

Future Ideas Lab

Making the cost assessment framework resilient to future challenges

September 2022



Executive Summary

The sector is coming under increasing pressure from a number of different directions:

- We have obligations to reduce our greenhouse gas (GHG) emissions in line with the Government's Net Zero target;
- There are changing public attitudes towards the use of combined sewer overflow (CSOs), necessitating a significant shift from current infrastructure;
- Changing weather patterns suggest future summers will be drier and future winters will be wetter, both of which will put strain upon the industry's assets and operations; and
- Simultaneously, customers' wallets are being squeezed by a variety of macroeconomic factors which mean any solutions to these pressures need to be delivered in the most efficient way possible.

A forward-looking approach will be necessary if price controls are to reasonably reflect these future challenges. In previous publications, we have referred to this concept as external validity¹. For example, Ofwat's base cost models are built using historic expenditure data, such that if future cost pressures change then this historic expenditure may not be reflective of future requirements. Or alternatively, performance targets that are simple extrapolations of past targets or performance may not reflect a realistic level of performance in the future.

The aim of this paper is to reflect on some of the specific issues facing the sector, and to provide practical solutions that could be introduced for PR24, and then be further developed during subsequent Price Reviews. We would welcome the opportunity to discuss any of these solutions with Ofwat or other interested stakeholders.

How to objectively determine 'what base buys'

At PR19, Ofwat set stretching performance targets for the industry. In general, it took the view that these could be achieved through better and efficient use of existing base expenditure, rather than requiring incremental enhancement spend. In this context, Ofwat has been characterised as holding a position whereby it is sufficient to assume that base expenditure is sufficient to meet these improvements in service, with an implicit requirement for companies to innovate and deliver additional efficiencies in order fund those improvements. At the CMA appeals and elsewhere, a number of contrasting views were exchanged about "what base buys."

In our view, the term 'what base buys' has been used by different parties in different contexts to refer to different ideas. We consider it would be useful to frame the debate by highlighting three broad categories which have all been given the 'what base buys' label at some point:

- (1) **Where costs relating to an activity (including to deliver improved levels of service) have been incurred historically within base costs and equivalently by all companies.** In this case, it is reasonable to assume base buys that activity in *full* in the future.
- (2) **Where some, but not all, companies have incurred expenditure historically when carrying out an activity.** Assuming there is no related cost driver in the benchmarking model, the model allocates all companies an equivalent average share. In this case, it is reasonable to assume base buys *part* of that activity in future.
- (3) **Where there is no historic base expenditure relating to that activity (for example, because the activity was classed as enhancement).** In this case, base will not (absent the overlay of a further assumption) buy *any* improvement. If the term 'what base buys' is used in this context, then it is a reference to an implicit additional efficiency/productivity challenge, *not* an objective assessment of the activities included within base costs.

¹ Uuw (2021) *Principles of Regulatory Cost Assessment*. Available [here](#).

Each of these cases will require different treatment within cost assessment. Importantly, the question of what base buys will be affected by decisions taken during the cost assessment process. We set out some relevant factors below, which are consistent with Reckon LLP's paper on this topic²:

- **Observed performance by all companies over the historical period covered by the models.** At the simplest level, it would be reasonable to expect expenditure benchmarks to reflect the average observed level of performance across the industry over the time period modelled, for any particular dimension of performance.
- **Exogenous factors affecting performance not captured in base cost models.** Base expenditure 'buys' less performance in more adverse operating environments because a higher proportion of expenditure is needed to offset more challenging exogenous factors.
- **Relationship between performance and rankings from cost benchmarking.** If we assume that any differences in company performance are purely due to management ability, then it may be appropriate to expect all companies to achieve average performance from base expenditure. However, if any differences are due to differences in historic expenditure, then this assumption is no longer appropriate because better performing companies have spent more money previously. Both cases can occur simultaneously.
- **Historical enhancement expenditure excluded from models.** If better performance is a result of enhancement expenditure excluded from base expenditure benchmarking models, then it may not be reasonable to assume that base buys any related performance improvements.

We draw upon the previous discussion to develop a framework that can help to objectively assess what base buys. This should ensure that efficiency is challenged within a transparent, objective and stable framework, one of our principles of cost assessment³.

How can cost assessment best support the economy's journey to Net Zero?

The water industry contributed 5% of the UK's greenhouse gas (GHG) emissions in 2020⁴. This means it has an important role to play as the economy moves towards the Government's target of Net Zero by 2050. However, we anticipate material upwards pressure upon emissions as we implement increasingly stringent environmental quality and performance programmes, which are likely to drive an increase in the consumption of resources such as electricity, fuels, chemicals and concrete (through more chemical dosing for example).

Additionally, we consider that achieving further emissions reductions from base expenditure will be extremely stretching. One reason why this is the case is because a very substantial part of the emissions reductions relating to electricity use over the last ten years has come through decarbonisation of the energy grid. Whilst this may have had some impact on power prices, it will have involved no further incremental expenditure by water companies. Future emissions reductions will likely require a much greater degree of direct intervention and expenditure by water companies themselves, which will not be reflected in past base expenditure.

The scale of this challenge means that we consider that the regulatory framework should incentivise companies to use a mix of interventions that suit their specific circumstances, including the use of market-based offsets. We should be under no illusions that moving the sector towards Net Zero will require serious and sustained interventions across all areas of companies' operations.

How to promote nature-based solutions

Nature-based solutions can promote a range of different benefits compared to a traditional 'grey' solution. They can lead to lower whole-life costs; additional habitats for wildlife; green spaces for the public to enjoy; and produce carbon benefits. However, their nature means they can interact differently with the regulatory

² Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements*. Available [here](#).

³ Uuw (2021) *Principles of Regulatory Cost Assessment*. Available [here](#).

⁴ ONS, *Atmospheric emissions: greenhouse gases by industry and gas*. Available [here](#).

framework, which can potentially disincentivise companies from implementing them. Ofwat has recognised this problem in its draft methodology, and has proposed some solutions. We contribute to this discussion by proposing a solution consistent with one put forward by Reckon LLP⁵.

This solution provides a framework by which Ofwat sets an efficient baseline for each unit of benefit delivered through a nature-based solution in the upcoming and future AMPs, until a specific termination date. At this termination date, related costs are remunerated through base expenditure models, analogous to maintenance expenditure for traditional solutions. Until this termination point, at each AMP, Ofwat can take account of the latest information on efficient costs for similar schemes and update baselines accordingly, allowing customers to benefit. Therefore, while this solution doesn't provide the same certainty as an approach where the net present value of a scheme is added to the RCV, it does establish a commonly understood framework through which adjustments could in future be made. While it doesn't eliminate the ex ante uncertainty, it gives companies confidence that nature-based solutions are likely to be remunerated in future, and sets the conditions under which the terms of remuneration can change, making it more likely they will pursue NbS even where uncertainty exists.

We consider that this approach adopts an appropriate balance between flexibility and certainty, which should encourage a move away from traditional 'grey' schemes where possible. It would not require any fundamental revision of the existing regulatory framework and so could be implemented at PR24. Indeed, the notion of an allowance per unit of enhancement benefit delivered ties closely to Ofwat's draft methodology proposals, whereby all business plan enhancement expenditure at PR24 should be associated with a performance improvement.

How to facilitate partnerships within cost assessment

The involvement of third parties can lead to lower costs for customers, while partner expertise and access to more catchment land can lead to substantial wider benefits for both customers and the environment. However, partnerships have unique features that are not easily aligned to the traditional framework for ex-ante cost assessment. For example, they involve coordination across a wide variety of third parties that have different goals and values, which can increase the uncertainty surrounding a specific solution type. For this reason, careful thought needs to be given as to how best to design the regulatory framework to capture the benefits partnerships can bring, while appropriately mitigating the inherent uncertainties.

In its draft PR24 methodology, Ofwat presented an approach to incentivise companies to engage in more partnership working, by netting off third party contributions from 'gross' enhancement expenditure and then benchmarking this 'net' cost. However, there is a risk that this approach will create a perverse incentive to only engage in partnerships where third parties contribute to a company-led scheme. This is because where we make a contribution to a partner's scheme, this expenditure will be reported within the 'gross' cost. If the benchmarking model does not include a relevant cost driver that captures variation in partnership schemes, then this partnership contribution will be considered as 'inefficiency' by the benchmark. We consider that Ofwat should collect information about both incoming and outgoing partnership contributions to facilitate an appropriate solution to this problem.

We also consider that ex-post incentives and reconciliations will be necessary to ensure that the uncertainty inherent with partnership working does not manifest itself in poor outcomes for customers. For example, if a partnership scheme can't go ahead (e.g. due to withdrawal of a significant partner), an appropriate mechanism would ensure that the company isn't penalised for pursuing an alternate scheme with equivalent benefits.

Adapting for adaptive planning

We support Ofwat's move to the long-term planning framework, which set an expectation for companies to shift their focus towards long-term planning at PR24, with price reviews considering how investment decisions in

⁵ Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements*. Available [here](#).

future AMPs can best support long-term ambition, optimise long-term performance and appropriately mitigate uncertainties and wider risks over a longer timeframe.

However, there is a risk that if cost assessment aligns to the 'no/least regrets' pathway and a decision point is met mid-AMP, then companies may not be able to appropriately respond in an efficient or effective way. An ex post mechanism that adjusts cost baselines in response should give companies sufficient confidence to submit business plans aligned to the 'no/least regrets' pathway.

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1. Introduction

- 1.1.1 The sector is coming under increasing pressure from a number of different directions:
- We have obligations to reduce our greenhouse gas (GHG) emissions in line with the Government's Net Zero target;
 - There are changing public attitudes towards the use of combined sewer overflow (CSOs), necessitating a significant shift from current infrastructure;
 - Changing weather patterns suggest future summers will be drier and future winters will be wetter, both of which will put strain upon the industry's assets and operations; and
 - Simultaneously, customers' wallets are being squeezed by a variety of macroeconomic factors which mean any solutions to these pressures need to be delivered in the most efficient way possible.
- 1.1.2 A well-designed regulatory regime will help to make sure the industry is capable of meeting the challenges it faces, by encouraging companies to recover the costs associated with delivering the right solution at the right time for an efficient price. At the same time, it should provide appropriate and proportionate incentives for companies to continue to improve performance and reduce costs.
- 1.1.3 A forward-looking approach will be important if the regulatory settlement is to reflect future cost pressures; in previous publications, we have referred to this concept as external validity⁶. For example, Ofwat's base cost models are built using historic expenditure data; if future cost pressures change then this historic expenditure may not be reflective of future requirements. Or alternatively, performance targets which are simple extrapolations of past targets or performance may not reflect a realistic level of performance in the future.
- 1.1.4 A key element of external validity relates to the service improvements that can be delivered from base expenditure. This is commonly referred to as 'what base buys'. This topic was widely discussed at PR19, and continues to be the focus of ongoing work and study. We draw upon recent work by Reckon LLP⁷, which has revealed new insights about the how the regulatory framework influences 'what base buys'. As well as what base buys, within this paper we consider several other topics with relevance to external validity:
- How cost assessment can best support the economy's journey to Net Zero within cost assessment;
 - How to promote nature-based solutions;
 - How to facilitate partnerships within cost assessment; and
 - How cost assessment can best facilitate adaptive planning.
- 1.1.5 Our aim is to provide solutions to these issues that are practical to implement at PR24 and that can be developed and built-upon during subsequent Price Reviews. We would welcome the opportunity to discuss any of these solutions with Ofwat or other interested stakeholders⁸.

⁶ Uuw (2021) *Principles of Regulatory Cost Assessment*. Available [here](#).

⁷ Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements*. Available [here](#).

⁸ If you would like to discuss any of the topics in more detail please email joseph.cubbin@uuplc.co.uk.

2. How to objectively determine what base buys

- ‘What base buys’ is a term used in different circumstances to refer to different things. We identify three alternate sentiments in which this term has been used.
- Each sentiment will require different treatment within cost assessment. We consider some issues and concepts that can inform this process.
- We draw upon this discussion to demonstrate how an objective framework can be used by companies and Ofwat at PR24 to make a reasoned assessment of what can reasonably be delivered from base expenditure.

2.1.1 Base costs most often make up the majority of companies’ cost base, and are incurred carrying out a wide range of activity. As Ofwat states, “*Base costs cover routine, year-on-year ongoing costs*”⁹. At PR19, Ofwat required companies to make significant improvements in performance using their base allowances. It considered this was reasonable, given that companies had (in general) made historic improvements to base service from base costs.

2.1.2 However, the question of what base buys is complex because a range of factors influence the performance levels ‘funded’ by base allowances. We briefly discuss some of these factors in this section and then draw upon this discussion to set out a framework we will use to assess what base buys while developing our business plan.

2.2 What do we mean when we use the phrase ‘what base buys’?

2.2.1 ‘What base buys’ is a concept that could be open to multiple interpretations. We have seen it used in a range of contexts to express different sentiments. We can group these into three broad categories:

- (1) Where costs relating to an activity (including to deliver improved levels of service) have been incurred historically within base costs and equivalently by all companies. In this case, it is reasonable to assume base buys that activity in full in the future.
- (2) Where some, but not all, companies have incurred expenditure historically when carrying out an activity. Assuming there is no related cost driver in the benchmarking model, the model allocates all companies an equivalent average share. In this case, it is reasonable to assume base buys part of that activity in future.
- (3) Where there is no historic base expenditure relating to that activity (for example, because the activity was classed as enhancement). In this case, base will not (absent the overlay of a further assumption) buy any improvement. If the term ‘what base buys’ is used in this context, then it is a reference to an implicit additional efficiency/productivity challenge, not an objective assessment of the activities included within base costs.

2.2.2 We consider that it is important to establish common understanding of these different scenarios, and the implications for the regulatory framework. Each scenario will need to be treated differently within cost assessment and when setting performance targets.

⁹ Ofwat (2022) *Appendix 9: setting efficient expenditure allowances*. Available [here](#).

2.3 What factors determine what base buys?

2.3.1 This section contains some topics which need to feature in any discussion on ‘what base buys’. We draw upon the recent work of Reckon LLP¹⁰ throughout, which has provided fresh insights that have evolved our understanding of this topic.

2.3.2 Base expenditure represents expenditure incurred in the day-to-day running of the business, while enhancement expenditure reflects expenditure incurred to increase the scale of or quality of service provision relative to a defined reference year. Crucially, the boundary point between reported base and enhancement expenditure may be company-specific, reflecting differences between each company’s historical position in terms of scale and quality of service.

2.3.3 Reckon emphasises that:

“It is highly important to recognise that this concept of base expenditure is fundamentally different to the set of expenditure that we might see as funded by base cost allowances derived from cross-company benchmarking of base expenditure.

Where a company’s expenditure allowances for base expenditure are determined by cross-company benchmarking models, rather than simply extrapolating its own historical base expenditure, the scope and nature of expenditure covered by those allowances departs from the scope and nature of the company’s base expenditure.”

2.3.4 Effectively, this means that ‘what base buys’ is determined by a variety of company-specific factors and how these manifest themselves at an industry level during the benchmarking process. As a result, we must give careful thought to each before we can determine a reasonable answer to ‘what base buys’. The following sections set out a (by no means exhaustive) collection of some factors that may impact upon this question. Further factors and considerations can be found in Reckon’s report.

2.3.5 Observed performance across all companies

2.3.6 At the simplest level, it would be reasonable to expect expenditure benchmarks to reflect the average observed level of performance across the industry, for any particular dimension of performance. This is a simple logical application of the nature of regression-based modelling, in that, absent a suitable cost driver a line of best fit can be thought to reflect the industry average attribute in question. Ofwat recognised this feature of benchmarking in its draft methodology¹¹:

“...If the company considers that the modelled base allowance does not adequately reflect its circumstances (for example, if it has implemented more opex based enhancement solutions than the industry average), it can submit a cost adjustment claim.” (emphasis added)

2.3.7 In this context, it would be reasonable to expect a company with below average performance to catch-up with the rest of the industry from base allowances (absent any exogenous factors which impact the assumption that companies could be expected to deliver equivalent performance). However, if that company was an above average performer in a different dimension of performance then this assumption may no longer be appropriate.

2.3.8 Importantly, the expenditure benchmark will reflect average performance over the historical sample period¹², meaning that it is unrealistic to assume that base buys an above average (e.g. an upper quartile) level of performance, or deliver an extrapolated trend of performance improvements - econometric models are backward-looking and so will not reflect continued future improvements in performance. We understand that Ofwat incorporates forward-looking forecasts of its cost drivers in the

¹⁰ Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat’s funding of base expenditure and enhancements*. Available [here](#).

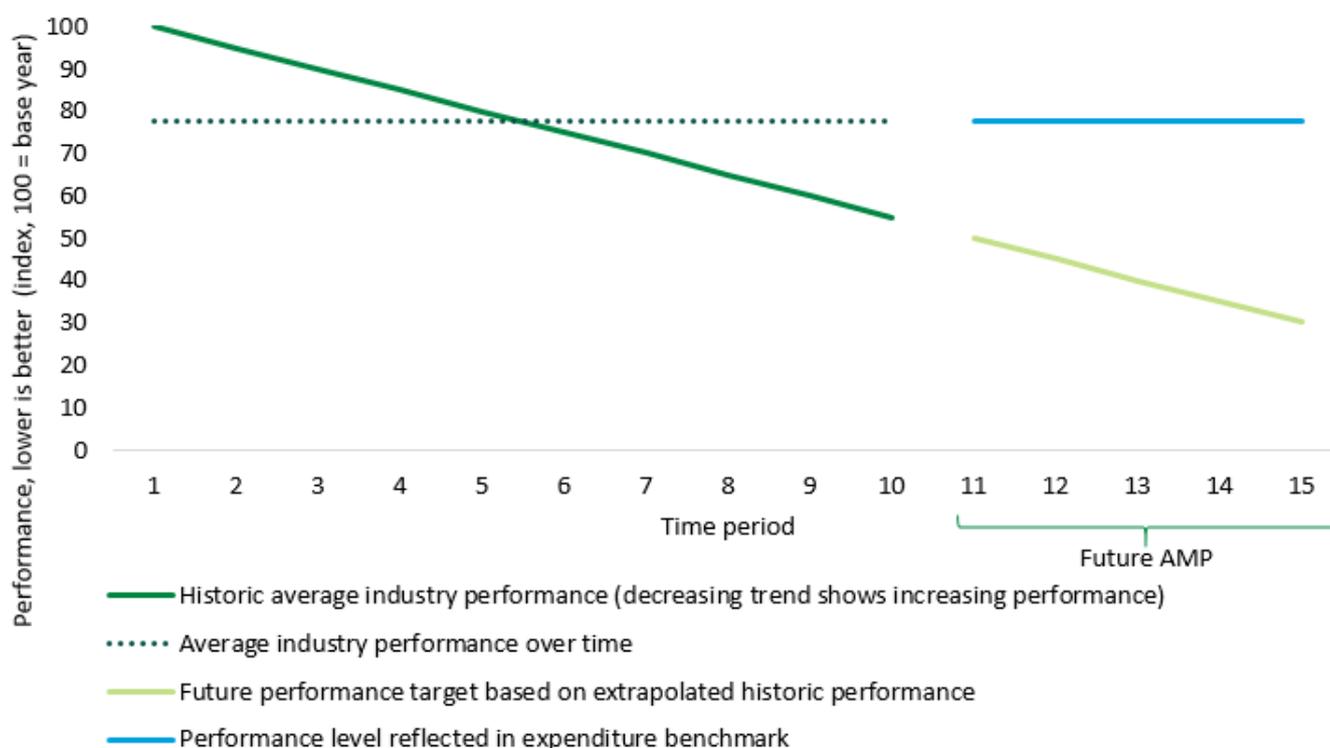
¹¹ Ofwat (2022) Appendix 9: setting expenditure allowances. Available [here](#).

¹² It may be reasonable to consider a different time period (i.e. a subset of the historical sample) where time dummies are included within the econometric specification.

expenditure benchmark; in some cases it is reasonable to expect that this will reflect improvements in service (e.g. through the water treatment complexity driver at PR19). However, generally these cost drivers reflect an increase in scale, not an improvement in performance, which means that assuming performance improvements are fully funded may not be accurate.

2.3.9 Figure 1 illustrates this using a simple example. In this example, performance has been steadily improving over the ten years included in the historical sample and we assume that no cost driver can reasonably be thought to be associated with performance. If the associated costs are used to benchmark companies' expenditure as is standard regulatory practice, then the benchmark will reflect average performance levels achieved over this time period (reflected by the blue line). In other words, base does not buy performance aligned to a target based upon extrapolated historic performance; the difference in targeted performance between historic average performance and an extrapolated target effectively represents a productivity challenge.

Figure 1 – An expenditure benchmark based upon historical cost will reflect average historical performance



2.3.10 Relationship between performance and rankings from cost benchmarking

2.3.11 Ofwat sets a catch-up efficiency challenge based upon how much more (or less) companies are spending relative to an 'efficient' benchmark company. This has the effect of reducing the expenditure benchmark of all companies deemed to be inefficient. This can relate to the discussion on what base buys in two alternative (but not mutually exclusive) ways:

- (1) If performance is in some cases driven by differences in the quality of management, then it may be reasonable to expect companies to achieve average or above average performance from 'efficient' base allowances.
- (2) If performance is in some cases driven by differences in company expenditure, then the use of an efficiency benchmark more stretching than the average company may mean it is reasonable to expect some companies to perform at a below average level, and other companies to performance above average.

2.3.12 Both of these cases can occur at the same time, meaning any attempt to correlate cost and performance can be misleading.

2.3.13 Historical enhancement expenditure excluded from models

2.3.14 Where enhancement expenditure has been excluded from base cost modelled expenditure, then the resulting botex benchmark will not reflect how this enhancement expenditure has supported previous improvements in service, in any way. If we assume that base allowances are sufficient to fund that enhancement expenditure in future, then that represents a productivity challenge. This should be explicitly recognised if efficiency is to be challenged within a stable, transparent and objective framework¹³.

2.3.15 Additionally, we need to recognise that companies have implemented different enhancement programmes in the past to address different risks with different interventions, with the result being a different profile of enhancement expenditure. Importantly, this variation in enhancement expenditure will lead to variation in company performance. Where this expenditure is excluded from the models, then the performance that can be expected from base allowances can differ in two ways:

- (1) Higher performance can be expected from companies that have had higher enhancement expenditure in related areas.
- (2) Lower performance can be expected from companies that have had lower enhancement expenditure in related areas.

2.3.16 This should be factored into the setting of performance targets; past enhancement may mean a performance benchmark is easily achievable for one company, but unattainable for another, even if the management quality is equivalent across both.

2.3.17 As a result, it may be unreasonable to assume that base expenditure is sufficient to facilitate performance improvements.

2.3.18 Exogenous factors affecting performance not captured in base-plus models

2.3.19 Performance may be impacted by regional factors outside of management control. A company that operates in a more adverse environment may need to incur additional expenditure relative to company operating in a more benign environment, despite both appearing to have similar performance levels.

2.3.20 Therefore, base expenditure 'buys' less performance in more adverse operating environments because a higher proportion of expenditure is needed to offset more challenging exogenous factors. Assuming that base buys the same level of service across the industry in the presence of such factors will result in inequitable stretch, with some customers paying too much for the service they receive.

2.3.21 We discussed this topic in detail in a previous Future Ideas Lab publication¹⁴. This paper introduced a framework that considered whether it was more appropriate to implement a common or company specific PCL for each performance commitment. We have developed this framework further to better elucidate the underlying drivers of this decision, as well as impacts elsewhere in the regulatory framework.

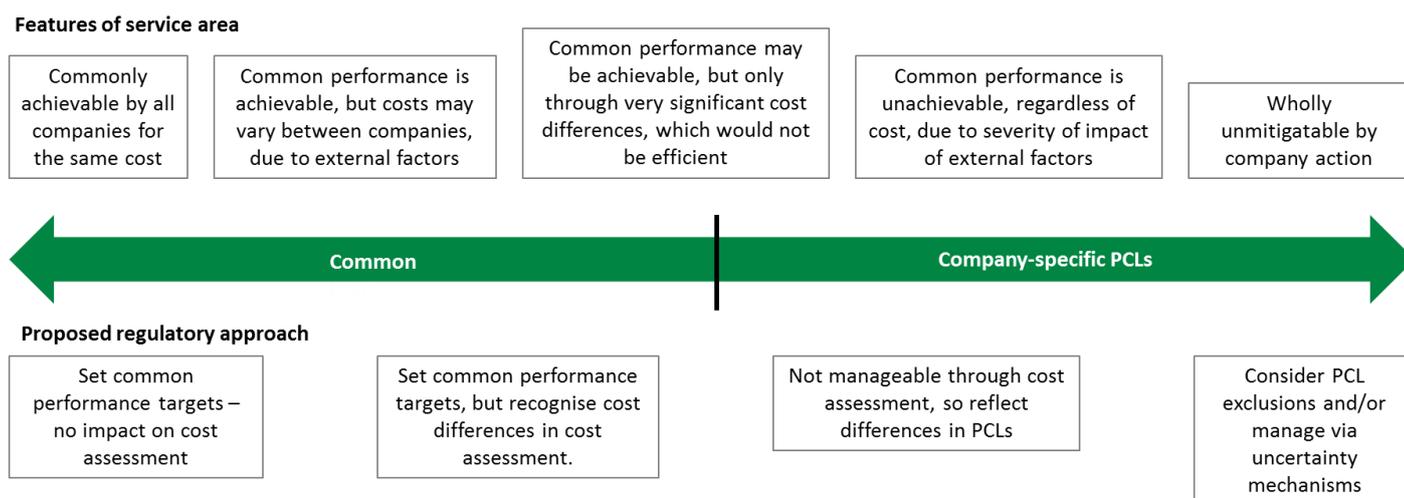
2.3.22 Figure 2 below illustrates how the effect of exogenous factors could be taken into account when setting performance targets. The diagram reflects any one particular dimension of performance (e.g. water supply interruptions, leakage, internal sewer flooding etc), and presents the effect of exogenous factors as a continuum where at the far left, exogenous factors either don't exist or all companies are affected in exactly the same way, and at the far right, the impact of exogenous factors on that aspect of a company's performance is so extreme the company is unable to mitigate the adverse effects. Between these two extremes, exogenous factors impact the performance of certain companies in different ways, such that the most appropriate solution within cost assessment changes:

¹³ This is one of our principles of cost assessment. See Uuw (2021) *Principles of Regulatory Cost Assessment*. Available [here](#).

¹⁴ Uuw (2022) *What lessons can we learn from cost assessment at PR19?* Available [here](#).

- **Commonly achievable by all companies for the same cost.** All companies face the same (or immaterially different) challenges, such that a simple unit cost model could be expected to provide an appropriate allocation of cost.
- **Common performance is achievable but costs may vary between companies due to external factors.** Exogenous factors do impact upon performance, but companies can be expected to achieve the same level of performance providing they receive an allocation of cost which appropriately reflects these factors.
- **Common performance may be achievable but only through very significant cost differences, which would not be efficient.** Exogenous factors are having a significant impact upon company performance. At some point, the increasing detrimental impact of these factors means it becomes inefficient to incur additional expenditure to improve performance. The exact point at which this occurs will vary according to a range of factors including the aspect of performance being considered, public perception, the marginal cost of new interventions etc.
- **Common performance is unachievable regardless of cost, due to the severity of the impact of external factors.** Exogenous factors are having such a detrimental impact that it is inefficient to attempt to mitigate them through incurring additional expenditure.
- **Entirely out of company control.** Companies are completely subject to these external factors and are unable to mitigate them in any way (e.g. legislative changes).

Figure 2 - How exogenous factors impact the assessment of performance levels



2.3.23 Each area of the exogeneity continuum can be associated with an appropriate regulatory response:

- **Set common performance targets – no impact on cost assessment.** Where exogenous factors are not expected to lead to material differences in performance between companies, a common performance target is appropriate.
- **Set common performance targets, but recognise cost differences in cost assessment.** Where exogenous factors begin to cause material differences in performance across the industry, it becomes appropriate to adjust cost benchmarks in response. For this reason, Ofwat includes a range of cost drivers in its cost benchmarking models and implements a cost adjustment regime. At some point within this category however, base no longer buys further improvements in performance. This point is determined by a range of factors which are discussed in detail in Reckon’s report¹⁵.

¹⁵ ¹⁵ Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat’s funding of base expenditure and enhancements*. Available [here](#).

- **Not manageable through cost assessment, so reflect differences in PCLs.** Cost assessment is unable to efficiently reflect the cost pressures related to the exogenous factor(s), so adjusting the performance target becomes the most appropriate solution.
- **Consider PCL exclusions and/or manage via uncertainty mechanisms.** It may become appropriate to exclude the impact of extreme exogenous factors from the measurement of a PCL. Alternatively, ex post mechanisms can adjust baselines in response to sudden changes in circumstance (we discuss this in more detail in section 6).

2.4 A framework for determining what base buys

2.4.1 We have drawn upon our past work and the preceding discussion to develop a framework that we will use to internally challenge our expectations for what can be delivered from base. The framework sets out a series of questions which lead to a suggested regulatory solution drawing upon the type of performance commitment target, the appropriate way of allocating botex and whether enhancement is necessary (in cases where base doesn't buy performance improvements). We set out more detail of the different outcomes in Table 1 below.

Table 1 - Explaining what the different outcomes of our framework mean

Regulatory lever	Potential options
Performance commitment level	Ofwat expects performance commitment levels can be either common (i.e. the same) across the industry or company-specific (i.e. different for particular companies). Company-specific PCLs can take the impact of exogenous factors into account and so provide comparable performance targets across the industry.
Botex	An adjustment to botex can be made through the inclusion of an appropriate cost driver or through the cost adjustment process. In a large number of cases, it's likely that Ofwat's PR19 model suite already includes suitable cost driver. For clarity, when we say an adjustment to botex is required, we mean relative to the case of a unit cost model, which only accounts for company scale.
Enhancement	Where enhancement expenditure is needed, base is unable to fund the required performance improvements. This is likely to occur in situations where performance targets are significantly more stretching relative to those in the past or entirely new.

2.4.2 This framework is set out in Figure 3. Table 2 then provides additional information on each of the tests.

Figure 3 - A framework to determine what base buys

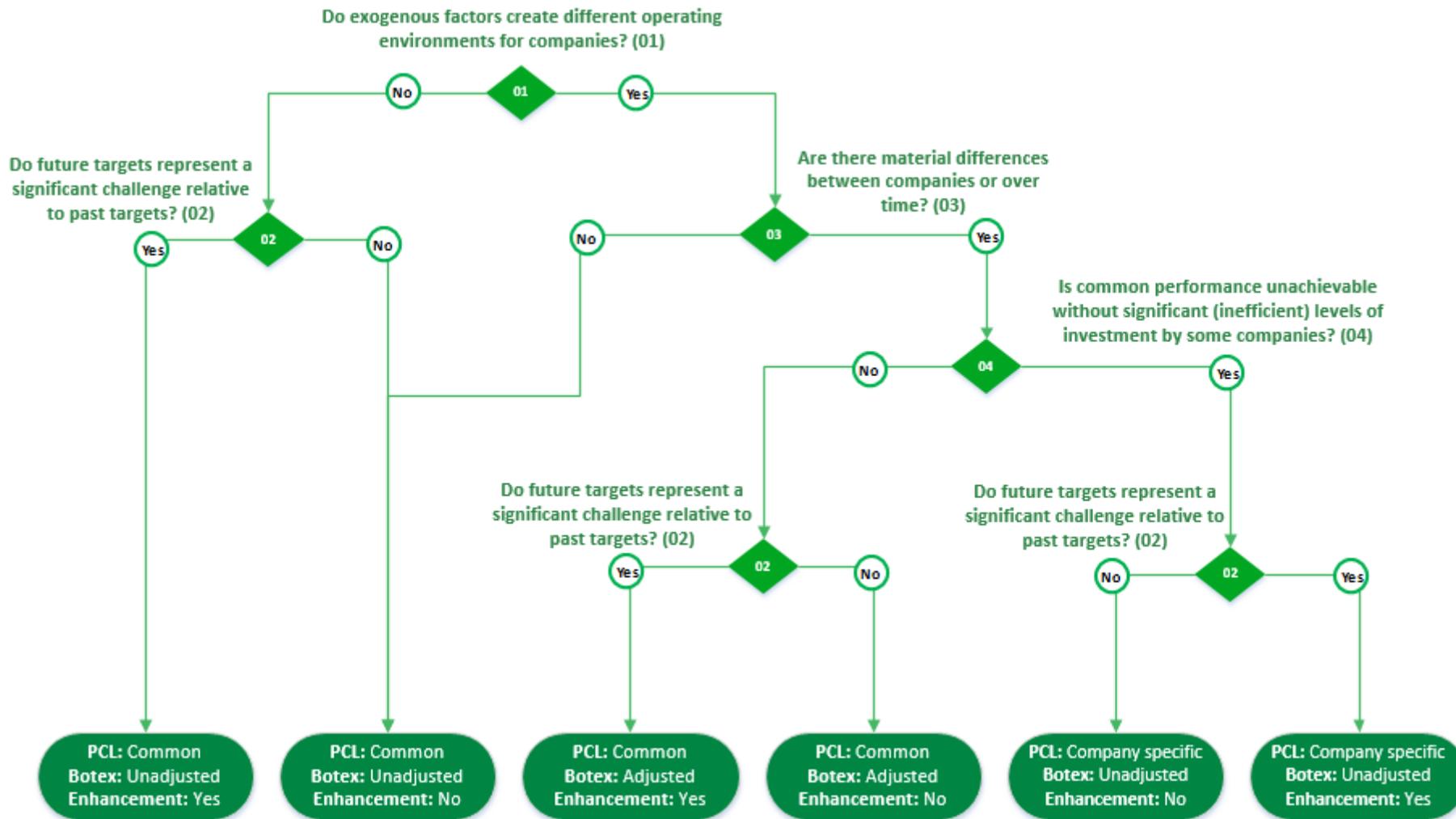


Table 2 - Additional information on each test gate

Reference	Test gate	Additional considerations
01	Do exogenous factors create different operating environments for companies?	<ul style="list-style-type: none"> • Would a unit cost model result in an inappropriate allocation of cost across the industry? • Is there evidence that exogenous factors create more adverse operating conditions in some areas? • Has the company demonstrated that it has taken all available action to mitigate the effects of exogenous factors? • Do the models provide an appropriate allocation of cost in relation to these exogenous factors?
02	Do future targets represent a significant challenge relative to past targets?	<ul style="list-style-type: none"> • Is the cost of making future improvements significantly above the cost of making past improvements? • Are there any emerging pressures which are expected to require a higher level of performance than in the past? • Is related enhancement expenditure included within the definition of modelled botex (plus) (if relevant)? • Do the models reasonably account for future changes in performance targets?
03	Are there material differences between companies or over time ¹⁶ ?	<ul style="list-style-type: none"> • Would adopting a unit cost approach lead to material allocative inefficiency across the industry? • If relevant, is the estimated implicit allowance from the model materially below the efficient costs a company incurs when delivering that activity? • Are there reasons to expect future industry expenditure is likely to be materially higher than in the past?
04	Is common performance unachievable without significant (inefficient) levels of investment by some companies?	<ul style="list-style-type: none"> • Is it economic for companies operating in more adverse conditions to make sufficient investment to catch-up with the performance of companies in more benign regions? E.g. companies with relatively high proportion of legacy combined sewers to invest in surface water separation in order to achieve equivalent performance levels from the sewer network (sewer flooding and overflows) • Do other pressures (such as public perception) mean the company should carry out investment that might be considered uneconomic?

¹⁶ As demonstrated in Reckon's report, the benchmarking approach can lead to allocative inefficiency where model specification does not appropriately capture relevant differences in circumstances. Simplistically, the implicit allowance within the benchmark can be thought to reflect the average level of that characteristic or activity across the industry.

2.5 Applying our framework to common performance commitments

2.5.1 This section demonstrates how this framework can be applied to a series of common performance commitments. While we carry out this exercise on a subset of performance commitments here to demonstrate how our approach works, we note that this process would be followed for all PCs to determine the most appropriate outcome. We also note that the ‘ref’ column refers back to the questions on the flow chart, which means they may not always be in numerical order.

Water quality compliance (CRI)

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	No	Companies are able to manage non-compliance risk through targeted action, such as mains flushing and effective testing, which may be sufficient to offset the effect of any exogenous factors.
02	Do future targets represent a significant challenge relative to past targets?	Yes	Changing environmental conditions could impact upon water quality. In such circumstances, previous targets will be materially harder to hit.

2.5.2 Therefore, in cases where there is a deterioration in the quality of raw water, additional enhancement expenditure may be required.

Water supply interruptions

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	No	We have previously argued that water supply interruptions performance is largely within management control.
02	Do future targets represent a significant challenge relative to past targets?	No	While we expect future targets to become incrementally more stretching, our current understanding is that there are no emerging pressures which require a substantial change in targets.

2.5.3 Therefore, we consider it is appropriate to expect improvements in water supply interruption performance to be funded from base allowances.

Discharge compliance

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	Yes	The discharge permit level is set by the Environment Agency, and is therefore largely outside of company control.
03	Are there material differences between companies or over time?	Yes	The condition of the local environment factors into the permit. It is reasonable to expect that this will differ across the industry, for example through the impact of industry on a local watercourse.
04	Is common performance unachievable without significant (inefficient) levels of investment by some companies?	No	Upgrading treatment works is a well-established practice, which can be targeted to where there is a clear requirement and associated benefit.

Ref	Test	Result	Justification
02	Do future targets represent a significant challenge relative to past targets?	Yes	A new or tightened permit requires additional stages of treatment. The cost of delivering this was not included in modelled botex at PR19.

2.5.4 Therefore, in order to comply with a new or more stringent permit, enhancement expenditure will be required.

Unplanned outages

2.5.5 We assess the unplanned outages PC against its PR19 definition. If the definition of the performance commitment changes in future, then our assessment under this framework may also change.

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	Yes	The source type can lead to differences in how assets have been configured and therefore lead to differences in maintenance activity.
03	Are there material differences between companies or over time?	Yes	There are significant differences in the mix of raw water sources across the industry
04	Is common performance unachievable without significant (inefficient) levels of investment by some companies?	No	Companies can make discrete and effective interventions to ensure their assets are well-maintained.
02	Do future targets represent a significant challenge relative to past targets? ¹⁷	No	Companies have always carried out appropriate maintenance activity.

2.5.6 Therefore, we consider an adjustment to botex may be necessary. We note that Ofwat's current model likely already provides an appropriate adjustment through the complexity cost driver.

Internal sewer flooding

2.5.7 Internal sewer flooding occurs when effluent discharges inside a customer's property, and is one of the most distressing events our customers can experience.

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	Yes	In a previous Future Ideas Lab paper, we drew upon the results of our internal sewer flooding hackathon and found that higher rates of internal sewer flooding are associated with high rates of combined sewers and rainfall, which are both exogenous.
03	Are there material differences between companies or over time?	Yes	The implicit allowance will reflect the average costs of addressing internal sewer flooding across the industry, not the different costs and the different operational performance that are achievable for each company.

¹⁷ If the definition of this performance commitment changes to exclude outages due to raw water deterioration, then this assessment may change.

Ref	Test	Result	Justification
04	Is common performance unachievable without significant (inefficient) levels of investment by some companies?	Yes	Our previous work in this area suggests that the common performance target for internal sewer flooding is beyond the frontier level of performance for a company with U UW's exogenous characteristics.
02	Do future targets represent a significant challenge relative to past targets?	No	Although the upper quartile may be slightly more stretching in AMP8, we don't expect this difference to be material.

2.5.8 Therefore, we consider a company-specific PCL to be in the best interests of customers. The scale of investment required to reduce the prevalence of our combined sewer network (to the point at which our performance is comparable with companies in benign operating environments) would likely be uneconomic.

Storm overflows

2.5.9 Combined sewer overflows discharge wastewater into the environment at times of extremely high rainfall. These overflows were inherited by wastewater companies at privatisation, with subsequent environmental programmes steadily reducing the frequency at which the overflows are used.

Ref	Test	Result	Justification
01	Do exogenous factors create different operating environments for companies?	Yes	The design of the sewer system inherited at privatisation (e.g. proportion of combined sewers) and frequency of heavy rainfall differs between companies and has material impact on performance.
03	Are there material differences between companies or over time?	Yes	Historically, expenditure to reduce spill frequency at CSOs has been provided as part of the WINEP; there is no implicit base allowance.
04	Is common performance unachievable without significant (inefficient) levels of investment by some companies?	Yes	Reengineering the sewer system will be expensive, but the public increasingly regards storm overflows as unacceptable.
02	Do future targets represent a significant challenge relative to past targets?	Yes	The public increasingly sees the use of overflows as unacceptable. This will require a different operating model to that employed in the past.

2.5.10 Therefore, we consider that a company-specific PCL and an enhancement allowance are the most appropriate tools to address storm overflows.

2.5.11 We consider that the framework introduced in section 2.4 represents an appropriate way to consider what base buys. It accounts for the key insights provided by Reckon, by requiring that the question of what base buys refers back to choices made when setting modelled allowances. In our view, the sensitivity of modelled allowances to these choices means that careful questions need to be asked of any approach to allocating costs across companies operating in a diverse range of environments. We consider that our framework represents an appropriate way of asking these questions and adjusting outcomes as a result.

2.5.12 While we only applied a subset of performance commitments to this framework for brevity, we consider that all PCs should be taken through this framework. This will help to ensure that the question of what base buys is answered in a way that aligns to our principle of challenging efficiency with a transparent, objective and stable framework.

3. How can cost assessment best support the economy's journey to Net Zero?

Summary

- The type and scale of activity required to effectively mitigate and reduce GHG emissions is a significant cost pressure which will require serious and sustained interventions across all areas of companies' operations.
- The nature of emissions reductions in the past means it is unrealistic to expect continued emissions reductions in the future without significant additional expenditure.
- Environmental and quality programmes will also create significant upward pressure on emissions such that 'best-value' enhancements are unlikely to offset any increase.
- As a result, the regulatory framework should incentivise companies to use a mix of interventions that suit their specific circumstances, including the use of market-based offsets, as well as facilitate the scale of investment required to move towards Net Zero.

3.1.1 The water industry contributed 5% of the UK's greenhouse gas (GHG) emissions in 2020¹⁸. This means it has an important role to play as the economy moves towards the Government's target of Net Zero by 2050. At the same time, the sector is facing increasingly stringent environmental standards, requiring significant additional investment, which will exert upwards pressure on emissions. The type and scale of activity required to effectively mitigate and reduce emissions is an entirely new cost pressure which will require serious and sustained interventions across all areas of companies' operations.

3.1.2 This section considers some key issues that the regulatory framework will need to address if the sector is to move towards Net Zero efficiently and effectively.

3.2 Clarity is crucial when setting scope, definitions and boundaries of emissions

3.2.1 It is important when discussing targets, incentives and reporting to be clear and unambiguous in the terms used and assumptions made regarding scope, definitions and boundaries. The consequence of not doing this is that companies may report emissions inconsistently, which will lead to a lack of transparency and ultimately companies being rewarded or penalised for differences in reporting and not differences in performance.

3.2.2 As per the worldwide Greenhouse Gas Protocol Corporate and Accounting and Reporting Standard¹⁹ and described in the Government's Environmental Reporting Guidelines²⁰ greenhouse gas emissions (GHG) are categorised into three groups or 'scopes':

¹⁸ ONS, *Atmospheric emissions: greenhouse gases by industry and gas*. Available [here](#).

¹⁹ *GHG Protocol Corporate Accounting and Reporting Standard (GHG Protocol Corporate Standard)*. Available [here](#).

²⁰ HMG (2019) *Environmental Reporting Guidelines*. Available [here](#).

- **Scope 1** relates to direct emissions, which can be attributed to activities carried out in the day-to-day operations of the organisation. For example, the emissions from the exhausts of network technicians' vans and from wastewater and sludge processing.
- **Scope 2** relates to indirect emissions, associated with the purchase of electricity. For example, the emissions created when generating grid electricity which is then used to power water pumps.
- **Scope 3** relates to other indirect emissions that are a consequence of the organisation's actions, which occur at sources which the organisation does not own or control and which are not classed as Scope 2 emissions. These include emissions from construction activities, emissions from use of fuel and electricity that is not in scope 1 or 2, use of products and services (for instance chemicals or outsourced partners) and business travel.

3.2.3 Our understanding of Ofwat's position is that companies are expected to at least align their plans with legal national carbon targets (e.g. 78% 2035 and net zero 2050), and therefore will need to address all emission scopes. However, at the time of writing, we consider that Ofwat needs to provide additional clarity on definitions and methodologies for both the incentive mechanisms and the performance commitment for use in PR24.

3.3 GHG emissions reductions will be harder to achieve in future

3.3.1 Ofwat should not assume that companies will be able to achieve the same pace of net GHG emissions reduction in the future for no additional cost. In fact, we anticipate that future AMPs will have a number of challenges (e.g. improving environmental requirements) that mean even proactive companies will actually face significant upwards pressures on emissions, despite making continued improvements and interventions from base allowances, for the following reasons:

- Companies are at different stages of their journey to Net Zero; early movers will not be able to achieve the same rate of reduction as later moving companies, as they will have already implemented 'low-hanging fruit' solutions, meaning additional improvements will become increasingly difficult and expensive. There may also be new costs to maintain reductions already achieved, for example with the increasing cost of renewable electricity from the national grid.
- All companies have previously benefited from the substantial decarbonisation of the grid over recent years, which will account for a large proportion of the historical emission reductions achieved by the sector – these reductions obviously should not simply be assumed to be achieved again to the same scale. In 2015 the UK grid electricity produced 0.46kg CO₂e for every kWh generated. By 2021 this had reduced to 0.21 kgCO₂e. This means that a significant proportion of historic emissions reductions were achieved as a result of decarbonisation of the electricity supply coming from the grid, not through further incremental expenditure by water companies. Future emissions reductions will likely require a much greater degree of direct intervention and expenditure by water companies themselves which will not be reflected in past base expenditure.
- Renewable energy tariffs and national renewable energy generation incentives have changed enormously in recent years. In the past, companies have been able to take advantage of low cost renewable tariffs and asset investment incentives to reduce carbon emissions without additional cost to customers. However, the cost of green electricity from a grid supplier has recently increased sharply, and this is likely to persist and increase in the future, which would cause companies to have to choose between lower emissions and lower cost. This means that Ofwat should not assume its expenditure benchmark for AMP8 will facilitate future carbon reductions.
- The industry is expecting a lot of growth pressure in emissions from enhancement programmes. These types of projects require new and enhanced assets to meet tighter environmental limits, which are likely to drive an increase in the consumption of resources such as electricity, fuels, chemicals and concrete (through more chemical dosing for example). Some projects may have the option for a nature-based solution (NbS) where the speed and scale of change allows it. If that is applicable, then NbS could offset some of the increased emissions in the long term but likely not

sufficiently to entirely offset them and not in time to observe reduced emissions in AMP8 (e.g. because trees need time to grow). As an example of the effect these more stringent targets have, nationally we're forecasting that the sludge produced by Wastewater Network Plus will increase by 15% from a 2020 baseline by 2030 and 40% by 2040 as the sector implements legal requirements for phosphorus reduction schemes in the Water Industry National Environment Plan (WINEP). As emissions from sludge activities are currently estimated based on the volume of sludge produced, we can expect reported emissions using the current methodology to increase by 15% by 2030.

- The industry is also expecting additional challenges and pressures from changing legislation and environmental regulation. For example, if enacted, we're expecting that the change in requirements driven by Farming Rules for Water will increase the distance which needs to be travelled with biosolids by 2-2.5x from AMP7 levels. This in turn will increase emissions from sludge disposal transport, although this may be partly mitigated by transition to low emissions vehicles.
- Currently, wastewater treatment process emissions are estimated based upon population size. This means that demographic changes (population movement and growth) will lead to an increase in reported emissions.
- Increasingly stringent performance targets will require companies to carry out increasing amounts of activity and interventions relative to the past, which could lead to additional emissions when emissions are directly measured.

3.3.2 We anticipate that these challenges and pressures will mean that, without offsetting activity and investment, companies see an increase in emissions despite making continued improvements and interventions from base allowances. Therefore, just maintaining 2024-25 emissions throughout AMP8 will represent a significant stretch for companies.

3.3.3 This means that while base allowances will continue to deliver some future GHG reductions, it is unrealistic to expect that historical base expenditure data will reflect the scale of activity required and that the trend of historic improvements can be achieved through future base allowances. In fact, depending on the scale of a company's environmental obligations, it is possible that base allowances may only be sufficient to lessen the impact of any upward pressure on emissions.

3.3.4 We anticipate that appropriate enhancement expenditure will be crucial in achieving the step-change required to secure the sector's transition to Net Zero.

3.4 Ofwat will need to pick a suitable measure to appropriately incentivise companies to reduce GHG emissions

3.4.1 One of our Principles of cost assessment²¹ is that efficiency should be challenged with a transparent, objective and stable framework. The question of how to measure and incentivise GHG reductions while maintaining this principle raises some issues that will need to be given careful thought.

3.4.2 The industry estimates emissions using the Carbon Accounting Workbook (CAW). The outputs of the CAW (and other tools) are then used to report company emissions in various mandatory and voluntary disclosures. Continual improvement of GHG emissions accounting (at an international level) together with changing emissions factors mean the CAW is susceptible to methodology and factor revisions year on year. This has the potential to make it harder for stakeholders to assess how companies are delivering against their performance targets on an equivalent basis. Therefore, we consider that an exercise to baseline historical reported emissions to standardised methodologies and emission factors, prior to these being used to set any form of Performance Commitment Level (PCL), would be essential in ensuring that carbon reductions interventions are incentivised within a transparent, objective and stable framework.

²¹ Uuw (2021) *Principles of Regulatory Cost Assessment*. Available [here](#).

- 3.4.3 We understand that Ofwat intends to use the latest available CAW at the end of AMP7 when setting baselines and targets for AMP8. However, if the (CAW) methodology changes part-way through AMP8, then the target, baseline and methodology will also need to be updated to enable companies to quantify and report emissions reduction changes resulting from management interventions, rather than just those changes that are the result of a change in methodology.
- 3.4.4 If this isn’t done, then the emissions performance associated with interventions implemented by companies (or the lack of interventions) will not be transparent to customers or stakeholders, which could lead to legitimacy issues. Additionally, if any artificial increases or decreases in reportable emissions (e.g. due to a methodological change or external consequences) feed through into financial rewards or penalties, then there is a risk that the framework could reward companies that happen to benefit from that circumstance rather than those who have delivered effective interventions. There is also a risk that if Ofwat’s assessment of enhancement costs is linked to emissions reductions, and the way these emissions reductions are measured changes, such that the methodology is inconsistent with that used to set the target, then customers may pay too much for the reductions that companies have achieved.
- 3.4.5 Therefore, careful thought will need to be given about how best to reflect changes in emissions for the purposes of incentivising the industry. One potential solution for the data inconsistency issue may be for Ofwat to work with companies to co-develop a carbon data table for the business plan submission. Companies could use historic versions of the CAW to provide underlying data, restated to a standard set of emissions factors and reporting methodologies. We would welcome the opportunity to work with Ofwat and with other water companies to explore available data and to co-develop a suitable carbon reduction target.

3.5 Ofwat should consider which emissions are realistically within companies’ control

- 3.5.1 Not all types of emissions are within company control. While it may be appropriate to gradually incorporate all types of emissions into the target over the course of future AMPs, it would be unrealistic to immediately expect companies to reduce categories of emissions over which they have limited (or no) control.
- 3.5.2 We propose that companies should report against the performance commitment level in order of their ability to impact GHG emissions e.g. scope 1, scope 2, scope 3 capital and infrastructure categories during AMP8, and expanding to other scope 3 categories in line with achieving net zero by 2050. Table 3 contains our proposals for which emissions should be included in the AMP8 performance commitment and within the enhancement tiers of the incentive mechanism.

Table 3 - UuW’s proposal for which emissions should be included within the incentive mechanism

Category	Proposal of which GHG emissions should be included within each tier
Base expenditure reduction	Operational emissions (scope 1, 2, plus a defined subset of scope 3 emissions related to annual operational activities, which should be defined and agreed as a sector)
Standard enhancement reduction	Whole life impact ² of enhancement projects
Net zero enhancement reduction	Whole life impact ² of projects against a counterfactual of base or a traditional solution
Net zero challenge	Whole life impact ² projects against a counterfactual of base or a traditional solution

Notes:

¹ Subset of scope 3 emissions should be as a minimum:

- Business travel on public transport and private vehicles used for company business

- Outsourced activities (if not included in scope 1 or 2)
 - Purchased electricity – Transmission and Distribution
- UU would suggest extending this subset to include all of GHG Protocol scope 3 categories 3, 5 and 6.
- Category 3 Fuel and energy related emissions (transport and distribution, and well to tank of all electricity, gaseous and liquids fuels used)
 - Category 5 Waste generated in operations (including sludge disposal)
 - Category 6 Business travel on public transport and private vehicles used for company business

² Whole life impact including embedded emissions (those associated with delivery of the capital project) and impact on operational emissions (scope 1, 2 and a defined subset of scope 3) associated with use stage of the asset(s) (to include operation, repair, maintenance, replacement and consumables). We do not propose to include decommissioning impact due to the long asset lives.

3.5.3 It is unclear if Ofwat is proposing to report emissions as net or gross, and if it intends to use location-based or market-based reporting for electricity. We propose net emissions reporting as this would align with the national goal for net zero and so increase transparency. There are pros and cons of both location and market-based reporting, which we propose is worked through by the industry with Ofwat to develop a proposal that does not create perverse incentives.

3.5.4 For example, the renewable energy market is likely to significantly evolve in future, which is likely to have a knock-on impact on costs. If the cost of purchasing green energy increases, then this would create a situation where companies are simultaneously facing two contradictory incentives:

- (1) An efficiency incentive to reduce costs and so transition away from green energy; and
- (2) A performance and legal incentive to reduce emissions, and so transition towards green energy.

We do not consider that this represents an optimal design of a regulatory framework.

3.5.5 Outside of the performance commitment, we also have a concern about the way in which we expect embedded emissions to be reported. Our interpretation is that embedded emissions (emissions associated with delivery of a capital project) are to be reported annually at the programme level. We consider that this would give an unrepresentative view of emissions trends because it would be a snapshot of a point in an investment cycle (and so would be susceptible to peaks and troughs). Embedded emissions (if separated out) should be reported at a project level, which allows emissions to be assessed against a suitable counterfactual (for example, a 'traditional' grey solution), and on a whole-life basis.

3.5.6 In summary, we would welcome clarity on which GHG Protocol scopes and categories are included within 'operational emissions' and 'embedded emissions' reporting, and which categories are outside either of these two boundaries for both the incentive mechanism and the performance commitment. We recommend that Ofwat adopts our proposal as set out in Table 3, and works with the industry to develop an appropriate approach to incorporate additional categories of emissions as we move towards 2050.

3.6 Ofwat should incentivise the use of all emission removal activities to maximise the efficiency of long-term net emissions reductions

3.6.1 The PR24 draft methodology makes reference to offsets being a lower preference to emissions reduction.

3.6.2 Carbon removals, insets and offsets covers a wide range of activities that lead to a net removal of greenhouse gases to the atmosphere. In this way they can net off emissions that cannot be mitigated due to economic and/or technical viability.

- 3.6.3 We consider that the regulatory framework should enable companies to adopt the most efficient and effective approaches from the widest mix of interventions available and suitable for their specific circumstances, without prejudice to any particular approach. Such interventions could include:
- Avoiding new GHG emissions as far as possible, including collaborative innovation, planning and assessment of sector priorities to ensure effective optimisation of environmental, climate and social (including affordability) priorities;
 - Improving our assets to reduce their GHG emissions, and working with others to reduce their pressures on water company assets and processes, such as protecting raw water sources to avoid energy and chemical use in water treatment, and removing surface water from the sewers to avoid pumping and wastewater treatment;
 - Capturing carbon from biomethane production, exporting biogas or electricity from Bioresources;
 - Investing in negative emissions activities on land where we deliver our core services e.g. peatland restoration and woodland creation to protect water quality and manage surface water flows. This activity could be classed as offsetting but is similar to NBS, as these activities will have multiple benefits for our region and customers; and
 - Using offset credits where appropriate and in the interests of customers e.g. where a credit is cheaper than the alternative capex solution. It is important that the use of such credits is governed to ensure confident and credible emissions avoidance using recognised and established principles.
- 3.6.4 Giving companies the freedom to choose the most appropriate mix of interventions for their circumstances would ensure that customers receive the best possible service (in terms of maximum carbon reductions) for the lowest possible price. For example, if a company has to choose between a high-cost intervention to reduce emissions (because there are no credible alternatives) or the use of low-cost, market-based offset credits, then we consider that the incentive regime should facilitate the lowest cost solution over the long-term. Furthermore delivering initiatives that are justified using wider value-based assessments incorporating natural and social values means customers will receive the best value service (across multiple benefits) for the optimal price.
- 3.6.5 We consider that this is aligned with Ofwat’s Net Zero Principles Position paper²², which affirms Ofwat’s commitment to the GHG Management Hierarchy. This hierarchy states that offsets can be used, but only once all other options for reduction have been exhausted.

3.7 Rather than enhancements where Net Zero is the ‘sole’ driver, Ofwat should facilitate enhancements where Net Zero is the ‘primary’ driver

- 3.7.1 In its draft methodology, Ofwat states that companies can present “*net zero specific investment where the sole driver is operational GHG emission reduction*” to make a case for additional enhancement allowances. However, in our experience an investment motivated by a sole driver is extremely rare; usually there are multiple drivers, as this is the best way to identify the most efficient and effective interventions within a constrained programme. For example, investment to replace a companies’ van fleet with electric vehicles may be considered to have a net zero driver. However, such an investment would also be motivated by having to replace vehicles at the end of their useful economic life. Therefore, we consider that moving to net zero would be better supported by allowing companies to present “*net zero specific investment where the primary driver is operational GHG emission reduction*” for assessment by Ofwat.

²² Ofwat (2022) *Net Zero Principles Position Paper*. Available [here](#).

4. How to promote nature-based solutions

- We support the regulatory adoption of a best-value approach and consider this will make nature-based solutions a more viable possibility when optioneering.
- The regulatory framework will need to adapt to facilitate growing numbers of nature-based solutions and we support Ofwat's efforts so far in this area.
- We propose a multi-AMP solution that builds upon the two options outlined in Ofwat's draft methodology.
- We consider that this solution would be practical to implement at PR24.

- 4.1.1 Nature-based Solutions (NbS) are ecosystem-based approaches defined by the International Union for Conservation of Nature (IUCN) as *"actions to protect, sustainably manage, and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits"*.
- 4.1.2 In the context of water management improvements, NbS is an umbrella term for a range of activities which harness the natural environment. These activities can enhance the natural water cycle through: modulating the flow of rainwater; creating environments to facilitate natural sedimentation and filtering processes; and allowing sediments and nutrients to remain in soils. In so doing they also create habitats that enhance biodiversity and human well-being.
- 4.1.3 In the right circumstances, an NbS can be implemented instead of a traditional 'grey' solution. While NbS are not necessarily cheaper in terms of whole life cost than a 'grey' solution (and in some cases, may be more expensive), their ability to deliver wider environmental and societal benefits makes them appealing, particularly in the context of Net Zero and wider public focus upon environmental harm.
- 4.1.4 The adoption of a 'best value' approach by both the EA and Ofwat enables recognition of a wider of range of benefits to include improvements in carbon, biodiversity and other 'capitals'. This should make NbS a more viable option. As a result, there is a need for the regulatory framework to adapt to accommodate NbS, a need which Ofwat has recognised.

4.2 How can nature-based solutions be better incentivised?

- 4.2.1 The PR19 approach to cost assessment reflected the fact that companies have not widely utilised NbS as a means for delivering environmental improvements and so had been tailored to benchmarking submissions of 'grey' schemes. The approach to benchmarking and remunerating NbS is therefore less mature.
- 4.2.2 Cost assessment typically involves making ex-ante assumptions about expenditure and benefits (by proxy of future performance levels) for future enhancements and therefore certainty around both plays a key role in making effective cost allowances. Importantly, certainty applies equally to both companies and Ofwat.
- 4.2.3 Nature-based solutions can have a range of different expenditure properties and profiles that makes their assessments more complex compared to traditional 'grey' schemes. A NbS can involve either:
- (a) significant up front expenditure (capex or opex) followed by ongoing operating and maintenance costs for the life of the asset – these are broadly the same characteristics as traditional 'grey' capital solutions; or
 - (b) low/no setup costs but with higher ongoing expenditure requirements for the duration of the scheme – this is different to traditional solutions and more akin to a lease arrangement.

- 4.2.4 The current definition and approach to assessing enhancements only applies to expenditure in the upcoming AMP rather than the whole life costs of an intervention. Therefore, after one AMP post-commissioning, all future expenditure is reported as 'base' and assessed as part of botex.
- 4.2.5 As a consequence, schemes that have a larger proportion of their whole-life cost in future periods, beyond the next AMP, will face a different approach to assessing cost efficiency, with a greater proportion of expenditure assessed against 'base' rather than enhancement cost.
- 4.2.6 If these types of schemes are not uniformly adopted by all companies then it is likely that the increased 'base' cost in future periods would be perceived as inefficiency. This potentially creates what we refer to as 'dynamic incentives' for companies, where being an early adopter relative to other companies is potentially detrimental.
- 4.2.7 Because the first type of NbS listed in 4.2.3 is similar to a traditional 'grey' solution, the incentive properties are more common between the two and so the PR19 approach is of less concern. The second type, where there is less upfront expenditure, is where the differences in incentives created by cost assessment occur and so is what we focus on within this section.
- 4.2.8 Table 4 below compares the different characteristics of traditional and nature-based solutions against each of the three characteristics discussed above; certainty, remuneration and dynamic incentives.
- 4.2.9 If left unaddressed, these factors risk creating an incentive to favour traditional 'grey' solutions, resulting in less efficient or lower value outcomes, to the overall detriment of customers.

Table 4 - Characteristics of traditional 'grey' solutions versus nature-based solutions

Characteristic	Traditional solutions	Nature-based solutions
Certainty	Both Ofwat and companies like to have certainty over the cost and benefits of a solution as it provides confidence to both that the business plan for cost and service are efficient and deliverable. Where solutions have been utilised extensively in the past, there is more information as to the cost and benefits associated with them. This enables cost and benefits for future solutions to be estimated with greater accuracy.	Smaller sample of historical interventions within and across companies. Can involve more innovative and untested solutions. Offers less ex-ante certainty on solution costs but also whether it will deliver the required benefits. Also involves uncertainty over the level of potential partner contributions, making robust comparative assessment more difficult.
Expenditure properties and remuneration	Traditional enhancement solutions tend to be capex with a significant proportion of upfront costs followed by lower operational and maintenance costs. Costs are added to the RCV and recovered across multiple AMPs with the RCV providing the certainty over future remuneration.	Greater potential for solutions with a smaller proportion of enhancement costs upfront in the next period, followed by higher ongoing operational and maintenance (base) costs in following AMPs. Future remuneration is dependent upon future cost allowances at subsequent price reviews.

Characteristic	Traditional solutions	Nature-based solutions
Dynamic incentives	<p>There is limited risk for first-movers when proposing new enhancements. Future allowances form a smaller proportion of whole-life cost and are also less at risk due to the presence of factors included in base cost models to account for the improved service level e.g. treatment complexity, that can remunerate companies for the increase in future operating and maintenance costs.</p>	<p>There is a risk of first-mover disadvantage. The first company to implement an NbS may get an allowance in the next AMP and any related expenditure will enter the historical dataset and be accounted for in future ‘base’ allowances. However, without a cost driver to reflect variance in NbS activity, the company’s NbS-related expenditure will be distributed evenly among every company, even those with no NbS. Therefore, companies with no NbS activity benefit unduly which creates an incentive not to implement NbS and could result in fewer being implemented than is efficient.</p>
4.2.10	<p>This comparison demonstrates that there is a clear risk that companies would prefer representing traditional solutions over nature-based solutions within price review submissions.</p>	
4.2.11	<p>Nature-based solutions may in some cases be more expensive, and may be associated with greater uncertainty (e.g. due to partner involvement or unknown ecological conditions). We suggest potential ways to appropriately incentivise companies to increase the use of partners in delivering improvements for customers in section 5.</p>	
4.2.12	<p>We consider that there would be considerable benefit for customers and the environmental if the cost assessment framework aligned the incentives to pursue nature-based solutions and traditional ‘grey’ solutions. The next section considers how this might be achieved.</p>	

4.3 How Ofwat can improve incentives to deliver nature-based solutions

- 4.3.1 Ofwat recognised similar concerns that have been raised by stakeholders in its draft methodology: *“We nonetheless indicated a concern raised by stakeholders that our approach may have discouraged companies from proposing nature-based solutions which require on-going management and operating expenditure (opex)”*²³. In its draft PR24 methodology, Ofwat presented two potential solutions to the problem;
- (1) The net present value (NPV) of the whole-life cost of the nature-based solution (NbS) could be added to the RCV (the ‘NPV approach’).
 - (2) Ofwat could set a ten year allowance to be recovered over two price control periods, with the allowance for the second price control period added to the RCV (the ‘ten year approach’).
- 4.3.2 We consider the advantages and disadvantages of these approaches in Table 5.

²³ Ofwat (2022) Appendix 9: setting expenditure allowances. Available [here](#).

Table 5 - Appraisal of the options set out in the draft methodology

Approach	Advantages	Disadvantages
NPV approach	<ul style="list-style-type: none"> Offers the most comparable level of <i>ex ante</i> allowance for both traditional and NbS, which should align the incentives across both. 	<ul style="list-style-type: none"> There may be a risk of double-funding companies if companies are being remunerated for NbS through RCV run-off and through base allowances (where costs related to NbS are included within the historical data used in future base cost benchmarking). This risk could be alleviated by separate reporting of NbS solution costs in each company’s APR. There may be a lack of flexibility inherent with this approach. This approach wouldn’t be able to adapt if new innovations make NbS cheaper to operate, or new information reveals a more efficient operating level – i.e. it does not address the greater level of <i>ex post</i> uncertainty in NbS. Potential to create complications with cost sharing.
Ten year allowance	<ul style="list-style-type: none"> Approach retains some flexibility to adapt as new and better information on efficient costs and success rate of solutions becomes available. 	<ul style="list-style-type: none"> Without a cost driver to account for the variance of NbS around the industry, each company would receive the industry average costs of NbS after ten years, meaning ‘first-movers’ that deliver more NbS than the average would receive insufficient cost allowances in future²⁴. While future cost adjustment claims may be proposed to deal with this problem, the uncertainty associated with the high evidential bar and materiality threshold may still not provide sufficient certainty, and therefore incentive, opposite a traditional grey solution. We are unclear of the benefit of adding the second AMP’s opex to the RCV. This might risk overcomplicating the remuneration of nature-based solutions. Potential to create complications with cost sharing.

4.3.3 While we do recognise there are potential difficulties in implementing the NPV approach, we do not think that they are insurmountable. However, we consider that any approach developed for PR24 is likely to be more of a pathfinder for future Price Reviews and so will need to be flexible enough to develop over time as NbS become more commonplace across the sector. As this happens, data and certainty for solutions will become more prevalent, enabling Ofwat to adopt a more permanent approach to assessment and remuneration at future Price Reviews. Ultimately a goal for PR24 should be to encourage companies to put forward NbS to enable this data to be collected.

4.3.4 While United Utilities Water included the NPV-approach in a discussion paper, this paper only sought to address one aspect of NbS i.e. funding over multiple AMPs and not other aspects (such as uncertainty in the delivery of benefits). Therefore, we now present an alternative solution that does address these other aspects. This solution comprises a suitable, flexible and ready-to-implement mechanism that draws upon the positives of the two approaches outlined above. This approach is consistent with that developed by Reckon LLP²⁵. Our initial appraisal of the benefits of this mechanism are:

²⁴ For the avoidance of doubt, we do not think that it would be appropriate to consider a variable for NbS in base cost models after ten years, as the expenditure is unlikely to be material enough to warrant using up the limited degrees of freedom.

²⁵ Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat’s funding of base expenditure and enhancements*.

- It requires minimal changes to the regulatory framework, and is similar to approaches used in the past;
- It is practical to implement immediately at PR24;
- Companies benefit from additional regulatory certainty; and
- It allows for sufficient flexibility that Ofwat can update assumptions at future Price Review through a predefined framework, which ensures customers benefit from new information on efficient costs.

An alternative approach to allocating efficient cost to opex-solutions across multiple AMPs

- 4.3.5 Ofwat would determine at PR24 that certain enhancement initiatives, for one or more companies, would be funded through new adaptable multi-AMP enhancement funding arrangements. This arrangement would provide the relevant water company with a separate stream of funding for these enhancements, for a period spanning multiple price control periods (to be suggested by companies but determined by Ofwat). The expenditure incurred on these enhancements would be excluded from future base cost models.
- 4.3.6 Ofwat would determine at PR24 the scale of enhancement benefits that the company is to be funded for; an allowance for operating expenditure per unit of those benefits; and a default time period for the funding of that enhancement, spanning multiple price control periods (e.g. 20 years). Where the benefit is not delivered, expenditure could be returned to customers through a performance commitment deliverable, if not directly linked to a common (or bespoke) performance commitment.
- 4.3.7 At each subsequent Price Review, Ofwat would have the ability to update the unit cost allowance, in the light of the latest information on efficient costs.
- 4.3.8 Ofwat would also have some pre-specified flexibility at subsequent Price Reviews to terminate the funding for the enhancement initiative before the end of the default time period (e.g. if there is evidence that the enhancement benefits are no longer needed) or to reduce the scale of benefits that are to be funded.
- 4.3.9 While there would, therefore, be no firm long-term commitment to the amount of funding to be provided over multiple price control periods, there would be an established methodology for determining these at each review. Instead, a provisional allowance for the long-term funding amount (e.g. estimated over 20 years based on initial assumptions on unit costs and volumes) could be determined at PR24, with the conditions under which this would be expected to change made clear. This allowance, insofar as it relates to price control periods subsequent to AMP8, would be published and recorded but it would not be included in totex allowances or the RCV at PR24.
- 4.3.10 Once the funding expiry date passes, the opex related to that project is added into base costs with continued operation being funded from base expenditure. This would be analogous to how companies are expected to maintain traditional capex-solutions using base allowances.

What information would Ofwat need to implement this approach?

- 4.3.11 Ofwat would need to collect some additional information from companies to implement this approach. We set this out here:
- (1) Outturn enhancement benefits in the form of an enhancement benefit metric (EBM). This would allow Ofwat to see whether projects have delivered the promised outcome. If not, costs can be returned to customers. This aligns with Ofwat's proposed requirement for all enhancement expenditure to be linked to a performance commitment or price control deliverable.
 - (2) Outturn operating and capital expenditure. This would be excluded from the definition of modelled base costs for time periods before the end of the default time period for the enhancement, and included once the default time period has concluded. It could also be used to benchmark efficient costs for each type of solution, with this information used to

update the unit cost allowance. This allows customers to benefit as companies get better at delivering NbS.

4.3.12 Measuring outcomes requires us to select a suitable enhancement benefit metric. We set out some potential examples in Table 6 below. We note that this type of information will be needed anyway, if all enhancement expenditure is expected to be linked to either a performance commitment or a price control deliverable.

Table 6 Examples of enhancement benefit metrics (developed in collaboration with Reckon LLP)

Type of metric	Examples
Metric closely linked to outcomes	<ul style="list-style-type: none"> • Measures of concentration of pollutants in a specified stretch of river • Measures of wildlife/biodiversity in an area post-greening. • Measure of biological oxygen demand. • Measure of number/severity of sewer flooding or pollution incidents. • Metric based on quantity of water abstracted/reduction in river abstraction requirements.
Scale of improvement in environmental conditions understood to substantially influence outcomes	<ul style="list-style-type: none"> • Estimated volume of phosphates or nitrates running off farmland in a specified part of a river catchment. • Estimated volume of phosphates or nitrates removed via a specific wetlands scheme. • Quantity of phosphates or nitrates present in soil & below root-level. • Measure of travel time for water flows to reduce flooding risk in periods of rapid rainfall.
Scale of improvement measured by reference to established capital enhancement solutions that might be used in the absence of opex-based initiatives	<ul style="list-style-type: none"> • Measure of the equivalent rain water storage capacity that is provided by blue-green drainage infrastructure.
Measure of risk of adverse outcomes	<ul style="list-style-type: none"> • Metric of valued-weighted risk of adverse events (e.g. CSO usage) defined according to a pre-specified methodology and holding external input data (e.g. assumed weather patterns) constant. • Metric of risk of sewer flooding in storm conditions (node based approach: node = manhole).
Activity-based metrics	<ul style="list-style-type: none"> • Area of farmland for which agreements have been reached to use low-pesticide farming practices. • Area of land converted to rain-gardens (could also be measured as output (quantity of water held) or risk (risk of flooding)).

Source: Reckon LLP

What sort of regulatory commitment would this approach represent?

4.3.13 The approach described above does not require Ofwat to make as fundamental a regulatory commitment as adding whole-life opex to the RCV. While this may not entirely eliminate the perceived capex-bias, we consider it is a pragmatic way to materially reduce the incentive gap between traditional and nature-based solutions.

- 4.3.14 This is because it establishes a framework by which a provisional whole-life allowance is determined for each nature-based solution. It then sets clear conditions for the regulator to revisit the provisional allowance at future price reviews e.g. if new and better information on efficient costs have come to light or the solution is no longer required. This ensures that both parties understand the nature of the commitment and reasons why it might change in future.

5. How to facilitate partnerships within cost assessment

- Partnerships can be an effective way to deliver increased benefits at no additional cost to customers. They can also enable water companies to utilise the expertise of other stakeholders in delivering enhancements.
- The PR24 draft methodology proposes to create incentives for companies to recover costs from third parties rather than customers through the benchmarking process, but does not provide equivalent incentives for partnerships where companies contribute funding to a partner's project and where partners contribute to a company's project.
- This may create a perverse incentive for companies to only seek out partnerships where it receives contributions towards its own projects rather than contribute to others, which may not be the best long-term option for customers.
- It is also important to develop a cost assessment framework that can accommodate the additional ex-ante uncertainties faced when undertaking partnership working.

5.1.1 The involvement of third parties can lead to lower costs for customers, while partner expertise and access to more catchment land can lead to substantial wider benefits for both customers and the environment. It is in the interests of a wide variety of stakeholders to ensure that the use of partnerships across the water industry continues to expand and for the cost assessment framework to facilitate this wherever possible.

5.1.2 Partnerships have unique features that are not easily aligned to the traditional framework for ex-ante cost assessment. For example, they involve coordination across a wide variety of third parties with different goals and values, which can increase the uncertainty surrounding a specific solution type. For this reason, careful thought should be given to how best to incentivise increased partnership working and unlock the multiple benefits that this can bring. This section is a contribution to that discussion.

5.2 Our interpretation of Ofwat's draft methodology proposals on partnership funding

5.2.1 In its draft methodology²⁶, Ofwat stated that benchmarking of enhancement expenditure could be used to encourage companies to maximise partnership contributions. We set out our interpretation of that proposal below, raise what we see as some potential risks associated with this approach and aim to provide some suggestions on how these risks could be mitigated.

5.2.2 The stylised example contained in Table 7 sets out our interpretation of Ofwat's proposals on partnership funding. For simplicity, we make a series of assumptions:

- (i) All companies carry out identical projects with equal opportunities for partner involvement, delivering the same enhancement benefit, which is measured using the same enhancement benefit metric.
- (ii) All companies are equally efficient at delivering gross cost of the scheme.
- (iii) Ofwat sets an upper quartile efficiency target on the net cost of the scheme (i.e. reflecting partnership contributions).

²⁶ Ofwat (2022) Appendix 9: setting expenditure allowances, section 6.3.3. Available [here](#).

- (iv) Both the gross cost and the partnership contributions only relate to activity that will directly benefit water company customers i.e. any activity that does not directly benefit water customers is not reflected.
 - (v) The only difference between each company’s circumstances is the company’s ability to leverage partnership funding.
- 5.2.3 Column a sets out the cost per unit of enhancement benefit delivered. We assume that all companies are delivering the same enhancement benefit for the same cost, and that delivery is measured in the same way.
- 5.2.4 Column b contains the partnership contributions leveraged by each company (i.e. inward flows of partnership funding). The ability of each company to secure partnership funding varies with company 1 leveraging the least and company 5 the most.
- 5.2.5 In column c, Ofwat nets off partnership contributions from enhancement totex and takes the upper quartile of companies’ costs net of partnership funding.
- 5.2.6 Column d illustrates each company’s gap to the net upper quartile, with a negative number indicating a company can deliver the enhancement benefit for below upper quartile net cost. In this example, this is solely due to the ability of a company to leverage partnership funding.
- 5.2.7 Column e sets out the companies’ profit or loss after cost sharing, following an upper quartile cost challenge. Company 5 was best able to leverage partnership funding enabling it to beat the efficiency benchmark and it earns a financial reward of £1 per unit of benefit delivered as a result.

Table 7 Stylised example of Ofwat’s proposed partnership funding approach

	Enhancement totex (unit cost per benefit)	Leveraged partnership contributions	Totex net of partnerships	Gap to upper quartile	Profit/(loss) after cost sharing
Column ref	a	b	c	d	e
Calculation			(a - b)	c - uq(c)	(d * 50% * -1)
Company 1	£100	£2	£98	£6	(£3)
Company 2	£100	£4	£96	£4	(£2)
Company 3	£100	£6	£94	£2	(£1)
Company 4	£100	£8	£92	£0	£0
Company 5	£100	£10	£90	(£2)	£1
Upper quartile			£92		

Source: U UW analysis

- 5.2.8 This approach can be seen to have appropriate incentive properties, as companies that secure greater partnership funding relative to others would be assessed as efficient and therefore benefit. However, there are some underlying issues with adopting this approach that will need to be addressed to provide appropriate incentives.
- 5.2.9 This approach not only implies that the generality of partnership solutions part fund company investment, resulting in an expectation of lower costs being recovered from customers, but also that the key determinant of success is that level of partner funding. The reality is more mixed, as partnership solutions may deliver substantially greater value than traditional solutions, but with quite variable impacts on the company’s cost contribution. Ofwat’s approach may therefore (inadvertently) disincentivise the most cost beneficial outcomes in favour of the lowest cost.

5.3 There is scope to improve Ofwat’s approach to partnership funding

5.3.1 We do not consider that Ofwat’s approach reflects the two-way nature of partnerships: partners can make contributions to the cost of projects undertaken by companies; or companies can contribute to the cost of projects undertaken by partners. Based upon our understanding of Ofwat’s proposals, there is a risk that Ofwat only appropriately reflects the first in cost assessment. This risk and its implications are set out in Table 8.

Table 8 - How Ofwat's proposed approach could provide an inaccurate assessment of partnerships

Direction of partner contribution	How is this accounted for?	What implication does this have?
Partner contributes to a company’s project	Currently, this would be classed as grant and contributions. There are also lines in Ofwat’s draft data tables (CW14, CWW14) for third party contributions.	Ofwat will be able to take full account of partnerships where partners contribute towards a company’s project expenditure. Our understanding is that it is this type of contribution will be included in column b of Table 7.
Company contributes to a partner’s project	This would be reflected in the generality of totex and wouldn’t be explicitly visible.	This expenditure would be included within column a of Table 7. If there is no specific cost driver relating this expenditure to the benefits delivered by partnerships then the model will view this expenditure as inefficient. This could provide a perverse incentive to only engage in partnerships where partners contribute towards a company-delivered scheme.

5.3.2 Therefore, our current understanding of Ofwat’s approach suggests that companies will be incentivised to favour one specific type of partnership (where a partner contributes to a UUW project), to the detriment of the other. We consider that there is scope to improve this approach by ensuring that there are equivalent incentives across both inward and outward flows of partnership funding.

5.3.3 This could be achieved by explicitly capturing both inward and outward flows of partnership funding in the APR and business plan data tables. This would facilitate an approach which does not discriminate between the two.

5.4 Partnerships are inherently uncertain

5.4.1 Partnerships are inherently uncertain for a variety of reasons:

Partners have different objectives which can lead to difficulties agreeing the most appropriate solution;

- Landowners are key stakeholders within partnerships but they can have very different goals and values to other partners which can sometimes prevent schemes progressing;
- As partnerships deliver a wider variety of objectives, there is more scope for a project to run into difficulty due to unforeseen circumstances; and
- Partners’ funding arrangements may be time sensitive or subject to internal budget arrangements, which may not align to the five-yearly price review.
- Partnership schemes take longer to develop due to the engagement and coordination required among multiple third parties.

5.4.2 Sometimes, this uncertainty results in a scheme not being delivered or delivered in a substantively different way to that originally envisaged. Historically, cost assessment hasn’t necessarily been designed

to accommodate uncertainty like this. In order for partnerships to deliver benefits to customers, it will be important for the regulatory regime to ensure companies are incentivised to act appropriately in the context of uncertainty.

5.5 Examples of the uncertainty surrounding partnerships

5.5.1 This section sets out some case studies that demonstrate how uncertain partnerships can sometimes be.

Burscough wetlands

5.5.2 Burscough WwTW in Lancashire serves over 30,000 people and discharges upstream of Martin Mere which is a Wildfowl and Wetlands Trust (WWT) nature reserve. The works was originally identified in the WINEP as requiring improvements to achieve new permits for ammonia, BOD and phosphorus. To meet the revised permit in addition to future population growth the existing works would require a rebuild at substantial cost, for a marginal improvement in effluent quality.

5.5.3 Therefore, we developed a partnership scheme which would develop 8.5 hectares of augmented wetland adjacent to the existing Martin Mere reserve and divert final effluent from Burscough WwTW to the wetland for polishing. The wetland would dose with aluminium to augment phosphorous removal to make the footprint of the wetland smaller. Additionally, there were significant wider benefits associated with the scheme such as more biodiversity and reduced flood risk.

5.5.4 Although opex costs associated with the wetland meant overall the wetland cost more than a traditional activated sludge plant, the whole life cost of the wetland was favourable due to significant savings on capex.

5.5.5 However, the scheme ran into issues when our partners, Natural England and the WWT, expressed concern at the use of aluminium dosing and the wider detrimental impact this could have on the local habitat. As a result, this scheme will not go ahead and we will need to identify an alternative solution to deliver our WINEP obligation.

Barnacre and Grizedale peatland restoration

5.5.6 The carbon in peat is dissolving into watercourses from our upland catchments at an increasing rate as a result of acid rain, coupled with the changing climate. Dissolved organic carbon in water results in higher treatment costs and in extreme circumstances can reduce supply as water treatment works (WTW) throughput is reduced to ensure sufficient treatment.

5.5.7 To address the reduction in raw water quality using a conventional solution we would need to build clarification stage at the receiving WTW. However, our preferred solution was to restore peatland on the nearby catchment which would reduce carbon run-off into watercourses and deliver wider environmental benefits in terms of improved habitat, carbon sequestration and catchment resilience. We identified an opportunity to work in partnership with the Forest of Bowland Area of Outstanding Natural Beauty to deliver this scheme.

5.5.8 However, the scheme ran into difficulty when a major local landowner had a principled objection to peatland restoration. This prevented the scheme from progressing.

5.6 Ex post mechanisms can provide appropriate incentives amidst uncertainty

5.6.1 Historically, cost assessment hasn't necessarily been designed to accommodate *ex post* uncertainty. In order for partnerships to deliver benefits to customers, it will be important for the regulatory regime to ensure companies are incentivised to act appropriately in the context of uncertainty. In Table 9, we set out some principles that appropriate incentives could follow, and highlight whether the current approach is able to provide these incentives or whether a dedicated mechanism may be required.

Table 9 - How to incentivise appropriate behaviours when there is uncertainty

Ref	Incentive property	Mechanism
1	If a company identifies additional benefits after the FD has been set, companies should be incentivised to implement them if it is in customer’s interests.	Explicitly tying enhancement expenditure to an associated ODI ensure that where additional benefit is delivered, the company earns an associated reward.
2	Where a partnership solution does not deliver the benefits envisaged in the business plan, then an appropriate amount of money should be returned to customers.	Explicitly tying enhancement expenditure to an associated ODI or PCD will ensure that where envisioned benefit is not delivered, the money is returned to customers.
3	<p>Where a project doesn’t go ahead and the company is able to demonstrate it is not at fault, there may be a range of suitable solutions depending upon the scenario:</p> <p>(b) Where the project was delivering a regulatory driver</p> <p>(c) Where the project was not delivering a regulatory driver, and the company is able to identify an alternative scheme which is able to deliver benefits at least as great as the cancelled scheme.</p>	<p>(a) The reconciliation mechanism could pass through the full efficient costs of an alternative solution. This could be the traditional solution or it could be an innovative solution delivered with/without the help of partners elsewhere in the catchment. If the WINEP moves to an outcome-based regime, then this mechanism will probably not be needed as the company can implement an alternative solution so long as the outcome was delivered.</p> <p>(b) The mechanism could adjust costs accordingly (e.g. downwards if the alternative scheme is cheaper). Ofwat could consider a ceiling to upwards adjustments to prevent companies cancelling otherwise viable schemes in order to seek additional cost allowances.</p>
4	Companies may not declare partnership funding if there is an element of uncertainty about the project. This could result in a less stretching upper quartile (net of partnership funding), and so be more reflective of a company’s circumstances if the partnership doesn’t go ahead. However, customers would benefit more if all companies were incentivised to declare potential partnership funding even where there is uncertainty.	<p>Ofwat could explicitly state how/if partnership funding feeds into its assessment of ambition. If this incentive is powerful enough, it would override any incentive to withhold partnership funding when business plans are submitted.</p> <p>However, we consider that Ofwat will need to calibrate partnership contributions across the sector in order to produce a relative assessment of ambition. It would be inappropriate to set an absolute target (e.g. 15% partnership funding for an enhancement programme) without any sense of whether the sector as a whole is able to deliver such a target.</p>

5.7 How to align data collection to the realities of partnerships

- 5.7.1 As Ofwat states in its draft PR24 methodology, water companies’ customers should not be expected to fund improvements not directly related to a water company’s core activities. We support this position.
- 5.7.2 The implication of this is that Ofwat should only account for partnership funding which has direct benefits for the core functions of a water company within its assessment of efficient enhancement costs

net of partnership expenditure. For this reason, any partnership funding data submitted alongside business plans should clearly distinguish between partnership funding which directly benefits water company customers, and partnership funding which only has indirect benefits. Our understanding (based on draft tables CW13 and CWW13) is that the business plan submission tables do not currently make this distinction.

- 5.7.3 If this is unaddressed, then there is a risk that Ofwat deducts indirect partnership costs from companies' enhancement totex. This would be at odds with Ofwat's principle that cost assessment should only account for costs which directly benefit a water company's customers, and could create an unachievable benchmark (as the enhancement totex net of partnership contributions would be unrealistically low).
- 5.7.4 Ofwat could address this risk in two ways:
- (1) Require that companies only submit partnership funding (in the 'third party contributions' line) which has direct benefits to water company customers in business plan tables.
 - (2) Adjust the business plan data tables, so that direct and indirect third party funding is appropriately recognised.
- 5.7.5 Option 1 would sufficiently mitigate the risks set out above, but it wouldn't necessarily support Ofwat's assessment of the 'best-value' elements of a project because the costs associated with delivering the wider benefits wouldn't be visible. Therefore, our preference is for option 2. This would mitigate the risks, and also allow Ofwat to take account of the wider benefits being delivered by the project in its assessment.

6. Adapting cost assessment for adaptive planning

- The adaptive planning framework facilitates the efficient planning and timing of investment, with possible associated benefits for customers and the environment.
- In order for these benefits to be realised, companies require confidence that their functions will not be compromised if they submit a business plan aligned to the no/least regrets pathway (i.e. with less investment in the current period than would be the case without adaptive planning).
- To achieve this, Ofwat should ensure that appropriate mechanisms exist, which are able to reflect the efficient expenditure associated with a trigger point that is reached midway through an AMP.

6.1.1 Ofwat published its final guidance for long-term delivery strategies in April 2022²⁷. The guidance detailed its expectations for companies to shift focus towards long-term planning at PR24, with price reviews considering how investment in the next AMP can best support long-term ambition, optimise long-term performance and appropriately mitigate uncertainties and wider risks over a longer timeframe.

6.2 Our understanding of Ofwat's approach to adaptive planning

6.2.1 The adaptive planning framework codifies a consistent structure within which stakeholders can consider complex long-term uncertainties in the water sector. It requires companies to:

- (1) Set out long-term outcomes they wish to deliver.
- (2) Consider how these long-term outcomes are delivered by strategic planning frameworks and statutory environment programmes.
- (3) Propose any additional investment that is necessary to meet long-term ambitions.
- (4) Set this activity out in a holistic 25-year plan.
- (5) The next price review then considers the upcoming five years of each company's long-term adaptive plan.

6.2.2 Ofwat's framework recognises that plans may have to change in order to address emerging pressures or mitigate unforeseen events; it requires companies to identify a series of alternate pathways that consider what investment may be required if future conditions are different, and set out pre-determined decision points to confirm that the transition should be made from the core pathway to an alternative. Decision points should be objectively informed by whether relevant indicators reach a 'trigger point'.

6.2.3 Our understanding for cost assessment is that, ex ante, companies will be able to recover costs in line with the 'core pathway' (also known as the no/least regret pathway) but there will not be any prescribed (uncertainty) mechanisms in place to deviate from this path during the AMP other than potentially through the use of bespoke PCDs and/or cost sharing with customers. In effect, this compartmentalises the risk of additional costs arising from alternative pathways, away from the cost plan, whereas (historically) companies may have included such costs.

²⁷ Ofwat (2022) Final guidance on long-term delivery strategies. Available [here](#).

6.2.4 We support the move towards long-term planning, and consider it will help to target investment towards the right solution at the right time, thereby helping to deliver the best value outcome for customers. However, we consider that there is some scope to adjust Ofwat's adaptive planning approach to ensure that the sector remains resilient for current and future customers. We set out our thoughts in the following sections.

6.3 Ex post mechanisms may be required to encourage companies to submit business plans aligned to the 'no/least regrets' pathway

6.3.1 Decision points act as a course correction, and cause companies to divert to an alternative pathway where additional investment is required in response (or previously identified expenditure is no longer required). They are activated when an appropriate indicator hits a threshold level, causing the pathway to move away from the central scenario towards more adverse or benign scenarios.

6.3.2 A business plan aligned to the no/least regrets pathway may comprise a lower level of investment than has been the case historically. This is a strength of the adaptive planning approach, as it encourages companies to make the right investment at the right time, which should increase efficiency over the long-run.

6.3.3 However, in order for the benefits of the approach to be realised, companies will need to have confidence that baselines will be appropriately adjusted in response to a trigger. In some cases, this process can happen as part of the price review preceding each AMP. However, in other cases, a trigger may require more urgent intervention.

6.3.4 We do not think it is appropriate to assume that existing frameworks fulfil this function:

- (a) Investment to meet new IED permit requirement was rejected during the Green Recovery process, despite there being a new requirement within the AMP.
- (b) Customer cost sharing mitigates the risk associated with a major trigger somewhat, but in cases where required expenditure is significant, companies may be incentivised to include this expenditure within the business plan submission (albeit on a risk adjusted basis) rather than as part of an alternate pathway. Where a trigger impacts a price control with no customer cost sharing (e.g. bioresources) then this risk will be amplified.
- (c) IDoK only applies in specific circumstances, which might not always align to a trigger; the IDoK mechanism was designed to cope with unforeseen circumstances whereas the adaptive planning framework is about efficiently managing known uncertainties.

6.3.5 In order for companies to have the confidence to submit a no/least regrets business plan, we consider ex post mechanisms will be needed to provide a means by which efficient adjustments to expenditure baselines can be made within the AMP. These mechanisms could ensure there is an appropriate *ex ante* allowance with *ex post* reconciliations contingent upon the outcome. There is regulatory precedent for adjustment mechanisms like this with Ofwat's WINEP uncertainty mechanism for PR19²⁸ as well as in the recent RII02 determinations.

6.3.6 One way to do this could be to utilise the PCD framework to tie expenditure adjustments to specific decision points within the AMP. We understand that Ofwat's current intention is to only use PCDs to make downwards adjustments to companies' expenditure baselines, for example where a company has not delivered on commitments made within its business plan. However, we consider that there may be value in widening the use of PCDs to make upwards adjustments, which in this case would provide

²⁸ Although, an ex post reconciliation for a trigger point would act in the opposite way to the WINEP adjustment mechanism at PR19 in that it would increase the baseline in response to new requirements, whereas the WINEP mechanism reduced the baseline when it became clear that projects were no longer required by the WINEP.

companies with sufficient confidence their baselines will reflect efficient expenditure relating to their obligations.

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