December 2022

Creating tomorrow, together:
Our final methodology for PR24

Appendix 9
Setting expenditure allowances

Ofwat

About this document

This appendix sets out further detail of our final methodology for Chapter 6 (setting expenditure allowances). It considers the views expressed by respondents to our PR24 draft methodology, published in July 2022.

This appendix covers our PR24 methodology for:

- setting efficient expenditure allowances;
- providing sufficient funding to maintain good asset health and resilience;
- service improvements we expect companies to deliver from expenditure allowances;
- facilitating efficient investment over 2025-30 and the long term; and
- encouraging companies to deliver best value.

It also sets out our expectations in relation to Board assurance on company expenditure proposals.

Contents

1. Introduction

At each price review, we set an efficient expenditure allowance for each company so that it can meet its statutory obligations and deliver outcomes that matter to customers and the environment, whilst also ensuring that customers do not pay more than they should for their water and wastewater services. This exercise is crucial given that water companies typically spend around £10 billion per year on providing water and wastewater services to customers in England and Wales.

The way we set expenditure allowances and the expectations we place on companies on submitting expenditure proposals will be critical for water companies delivering additional value through PR24. It will directly contribute to the delivery of our goals of an increasing focus on the long term, delivery of greater environmental value and driving improvements through efficiency and innovation, as well as helping to deliver the needs of customers and communities.

This appendix builds on the five principles that underpin our PR24 approach to expenditure assessment outlined in Chapter 6 of the final methodology document:

- we provide companies with an efficient cost allowance so that customers do not pay more than they need to (see Section 2);
- we allow sufficient funding for water companies to be resilient and maintain good asset health (Section 3);
- we require water companies to deliver improved service to customers and the environment from expenditure allowances (Section 4);
- we will facilitate efficient investment over 2025-30 and the long term (Section 5);
- we encourage companies to deliver best value. This requires companies to take account of wider environmental and social benefits, costs, risks and affordability of customers' bills when developing their enhancement proposals (Section 6).

We also set out our expectations in relation to Board assurance in relation to expenditure proposals (Section 7).

Taken together, these principles aim to secure that companies are able to meet their statutory obligations and deliver necessary improvements for customers and the environment.

We have not completed a standalone impact assessment but the detailed reasoning behind our methodology is set out in the sections below.

2. Providing companies with an efficient cost allowance

We set an efficient total expenditure (totex) allowance for each company for the price control period. We set separate efficient cost allowances for each price control.

Our efficient cost allowances are made up of **base** and **enhancement** expenditure.

Table 2.1: Building blocks of our efficient expenditure allowances

Building block	Description

Base expenditure	• Base expenditure includes:
	  ○ routine, year-on-year costs, which companies incur in the normal running of their businesses to provide a base level of good service to customers and the environment;
	  ○ expenditure on maintaining the long-term capability of assets;
	  ○ expenditure to improve efficiency; and
	  ○ expenditure to comply with current legal obligations.
	• Base expenditure covers wholesale and retail (residential and business) activities, and currently make up around 80% of all costs incurred by water companies.

Enhancement expenditure	• Enhancement expenditure is generally where there is a permanent increase or step change in the current level of service to a new 'base' level and/or the provision to new customers of the current service level. • Enhancement funding can be for environmental improvements required to meet new statutory obligations, improving service quality and resilience, and providing new solutions for water provision in drought conditions.

Water companies are monopoly providers of most water and wastewater services. We cannot rely on competition to deliver efficient costs and good service quality for customers. We therefore use regulatory tools to incentivise companies to reveal efficient costs and reduce information asymmetry between ourselves and water companies. This ensures that customers do not overpay.

It is important to recognise that companies are funded to be fully compliant with their current legal obligations through their base expenditure allowances. Any non-compliance should be addressed by the companies, and we would not expect customers to pay for this.

This section explains how we will provide companies with an efficient expenditure allowance at PR24.

2.1 Our final methodology policies

Benchmarking analysis is the most common tool we use to determine efficient cost allowances. This involves comparing costs between water companies on a like-for-like basis to identify a 'benchmark' that we consider all companies should achieve and helps to overcome information asymmetry. We will also use external benchmarks where possible.

We will build on our PR19 econometric base cost models. We have asked companies to submit their own proposed cost models in early 2023, and we intend to publish our updated base cost models for consultation in spring 2023.

We intend to make greater use of benchmarking in our assessment of enhancement expenditure at PR24, including use of historical cost benchmarking. We will complement benchmarking analysis with bespoke assessments of costs, such as engineering deep dives or shallow dives, when cost benchmarking analysis is not feasible. We have revised our enhancement assessment criteria to provide further clarity on the evidence we expect to see in companies' business plan submissions.

Like in PR19, we will allow companies to submit cost adjustment claims for factors outside of company control that cause material differences in costs between companies and/or over time and are not captured in our benchmarking analysis. But companies will need to provide compelling evidence for any cost adjustment. Cost adjustment claims at PR24 should focus on base costs and be symmetrical when they relate to costs incurred historically. We intend to hold a cost adjustment claim consultation in Summer 2023 to allow all companies to consider them ahead of business plan submissions.

We will set separate catch-up and frontier shift efficiency adjustments, taking into account evidence from the water and other sectors, and require compelling evidence for real price effect adjustments.

We have simplified our cost sharing approach for PR24, reducing the degree of asymmetry in cost sharing rates. Cost sharing rates will be informed by the quality and ambition assessment (QAA) of company business plans.[1] Companies with 'Outstanding' and 'Standard' business plans will receive 50:50 over and underspending sharing rates, 'Lacking Ambition' 55:45, and 'Inadequate' 60:40. We will consider cost efficiency and the quality of cost adjustment claims as part of the QAA.

2.2 Changes from our draft methodology

- We will add enhancement opex to modelled base costs for a subset of enhancement lines where we are certain the costs represent ongoing running costs from new assets: nitrogen removal; phosphorus removal; reduction of sanitary parameters; UV disinfection (wastewater); and chemical removal schemes.
- For the spring 2023 modelling consultation, we intend to exclude site-specific developer services and growth at wastewater treatment works costs from the scope of modelled base costs. But include network reinforcement and reducing risk of sewer flooding enhancement expenditure. We will reassess these assumptions at draft determinations.

[1] See Chapter 11 of the PR24 final methodology for more information on how we intend to use incentives (rewards and penalties) to encourage companies to produce quality and ambitious business plans.

- For third party services governed by the price control, we will include an end-of-period reconciliation to enable companies to recover their efficient costs if outturn activity is different to forecast.
- We intend to treat section 185 diversions (water only), and non-section 185 diversions (water and wastewater), as part of third-party services at PR24.
- We will consider the merits of having lower cost sharing rates on enhancement expenditure at draft and final determinations, where the base and enhancement boundary is clear.

2.3 Stakeholder views

Most responses to this area were from water companies, with responses from other stakeholders on specific issues.

Overall, respondents broadly support our proposed approach to setting efficient cost allowances at PR24, which built on our PR19 approach. But water and wastewater companies raised concerns around specific issues that are set out below:

- Anglian Water, Thames Water, Wessex Water and Yorkshire Water consider the spring 2023 modelling consultation is too late as they will not know the final cost models when developing their business plans.
- Several companies raised concerns about the use of older historical data in the base cost models as they think it is not representative.[2]
- Several companies do not agree with our proposal to consider using forecast costs in the base cost models and/or to set the catch-up efficiency challenge. They think this would introduce endogeneity into the base cost assessment.[3]
- Anglian Water, South West Water, United Utilities and South East Water asked us to assess growth related costs separately from base costs as they do not think the base cost models can accurately explain these costs.
- Thames Water, United Utilities, Wessex Water, Portsmouth Water and SES Water raised concerns with our proposal to only use bottom-up models where there is a demonstrable reason to do so to assess residential retail costs at PR24.
- More detail was requested on our proposed approach to: (i) assessing enhancement costs; (ii) catch-up efficiency; and (iii) frontier shift efficiency and real price effects.[4]

[2] Anglian Water, Dŵr Cymru, Severn Trent, Hafren Dyfrdwy, Yorkshire Water and Affinity Water.
[3] Anglian Water, Dŵr Cymru, Severn Trent, Hafren Dyfrdwy, Thames Water, Affinity Water.
[4] Enhancement: Anglian Water, South West Water, Thames Water, Wessex Water, Yorkshire Water. Catch-up efficiency: Severn Trent, Hafren Dyfrdwy, South West Water, Thames Water, United Utilities, South East Water. Frontier shift efficiency: Anglian Water, Severn Trent, Hafren Dyfrdwy, Southern Water, Thames Water, Yorkshire Water, Affinity Water, South East Water.

- Anglian Water and Thames Water raised concerns around the timing of the proposed Summer 2023 cost adjustment claim consultation because the final cost models will not be known by then.

Our proposal to reduce the degree of asymmetry in cost sharing rates received a mixed response. Dŵr Cymru, Northumbrian Water, Southern Water and Wessex Water do not think cost sharing rates should be asymmetric and should not be based on business plan quality as this could incentivise companies to submit low cost forecasts. But the Consumer Council for Water (CCW) considers the variation in cost sharing rates should be higher to encourage stretching and well evidenced business plans.

There was a broad consensus that third party services should be self-funding, outside of the price control and therefore outside of cost sharing and the revenue forecasting incentive.

2.4 Our final decisions and reasoning

This sub-section provides further detail on our approach to setting efficient cost allowances, including consideration of stakeholder views.

2.4.1 Setting efficient base cost allowances

Our efficient base cost allowances consist of modelled and unmodelled base costs:

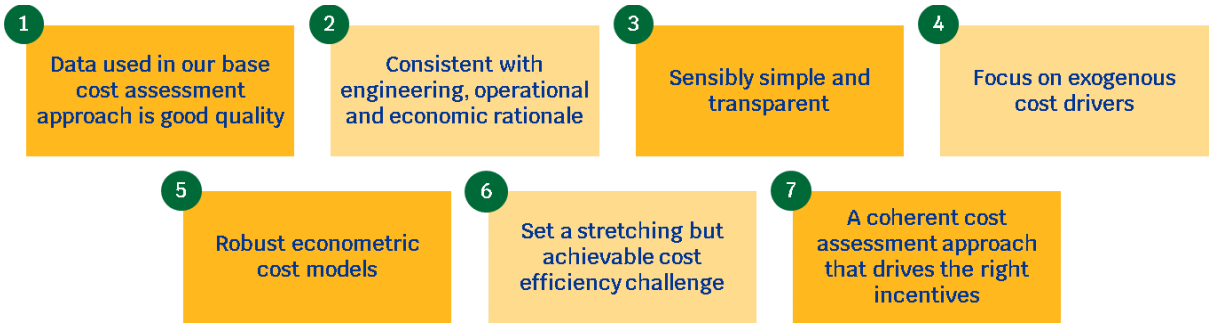
- Modelled base costs are assessed using econometric models.
- Unmodelled base costs consist of a small number of cost items that are more suitable for separate assessment – either because they are driven by specific regional requirements and/or are largely outside of company control.

We set out our approach to assessing modelled and unmodelled base costs at PR24 below having considered stakeholder responses to our draft methodology. We provide further detail of our approach to cost adjustment claims, capital maintenance and asset health, and the cost-service relationship, in Section 2.4.3, Section 3 and Section 4, respectively.

PR24 base cost principles

Our final PR24 base cost assessment principles are set out below, and should be considered alongside the five key principles that underpin our PR24 approach to expenditure assessment outlined in the introduction.

Figure 2.1: Principles of PR24 base cost assessment



We received only a few comments in response to our proposed base cost assessment principles presented in the draft methodology. The water companies that did respond generally agreed with the principles and welcomed the minor changes we made to the original principles presented in our base cost consultation (ie the addition of a data quality principle).[5]

Wessex Water and Yorkshire Water questioned the focus on exogenous cost drivers. We consider this principle is important as it helps to ensure the independence of our efficient base cost allowance, which incentivises companies to reveal their efficient costs when submitting their business plans and avoids the risk of perverse incentives (ie inflating cost driver forecasts and/or causing suboptimal investment decisions). We are open to considering drivers that are only endogenous in the long term as the risk of perverse incentives is lower.

Yorkshire Water asked for more detail on what is a 'stretching but achievable' cost efficiency challenge. We cannot be definitive at this stage as the level of stretch depends on a number of unknowns (eg econometric model robustness, historical efficiency improvements, level of stretch in business plans). See Section 2.4.4 for more details.

Modelled base costs

We use econometric benchmarking models to set efficient base cost allowances. These use statistical methods to compare costs between companies on a like-for-like basis by taking into account multiple factors that drive differences in costs between companies (eg company size, population density, treatment complexity, etc.) and over time.

We have confidence in our PR19 base cost econometric models, developed through an extensive consultation process, which began in 2016.[6] We had extensive input from the sector and the models are consistent with engineering insight. Our approach to assessing wholesale base costs was largely supported in the Competition and Markets Authority's

[5] Ofwat, 'Assessing base costs at PR24', December 2021, Section 2 - Principles of PR24 base cost assessment.
[6] Ofwat, 'Cost assessment for PR19: a consultation on econometric cost modelling', March 2018.

(CMA's) PR19 redeterminations.[7] We therefore will build on our PR19 approach, making improvements where appropriate. Companies are largely supportive of this approach based on feedback received in the Cost Assessment Working Group (CAWG) and in response to the base cost consultation and PR24 draft methodology.

We intend to publish a base cost modelling consultation in spring 2023, which will provide an early view of our potential PR24 base cost models. This would allow companies to:

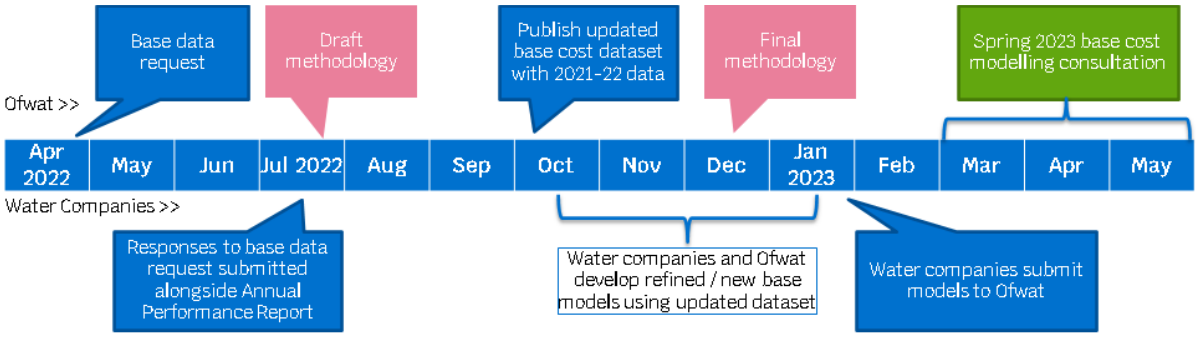
- account for early efficiency information in business plans;
- focus more on long-term challenges; and
- submit good quality symmetrical cost adjustment claims (see Section 2.4.4 below).

We published updated base cost modelling datasets in October 2022, which include historical data up to 2021-22 and the additional cost driver data requested in April 2022.[8] [9] We invite companies to develop their own base cost models and submit them to us by **12th January 2023** for consideration ahead of the spring 2023 modelling consultation. We welcome fresh ideas on how our base cost models can be improved and look forward to receiving companies' proposed models. In November 2022, we published a template and guidance note to support companies in the model development process,[10] and to ensure that the models we receive from companies can be compared on a like-for-like basis.

The figure below presents our base cost modelling timeline up until spring 2023. We note that several companies consider the spring 2023 modelling consultation is too late as they will not know the final models when they develop their business plans. We disagree with this view. The spring 2023 modelling consultation is intended to be an initial set of models that companies can use to inform their business plans. And we do not consider an earlier modelling consultation date is feasible given the time needed to develop robust econometric models. We do not intend to publish a decision document following the spring 2023 modelling consultation, and will take on board stakeholder comments on our consultation in our PR24 draft determinations.

[7] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021.
[8] Updated base cost modelling datasets are available here: https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr24-cost-assessment-datasets/
[9] Ofwat, 'IN 22/02 Cost assessment data requests', April 2022.
[10] Ofwat, 'Template and guidance for the submission of base econometric cost models ahead of the spring 2023 consultation', November 2022.

Figure 2.2: PR24 base cost modelling timeline until spring 2023



We summarise the key aspects of our approach to base cost modelling at PR24 below.

Base cost modelling suite

We intend to develop base cost models at different levels of cost aggregation where feasible, which was supported by companies. This accounts for trade-offs between disaggregated and more aggregated cost models. The former can enable a wider range of cost drivers to be captured in our approach. But more aggregated models capture interactions between different services and mitigate potential cost allocation issues.

In our draft methodology, we proposed to only use the bottom-up models where there is a demonstrable reason to do so to assess residential retail costs.[11] And instead focus on the top-down residential retail models. Five companies questioned this as they thought it was appropriate to consider different cost drivers for different elements of retail costs, which could be facilitated more with bottom-up models. To clarify, we recognise the benefit to keeping open the option of using models at different levels of cost aggregation to assess residential retail costs at PR24. We are also open to considering fresh ideas that could improve residential retail cost assessment. We will continue to review retail cost drivers, including the impact of deprivation on companies' bad debt costs, ahead of the spring 2023 modelling consultation.

We will attempt to develop robust wholesale wastewater network plus models (sewage treatment and sewage collection) following the work to improve the allocation of costs between bioresources and wastewater network plus activities since PR19. We also intend to set separate efficiency challenges for these two controls at PR24. Several companies raised concerns with this because of substitution effects. We consider the work undertaken to improve cost allocation helps to address this issue. We will also consider additional cost drivers in the bioresources models to control for sludge quality through the model development process, which was suggested by United Utilities.

[11] Ofwat, 'Creating tomorrow, together: consulting on our methodology for PR24', July 2022.

Scope of modelled base costs

We intend to start with the PR19 scope of modelled base costs. We will consider amendments to the scope of modelled base costs at PR24 based on the criteria set out in Section 3.1 of our base cost consultation, which received support from companies.[12] The bar for excluding costs from the base cost models should be high given the inclusion of a broad range of costs in the models can better account for cost complementarities and trade-offs.

We intend to set a separate cost challenge for bioresources activities and wastewater network plus activities at PR24. This will facilitate our proposed approach to regulating bioresources.[13]

We will consider separate assessment of wholesale network plus growth expenditure at PR24, which was supported by several companies in response to our draft methodology as they do not think the base cost models can accurately explain growth related costs (discussed further below).

We intend to develop models before the deduction of grants and contributions and do not propose to apply pre-modelling factor adjustments. We received no objection to these proposals in response to our draft methodology.

In our draft methodology, we set out our intention to exclude enhancement opex from modelled base costs from 2020-21 onwards.[14] This proposal was made possible because we have collected enhancement opex separately from other opex since April 2020 and excluding enhancement opex would avoid the risk of double funding. Anglian Water, United Utilities and Wessex Water argue that enhancement-running-cost operating expenditure should be included in modelled base costs. This includes the ongoing running costs from new assets. They argue these ongoing costs will continue, and therefore should be included in the base cost models. This argument has some merit, but the absence of granular enhancement opex reporting makes this challenging. Adding all enhancement opex to modelled base costs would lead to double funding. We therefore propose to add enhancement opex to modelled base costs for a subset of enhancement lines where we are more certain the costs are ongoing: nitrogen removal; phosphorus removal; reduction of sanitary parameters; UV disinfection (wastewater); chemical removal schemes; and bioresources quality. We will look to improve enhancement opex reporting further ahead of the 2025-26 reporting year.

We will include atypical costs in modelled base costs at PR24 by default. But will continue to exclude atypical costs that relate to fines/penalties, accounting adjustments, costs associated with referrals to the Competition and Markets Authority (CMA), and truly one-off atypical costs that are unlikely to be repeated (eg costs incurred in preparation for the

[12] Ofwat, 'Assessing base costs at PR24', December 2021.
[13] See Appendix 4: Bioresources control for more details.
[14] Enhancement opex will be included in the 2011-12 to 2019-20 period as this will represent the new baseline.

introduction of retail competition for business customers). In response to the draft methodology, Anglian Water suggested excluding atypical expenditure from modelled base costs to ensure comparability over time. We disagree. Most reported atypical costs are related to day-to-day operational activities that are likely to be repeated in the future (eg responding to severe weather events) and should be included in base expenditure. Our approach will also better ensure comparability between companies and over time given companies seem to take different approaches to reporting atypical costs in annual performance reports. Some companies split out atypical expenditure items by exception, whereas others report costs as atypical expenditure items more freely. For example, Yorkshire Water have reported over 50 atypical expenditure items since 2011-12 across, but South West Water have reported less than 10 atypical expenditure items over the same period.

Treatment of licence fees

Ofwat is mainly funded by licence fees paid by water companies and there is a cap on the levels of those fees in Condition N of water companies' licences.[15] In June 2022, we consulted on proposals to replace the historical formula in Condition N with a new cap that aligns with the decisions made by the Treasury, through the Comprehensive Spending Review, about how much Ofwat can spend.[16] In response, Dŵr Cymru, Northumbrian Water and Wessex Water raised concerns with how licence fees are treated in our cost assessment approach. We said that we would consider the issues alongside the consultation on the draft methodology for PR24.

At PR19, licence fee costs were included in modelled base costs. Dŵr Cymru, Northumbrian Water and Wessex Water all suggest that the licence fee costs should be assessed as part of unmodelled base costs with either 100% pass-through to customers or a higher cost-sharing rate. We disagree and will not change the treatment of licence fee costs at PR24. Licence fees are a small proportion of total costs, and do not vary much year-on-year. They also largely vary based on company scale, which is a key driver in our base cost models. It is therefore appropriate to include licence fees in modelled base costs. We do not pass through any other costs 100% to customers and so would seem odd that the only costs we would pass through would be our licence fees. We also consider that water companies can influence our costs through engagement on our regulatory approach and our forward programme consultations.

Assessment of growth expenditure (wholesale network plus)

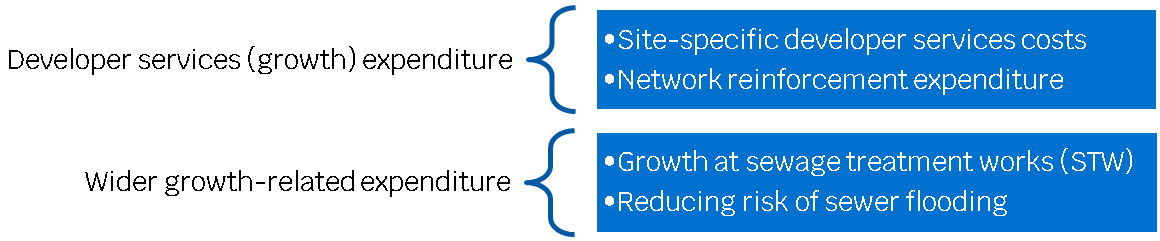
At PR19, we assessed wholesale network plus costs driven by population growth (ie growth expenditure) with base costs because they share similar characteristics, notably companies

[15] Other regulated entities also pay licence fees but are only required to contribute towards specific Ofwat costs. Retailers in the business retail market (water supply and/or sewerage licensees) pay their share of our costs in relation to the water supply and sewerage licensing regime and the licensed infrastructure provider for the Thames Tideway Tunnel pays for our costs in relation the regulation, monitoring and enforcement of the infrastructure provider.
[16] Ofwat, 'Proposal to modify the regulation fee cap in Condition N of water company licences', June 2022.

experience these costs on a year-on-year basis. The integrated approach also mitigated for known reporting differences between operating, capital maintenance and growth expenditure, which may have made standalone growth and base models misleading. In its PR19 redetermination, the CMA used the same approach.[17]

Figure 2.3 indicates the scope of growth-related expenditure at PR19.

Figure 2.3: Scope of growth-related expenditure



Since PR19, we have undertaken steps to improve data collection relating to growth expenditure, with the aim of improving our ability to assess growth related expenditure separately from base costs at PR24:

- improved reporting of developer services expenditure from 2020-21 in companies' annual performance reports, including improved definitions and reporting of growth operating expenditure;
- collection of more granular developer services information to better understand the state of competition in developer services and unit cost differentials;[18]
- a data request to collect historical developer services expenditure on the same basis as the improved annual performance reports' definitions.[19] This should enable us to accurately remove growth expenditure from base costs; and
- a data request to collect historical network reinforcement cost driver information, to support our assessment of this expenditure at PR24.[20]

We commissioned consultants Arup to analyse whether growth-related expenditure could be robustly assessed separately from base costs in January 2022 based on existing historical data.[21] Arup concluded that a standalone econometric model may be a viable option for assessing growth at wastewater treatment works costs at PR24. But Arup was unable to develop robust standalone models for network reinforcement and reducing risk of sewer flooding expenditure. This was because of cost allocation issues and the absence of relevant cost driver information.

[17] Competition and Markets Authority, 'Ofwat Price Determinations', March 2021, pp. 298-299.
[18] Ofwat, 'Gathering data about developer services: Data request 2020-21', August 2021.
[19] Ofwat, 'Growth expenditure data request – April 2022', April 2022.
[20] Ofwat, 'Network reinforcement data request – Data sheet', May 2022.
[21] Arup, 'Assessment of growth-related costs at PR24', May 2022.

In response to our draft determination, Anglian Water, South West Water, United Utilities and South East Water reiterated their view that growth related costs should be assessed separately from base costs. They do not think the base cost models can accurately explain growth related costs.

Following review of the additional growth-related cost information, we intend to:

- **Exclude site-specific developer services costs from the base cost models**. For English water companies, site-specific developer services are being removed from the price control, so it does not make sense to continue to include in the base models. This has been facilitated through improved cost reporting in this area.
- **Provisionally exclude growth at wastewater treatment works costs from the base cost models**. Arup concluded that a standalone econometric model may be a viable option for assessing these costs. We will continue to assess this and revisit this for PR24 draft determination. If a robust standalone cost model is not feasible, we may revert to including growth at wastewater treatment works costs in the base cost models.
- **Include network reinforcement costs in the base cost models** due to substantial interactions with capital maintenance expenditure and a close relationship with base cost drivers (eg scale and density). Arup were also unable to develop robust standalone models for network reinforcement. We will consider cost adjustment claims from companies that expect to deliver a higher amount of network reinforcement work than is funded through the base cost models.
- **Include reducing risk of sewer flooding enhancement expenditure in the base cost models.** Arup were not able to develop robust standalone models for reducing risk of sewer flooding expenditure because of cost allocation issues (ie interactions between base and enhancement). We consider this expenditure can be explained by base cost drivers (eg scale and density), and we are in the process of considering additional cost drivers through the model development process (eg urban rainfall).

Sample period selection

We intend to use the full historical data series to develop the base cost models (back to 2011-12). Anglian Water, Dŵr Cymru, Severn Trent Water, Yorkshire Water and Affinity Water expressed concern with using older historical data in the base cost models in response to the draft methodology as they do not think it is representative. We disagree with this view. Using the full historical data series maximises model precision, and it is not best practice to arbitrarily remove years from the sample. Using the full data series also ensures we capture the cyclical nature of capital maintenance. We will consider new cost drivers that explain the increase in expenditure in recent years through the model development process, which we consider is more appropriate than arbitrarily reducing the sample size.

We also intend to cautiously consider using business plan forecast data in our base cost models. Several companies raised concerns with this in response to our draft methodology as

they think it will introduce endogeneity into the base cost assessment. They are also concerned that business plan forecasts will be influenced by quality and ambition assessment. We consider robust forecast data may help to identify forward cost trends and future efficiency gains. We will only consider using business plan forecasts in the base cost models if they are robust and not significantly impacted by different company risk appetites.

Model estimation method

We intend to use random effects estimation to estimate the base cost econometric models at PR24. This is widely supported by companies. Random effects estimation explicitly takes into account the panel data structure (ie repeated observations over time for multiple water companies), which is why it is preferred over standard ordinary least squares (OLS) estimation. We used random effects at PR19, and so did the CMA in the PR19 redeterminations. We would cautiously consider alternative estimation methods if random effects did not estimate sufficiently robust base cost models.

Unmodelled base costs

In the draft methodology we proposed to exclude a small number of base cost items from our econometric models. We consider these costs are either largely outside of management control, incurred by only some companies or recovered through third-party revenue.

The costs we excluded were:

- pension deficit recovery costs (PDRC);
- business rates;
- abstraction and discharge charges (water service only);
- costs associated with the Traffic Management Act (TMA);
- wastewater Industrial Emissions Directive (IED) operating costs;
- third party costs; and
- non-section 185 diversions costs.

Anglian Water said that it considered our proposals on unmodelled costs were reasonable. We did not receive any comments from stakeholders on the categories of costs that we consider as unmodelled costs. The only change to our view of the costs that will be assessed as unmodelled base costs at PR24 from our draft methodology is that we have added equity issuance costs. We provide more details on our approach for each cost below.

Pension deficit costs

Historically, all companies have operated defined benefit pension schemes for their employees. In recent times, the estimates of scheme liabilities have exceeded estimates of assets, giving rise to deficits. The deficits are repaired by additional contributions or deficit

repair costs. These costs are separate from ongoing pension contributions, which are included in modelled base costs.

In 2009, we set a pension deficit recovery period for each company and companies were allowed to recover 50% of deficits from customers. Information Notice 13/17 shows the assumed recovery periods and sets out our policy for the treatment of pension deficit repair costs at PR14 and beyond.[22] For one company, Northumbrian Water, the recovery period extends to 2025-30. We will make an allowance for Northumbrian Water's remaining recovery period in line with Information Notice 13/17 at PR24. We will not make an allowance for companies to recover any remaining deficit from customers. Remaining deficits will fall wholly to management and shareholders to deal with.

Business rates

Business rates are charged on non-domestic properties such as offices and factories. Cumulo rates refer to rates on land and buildings where operating assets are held (eg a water treatment works). We use the term business rates collectively to include both business rates and cumulo rates.

We will include an allowance for business rates as part of each company's PR24 ex ante cost allowance. This will provide an incentive for companies to manage their business rates efficiently and engage effectively with the Valuation Office Agency which determines business rates. We expect companies to provide a robust explanation of their forecast levels of business rates and what steps they have taken to ensure these are efficient.

We recognise that companies have limited control over the level of business rates they pay, and we will continue to apply enhanced cost sharing rates of 25:25 at PR24.

Thames Water and United Utilities agreed with this approach. But Northumbrian Water argued that we should set cost sharing rates at 10:10. No other companies commented.

Companies underspent against their business rates allowances in the period 2015-20 and are doing so again in the 2020-25 period to date. In recent years, we have also seen evidence of companies successfully challenging their rateable values and receiving significant rebates. We consider 25:25 sharing rates appropriately retains a strong incentive for companies to continue to influence their business rates where they can by engaging with the Valuation Office Agency.

Abstraction charges

The Environment Agency, Canal & River Trust and Natural Resources Wales impose abstraction charges on water companies to recover their costs of managing and regulating

[22] Ofwat, Information Notice 13/17, October 2013.

abstractions and discharge consents. We exclude abstraction charges from our econometric models due to the lower degree of controllability and bespoke company and regional issues.

We will remove the PR19 enhanced cost sharing arrangements for abstraction charges at PR24. This is because we are not aware of any further changes to abstraction licence charges in the period 2025-30.

United Utilities agreed with the removal of enhanced cost sharing rates under the assumption that there is no change to the approach for valuing abstraction licences for 2025-30. Northumbrian Water and Severn Trent Water disagreed with the removal of enhanced sharing rates since they considered these costs remain subject to change and are outside of management control.

We will consider the impact of any new charging structures set by the Environment Agency and Natural Resources Wales in our PR24 determination process. Companies can provide evidence in their business plans for any other forecast changes in their abstraction charges.

Costs associated with the Traffic Management Act

The Traffic Management Act 2004 places a duty on local authorities to make sure traffic moves freely and quickly on their roads and the roads of nearby authorities. Water companies who want to carry out street works must apply to the highway authority for a permit. Companies incur costs relating to the permits themselves as well as the administration of the permit schemes.

Traffic Management Act costs are only incurred by a subset of companies and are not well correlated with base cost drivers. We therefore intend to assess Traffic Management Act costs separately from other base costs and include in cost sharing, as in PR19.

Wastewater Industrial Emissions Directive operating costs

Ongoing costs associated with Industrial Emissions Directive obligations are currently only incurred by a subset of companies. We therefore assessed these costs separately from other base costs at PR19. These costs are included in cost sharing.

By PR24, we anticipate that more, if not all, companies will incur these costs. In our draft methodology we said that we were considering if it is now appropriate to include these costs in our base cost models.

We did not receive any comments on our approach to assessing wastewater Industrial Emissions Directive operating costs.

We will continue to assess these costs as unmodelled costs at PR24. However, we consider that this should be limited to the costs of Environment Agency and Natural Resources Wales permits and associated administration costs. Any costs related to the inspection and maintenance of assets should be included in modelled base costs.

Third-party costs

Third-party costs are incurred by companies in providing services outside of their principal services (eg supplying non-potable water and bulk supplies). At PR19, we allowed companies' third-party costs included in their business plans provided they were equal to third-party revenue. This ensured customers were not disadvantaged. Third-party costs were also excluded from cost sharing. We intend to apply the same approach at PR24.

In the draft methodology we asked for views on how best to align the treatment of the costs and revenues for providing third party services. In general, stakeholders agree that third party services are self-financing. Nine companies said that all third-party services should be excluded from both cost sharing and the price control.

We disagree that all third-party services should be outside the price control. The third-party services governed by the price control are services where the water companies are either monopoly suppliers, have a statutory obligation to provide them or that use regulated assets. We consider it appropriate for them to remain within the price control. This provides an element of protection for both the users of these services and end-user customers.

For third party services governed by the price control, we will include an end-of-period reconciliation to enable companies to recover their efficient costs if outturn activity is different to forecast. Where actual revenue received is greater than actual cost, we will adjust companies' cost allowances to take account of the difference between actual costs and those originally allowed for. This allows companies to recover their efficient costs but retains an incentive for charges to remain cost reflective and customers continue to benefit from any revenue in excess of cost.

We will require companies to demonstrate their costs are efficient in the end-of-period reconciliation to increase protection for third parties and end-user customers, and retain the option to disallow a revenue adjustment when cost efficiency is not demonstrated.

For PR24, we intend to treat water diversions under section 185 of the Water Industry Act 1991 (ie water section 185 diversions) as part of third party services. These services are currently not contested, and we think it is appropriate for them to remain in the price control.[23] But there is limited interaction with other water company activities, and it can be challenging to forecast the volume and mix of diversions work during the price review. So, the inclusion of

[23] Unlike wastewater section 185 diversions, which are contestable, and we are removing from the price control alongside other wastewater site-specific developer services costs.

water section 185 diversions in the third-party services end-of-period reconciliation will ensure water companies can recover their efficient costs. Developer services customers in England are further protected through new connection charging rules.

Non-section 185 diversions costs

At PR19, we removed diversions requested not under section 185 of the Water Industry Act 1991 from the price control. These are:

- diversions requested under the New Roads and Street Works Act 1991, where legislation restricts the amount companies can charge to the end customer of around 82% of costs; and
- other non-section 185 diversions, such as those required for High Speed 2.

We applied this approach because the expenditure is relatively uncertain, meaning that actual expenditure could be significantly different from forecast. This risk was magnified in the 2020-25 period because of the large forecast increase in non-section 185 diversions expenditure because of High Speed 2.

We allowed the remaining 18% of costs driven by New Roads and Street Works Act 1991 to be recovered from general customer through water customer bills. This allowance was not subject to cost sharing given that companies already benefit from a high level of protection from changes in non-section 185 costs. It also helps to incentivise cost efficiency.

In the draft methodology, we proposed to maintain the same regulatory approach at PR24. We received no comments on this proposal.

Given the introduction of the third-party services end-of-period reconciliation at PR24, we intend to treat non-section 185 diversions (water and wastewater) as part of third-party services at PR24. Non-section 185 diversions must be delivered by the incumbent water companies. Inclusion in third-party services mitigates volume and timing uncertainty while aligning the approach with other third-party services. It also does not require a licence modification and means we can challenge cost efficiency at the end-of-period third party services reconciliation – protecting third parties and end-user customers.

Equity issuance costs

In Section 8.3 of our final PR24 methodology, we propose to provide companies with an allowance of 2% for issuance costs for equity financing in the case of significant RCV growth.[24] We will treat this as part of unmodelled base costs and include in our efficient total expenditure allowances.

[24] Ofwat, 'Creating tomorrow, together: our final methodology for PR24', December 2022.

2.4.2 Setting efficient enhancement cost allowances

Enhancement expenditure is generally where there is a permanent increase or step change in the current level of service to a new 'base' level and/or the provision to new customers of the current service. Enhancement funding can be for environmental improvements required to meet new statutory obligations, improving service quality and resilience, and providing new solutions for water provision in drought conditions.[25]

We have considered stakeholder responses to our draft methodology and set out our approach to setting efficient enhancement cost allowances at PR24 below.

Enhancement benchmarking models

At PR19, for most enhancement expenditure we used unit cost and simple econometric models largely based on forecast data to set efficient expenditure allowances. We continue to consider that cost benchmarking is the most effective way of assessing company enhancement costs to deliver value for customers. We will look to extend our approach to enhancement cost benchmarking at PR24. This includes considering the use of outturn costs and cost drivers, reflecting the recommendations from the CMA and the PR19 lessons learnt[26], as well as information from industry databases and expert cost consultants.

We will build on our PR19 approach for PR24 and, where appropriate, we will use historical and forecast expenditure to set efficient expenditure allowances. This may be supplemented by other relevant datasets such as:

- outturn data from other sources such as those being reported as part of the green economic recovery projects;
- water industry cost datasets that we have developed for certain water and wastewater enhancement activities; and
- external cost benchmarks.

For the remaining expenditure that cannot be reasonably benchmarked and where costs are material, we will consider using engineering deep dive assessments to identify an efficient cost allowance.

Hafren Dyfrdwy, Northumbrian Water, United Utilities and SES Water welcomed our approach to enhancement assessment as it built on PR19, making use of the most suitable assessment approach based on the requests received, available data and model performance.

[25] Enhancement requirements to address drought resilience are identified in final water resources management plans (WRMPs) which benefits from a standardised assessment approach of risk to a defined hazard.
[26] Ofwat, 'PR24 and beyond: Our reflections on lessons learnt from PR19', December 2020, pp.70-71.

Affinity Water, Anglian Water, Southern Water, Thames Water, Wessex Water and Yorkshire Water asked for more detail on our enhancement cost assessment approach in response to our draft methodology, in particular early sight of our intended cost efficiency assessment approach for each enhancement area (eg modelling; engineering deep dive; etc.) We disagree that this is feasible or in the interests of customers. Compared to PR19, we have provided more certainty on the criteria we will use when assessing enhancement requests and the approaches we will use to determine cost efficiency. It is not possible to know exactly what approach we will take until we receive companies' PR24 business plans and data tables. Releasing too much information ahead of business plan submissions risks causing perverse incentives and outcomes. For example, companies could focus on providing costs consistent with our modelling rather than what they consider to be an efficient level. We therefore do not intend to set out further details of our cost efficiency assessment approach ahead of business plan submissions.

Wessex Water raised a concern about the capping of allowances to minimum of business plan requests or modelled output costs as used at PR19. We do not agree that this was a significant issue at PR19 but will continue to consider the appropriate use of the 'minimum of' principle and the aggregation of allowances that it should be applied at to minimise the impacts of data and modelling uncertainty.

Thames Water raised the idea of dynamic panel data modelling for enhancement costs. They argue this method can control for the lumpiness of expenditure, and result in more reliable and objective results. We consider dynamic panel modelling would bring additional technical challenges that would require adding significant complexity to address. For example, deciding on the most appropriate way to deal with the correlation between the lagged dependent variable and the dependent variable. It also relies on a long-time series of data, which is not available for most enhancement areas. At PR19, most enhancement expenditure was assessed based on 5-years of business plan forecast data. There are alternative options available that are simpler and more feasible that we consider can achieve the same outcome as dynamic panel modelling. For example, including explanatory variables in the model that explain the variation in expenditure over time; or smoothing the expenditure data over time. We note that no other company has been supportive of dynamic panel modelling in response to the draft methodology or previous publications.

Enhancement data collection

The business plan data tables set out the enhancement reporting requirements by area of investment. We have updated many enhancement lines since PR19. These updates have been informed by discussions with companies in the cost assessment working group.[27]

Several enhancement areas have been disaggregated to more granular activity levels to assist benchmarking. This recognises some new drivers for PR24 and allowing comparable

[27] Ofwat, 'Cost assessment working group meeting notes', February and March 2022.

benchmarking of interventions such as green solutions. For example, getting costs and effective storage benefits presented against both grey (eg storm tanks) and green (eg sustainable drainage systems) for interventions in wastewater networks. Wessex Water responded that the methodology needs to reflect the challenges to enhancement benchmarking that arise from efforts to promote nature-based solutions. We consider that the changes to the enhancement data line reporting (costs and drivers) together with other changes relating to nature based solutions outlined in Section 6.4.2 address this concern.

We retain freeform enhancement lines for investments that do not match the standard enhancement lines presented. However, we expect investment requests to be presented here by exception.

It is the companies' responsibility to ensure that requests are submitted in the correct tables and are well referenced. This includes whether this is in the correct standard enhancement line, freeform enhancement line (by exception) or base costs. Misallocations or poorly presented evidence may result in costs being challenged using an approach not appropriate to the activity type. We will use the queries process to support our assessment and provide feedback for updated submissions, but we will assess what is presented.

Enhancement activity areas (for example, delivery of lead reduction or increasing metering), which may cover several similar disaggregated enhancement cost lines, should be supported and justified by a well evidenced business case. The location of this business case within the business plan documentation should be clearly identified in the business plan data table commentary for the relevant enhancement lines.

We will not have early enhancement submissions. We already have early development and regulatory feedback on the strategic planning frameworks (WRMPs and DWMPs [28]) and environmental programmes which identify and justify most enhancement costs. Improvements to enhancement assessment criteria (discussed below) and enhancement line definitions will also improve the focus and quality of submissions. This builds on the feedback provided to companies throughout the PR19 process.

Enhancement assessment criteria

At PR24, we will consider the need, optioneering, cost efficiency and customer protection evidence presented by companies for all enhancement expenditure requests. This builds on the assessment criteria used to assess enhancement at PR19.

We have not made significant changes to the assessment criteria used at PR19. However, we have made some updates to help simplify and provide further clarity on our expectations for the evidence companies should provide. Hafren Dyfrdwy, South East Water and Yorkshire Water welcomed the additional guidance provided in their draft methodology responses.

[28] Water resources management plans (WRMPs) and drainage and wastewater management plans (DWMPs).

Wessex Water agreed that setting out clear criteria to assess enhancement proposals and tailoring these criteria for enhancement proposals as a positive regulatory development.

Companies should provide evidence aligned with all these criteria as part of their enhancement cost business cases. Comprehensive business cases for enhancement investment should be provided for all enhancement areas. Even those we assessed using benchmarking models at PR19. Companies should provide sufficient and convincing evidence for enhancement investment. Compelling evidence should be submitted to support company requests for adjustments to standard calculated allowances, for example modelled adjustments.

We will use four criteria groupings to assess enhancement at PR24:

- need for enhancement investment;
- best option for customers;
- cost efficiency; and
- customer protection.

Compared to the criteria used at PR19, the management control criterion has become a sub-criterion within the need for enhancement investment criteria grouping, and the need for adjustment criteria is part of the cost efficiency criterion. We have also removed affordability and board assurance as these were not always used for specific enhancement requests and are not appropriate to be applied at an enhancement investment line level. Affordability and board assurance are still important parts of company business plans.

Wessex Water agreed with the removal of the affordability and board assurance criteria, but disagreed with us moving need for adjustment into the cost efficiency criteria grouping because of the risk of double funding (ie poorly performing company requesting enhancement funding to deliver performance levels already funded by base). We agree this risk exists. We will review company evidence within need for enhancement investment grouping (eg overlap of need with previously funded performance) to mitigate this risk. The need for adjustment sub-criterion is used to identify where special circumstances may require a cost adjustment to enhancement benchmark models.

Affordability should be assessed and taken account of at a higher level than by enhancement line and should be clearly addressed through company plans. Affordability should inform the scale and timing of the PR24 enhancement programme in the context of the overall cost of the PR24 business plans and the companies' long-term delivery strategy. The considerations on enhancement proposals and how affordability has informed them should be evidenced.

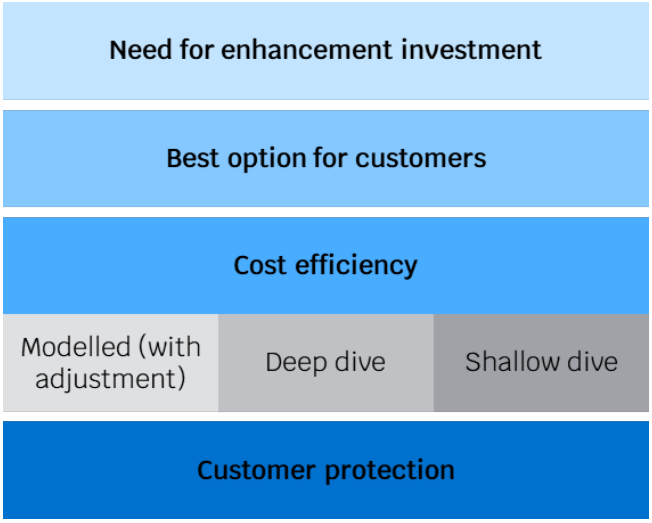
Board assurance should be provided to support the scale and timing of the overall enhancement programme. We provide more detail on board assurance expectations in Section 7. In summary there is an expectation that the enhancement proposals within a

company business plan are based on robust and efficient expenditure forecasts, the investment represents the best option for customers, the programme is deliverable and affordable, and the proposals reflect customer views.

We discuss the criteria below outlining the key changes from those used at PR19. Further details of the enhancement assessment criteria and sub-criteria are set out in the annex, A1 enhancement and cost adjustment claim assessment criteria. This provides companies with guidance on the types of evidence that is expected within business cases to support investment requests.

Southern Water requested more guidance on the expectations for high quality enhancement business cases. The enhancement criteria build on those used at PR19, and we have provided more details about their application than at PR19. We therefore consider companies have sufficient information on how these will be applied and the evidential bar that will be used. Resilience enhancement requests were poorly justified at PR19, to further support companies in identifying and supporting enhancement requests Section 3 provides more guidance in this area. As well as using this methodology to support the development of business cases in relation to enhancement requests, companies may consider learning from standardised approaches to presenting these, such as the Green Book's five case model methodology.[29]

Figure 2.4: PR24 enhancement expenditure assessment criteria and cost efficiency assessment methods



Need for enhancement investment

The need for enhancement investment must be clear and well evidenced. We expect the scale and timing of the need to be justified by companies including reference to long-term delivery strategies to provide the long-term context where necessary. Where the need is driven by another process, such as the strategic planning frameworks or statutory

[29] HM Treasury, 'Guide to developing the project business case', 2018.

environmental programmes, we will validate the timing and scale of need against these and any previous feedback we have provided. The criteria have been refined to make this clearer.

Customers should not pay twice for resilient services – that is, they should not pay once through base allowances or previously funded enhancements, and then again through requests for further enhancement funding for the same improvement. This includes accounting for funding agreed through the additional processes, green economic recovery and transitional funding, during 2020-25. The need criterion now includes sub-criteria requesting evidence that any base overlap has been clearly accounted for and that the request is not for previously funded outputs or performance improvements. The funding being requested must be clearly justified with sufficient and convincing evidence as being additional.

The customer support sub-criterion has been updated to reflect that we expect customer views to have been sought on the scale and timing of the need for investment.

Wessex Water expressed a concern about the terminology used for this criterion and whether it can lead to bias. It preferred "justification for investment" rather than "need for investment" due to some areas of investment requiring a judgement around the level of customer support. We agree that enhancement is not always aligned to a statutory or regulatory requirement. Companies should obtain and quantify customer support on the need for investment where not directly aligned to a statutory requirement. We continue to define this criterion as "need for enhancement investment" as its clear for stakeholders to understand and reflects continuity with PR19.

Best option for customers

We expect companies to assess a wide range of options to meet a defined need. This will provide confidence that company proposals will deliver the best option for customers. A range of options across different option types, including nature-based solutions, operational actions, innovative and modular schemes should be fairly, consistently and transparently considered and appraised.

We expect companies to consider best value options rather than just least cost, building on the sub-criteria used at PR19. Where a best value solution is presented, the assessment of wider benefits attributable to the solution should be presented based on robust valuations. The costs and benefits of the proposed solution in business plan should also be compared to the least cost solution (in the circumstances where this is different).

We have added a sub-criterion to reflect our expectation that where wider value is used to justify an option being promoted, benefits should be robustly calculated and traceable to ensure that customers receive all funded benefits. We also expect evidence to show that the

scale of forecast third party funding to be secured (where appropriate) is reliable and appropriate to the activity and outcomes being proposed.

We provide further clarity on the customer support sub-criterion to explain that support for the solution should be set in the context of other solutions considered (including the least cost solution where different), and the contribution the solution makes to addressing the need. Company evidence on customer support should be scheme, scheme-type or programme specific. This evidence should demonstrate that the customers who will pay for the improvement are prepared to pay for the delivery of non-statutory improvements in the context of the enhancement proposal and wider company business plan.[30] The research underpinning this evidence should follow our standards for high quality research.[31]

The collaborative customer research that is informing our setting of indicative outcome delivery incentive rates should not replace the need for evidence of customer support on specific enhancement expenditure proposals. But we expect companies to use the monetary values derived from this research as part of enhancement business cases wherever possible. Our outcomes regime provides customer protection through performance commitments alongside outcome delivery incentives. Evidence of customer support on proposals for non-statutory activities provides further protection for customers.

We acknowledge that customer engagement and research can be costly. Where appropriate, to demonstrate customer support, we expect companies to group schemes which share the same intervention option-type (eg sustainable drainage systems) and/or try to solve the same problem (eg enhancement programme to increase network storage capacity to reduce storm overflows). However, for enhancement schemes which require significant investment we expect companies to conduct customer engagement/research separately for each individual scheme.

Cost efficiency

Enhancement expenditure requests should be efficient with sufficient and convincing evidence to demonstrate efficiency. At PR24, we will use the same methods to assess enhancement costs as we did at PR19. This includes reviewing the evidence provided in business cases and applying cost benchmarking models, cost efficiency deep dives, and shallow dives. For enhancement activities being undertaken by most companies, and where we can identify appropriate cost drivers, we will use econometric or unit cost models to determine efficient cost allowances. Where companies have special circumstances, we will consider cost adjustments based on compelling evidence presented in business cases and

[30] For customers to provide an informed view about the enhancement proposal, they should be presented with alternative options to address a defined need, eg doing nothing and a lower cost alternative.
[31] Ofwat, 'PR24 and beyond: Customer engagement policy – a position paper', February 2022.

business plan table commentary. Sub-criteria have been added to reflect the type and strength of evidence required to support a cost adjustment.

Where enhancement benchmarking models are unsuitable or not achievable, we will undertake bespoke assessments including considering the use of cost efficiency engineering deep dives, or shallow dives as appropriate. We will undertake deep dives to assess cost efficiency where spend is material. But retain the flexibility to deep dive lower value costs where appropriate.

Customer protection

We expect companies to present how customers will be protected to ensure that investments deliver the intended benefits as defined in the business case. Companies should clearly link enhancement investments to improvements in performance – via common or bespoke performance commitment levels.

For investments where the outputs do not map neatly to performance commitments companies should identify the price control deliverables (PCDs) to protect against non-delivery of the primary and wider outputs. PCDs should be used to ensure funding is fully returned where defined outputs are not delivered. These can be scheme specific for material areas of investment or based on delivery of funded volumes (eg number of meters). In some cases, a performance commitment may also be appropriate to incentivise outperformance.

2.4.3 Cost adjustment claims

Econometric cost modelling is the main benchmarking tool we use to set an efficient cost allowance for each company. But we recognise that statistical models are imperfect and cannot account for all relevant factors that affect costs. There may be instances where an adjustment is required to correct these imperfections.

The cost adjustment claim process allows a company to present evidence in its business plan of unique operating circumstances, non-standard legal requirements or atypical expenditure which drive higher efficient costs for the company relative to its peers. It is a key component of our cost assessment approach at PR24.

While the cost adjustment claim guidance is generally well understood by companies, for PR24 we have improved our guidance in relation to the assessment gates, the calculation of implicit allowances, and the evidence required for symmetrical cost adjustment claims. We consider this should lead to better cost adjustment claims at PR24.

We outline how the cost adjustment claim process will work at PR24 in detail below, and demonstrate how we have considered stakeholder responses to our draft methodology.

We discuss the interaction between the cost adjustment claim process and delivering service level improvements in Section 4.

Scope of the cost adjustment claim process

At PR19, companies submitted cost adjustment claims for base (wholesale and retail) and enhancement expenditure. We often reallocated enhancement claims and assessed them as part of the relevant enhancement expenditure line.

In our base consultation and at the draft methodology, we proposed to separate the adjustment process between base and enhancement claims, to minimise the number of post-submission reallocations and tailor the assessment criteria to base cost claims.[32] Companies were generally supportive of this, as it allows to tailor the assessment criteria between enhancement proposals and cost adjustment claims.

At PR24, the cost adjustment claim process will be limited to base (wholesale and residential retail) and bioresources costs.[33]

We consider this is appropriate because our assessment of enhancement expenditure relies more on forecast data. We will therefore determine our assessment approach for each enhancement area once we receive companies' business plans. In the absence of certainty about the coverage and scope of our enhancement models, companies may be limited in their ability to submit cases for adjustments to modelled enhancement cost allowances in business plan submissions. We therefore consider it more appropriate for companies to evidence any request for enhancement expenditure within business cases, as part of the relevant enhancement expenditure line. We discuss the evidence expected in enhancement business cases in Section 2.4.2.

For the avoidance of the doubt, business plan tables for cost adjustment claims should not be used to submit enhancement claims at PR24. Requests for enhancement expenditure should be submitted as part of the relevant enhancement expenditure line and evidenced with an appropriate business case.

Standard of evidence expected

We expect companies to submit compelling evidence against the assessment criteria.

We expect the quality of cost adjustment claims to be higher at PR24 because:

[32] Ofwat, 'Assessing base costs at PR24', December 2021.
[33] We do not expect cost adjustment claims in business retail, due to the absence of a modelling approach to assess these costs. We expect Welsh water companies to evidence their requested expenditure for this activity with relevant business cases.

- **Having sight of our potential cost models should substantially improve quality and reduce the quantity of the cost claims companies submit at PR24**. This contrasts with PR19, where companies did not have knowledge of our base cost models before submitting their business plans.
- **Our assessment of PR19 claims is published on our website**,[34] which companies can build on to improve the quality of their PR24 claims.
- **We are expanding our guidance** for evidence we expect to be submitted.
- **We have collected additional cross-sector data** from companies to support the submission of well-evidenced cost adjustment claims and published updated datasets on our website.[35] [36]

For cost adjustment claims that were rejected at PR19, we expect to see a material change in evidence that supports the cost adjustment claim, or a material change in circumstances surrounding the cost adjustment claim. We would not expect cost claims that were rejected at PR19 to be accepted at PR24 if these conditions are not met. For avoidance of doubt, this condition will not apply if the cost claim is driven by a change in the cost models at PR24.

For new cost claims, we expect companies to explain why they were not submitted at PR19.

Assessment criteria

The criteria we will use to assess cost adjustment claims at PR24 are:

- need for adjustment (necessary);
- cost efficiency (necessary);
- need for investment (where appropriate);
- best option for customers (where appropriate); and
- customer protection (where appropriate).

We have tailored the cost adjustment claim criteria to the costs included in the process (ie base (wholesale and residential retail) and bioresources costs). We have also improved the guidance to assessment criteria where possible, by taking on board lessons learnt from PR19.

We outline the evidence required under each assessment criterion in the annex to this document (enhancement and cost adjustment claim assessment criteria). We did not receive additional comments on the cost adjustment claim criteria in response to the draft determination.

Costs included in the cost adjustment claim process are assessed primarily using econometric cost models. The need for adjustment criterion is therefore the most important.

[34] Ofwat, 'Final determination models', December 2021.
[35] Ofwat, 'IN 22/02 Cost assessment data requests', April 2022, pp.2-3.
[36] Ofwat, 'PR24 – Cost assessment datasets'.

Hence, why we include as a standalone criterion.[37] We expect companies to clearly explain why our econometric models do not adequately capture their unique circumstances (ie special factor). We also expect companies to demonstrate that the base cost allowance would be insufficient to accommodate the special factor without the claim. If an alternative explanatory variable is used to calculate the cost adjustment, companies must explain why it is superior to the explanatory variables in our cost models. The claim would be rejected if it fails the 'need for adjustment' criterion.

Cost efficiency is the next most important criterion and is required for all cost adjustment claims. But need for investment, best option for customers, and customer protection may only be required for specific cost adjustment claims (eg a large, atypical investment which may not be included in our cost baselines).

Compared to the PR19 cost adjustment claim assessment criteria, we have removed 'affordability' and 'board assurance'. These gates were generally not used to decide acceptance or rejection of a claim at PR19. We expect companies to demonstrate affordability of their business plans, and for the board to provide overall sign off and assurance that the business plan represents the best option for customers. We also capture 'management control' in 'need for adjustment' rather than as a standalone criterion.

We recognise that different criteria will be applicable for different types of claims. It will be for the company to provide the appropriate evidence to support each claim.

For bioresources cost claims, we will consider the appropriateness of the company's sludge strategy and the extent the company has considered market opportunities and used appropriate benchmarks to demonstrate value for money.

Calculation of the implicit allowance

The implicit allowance captures the proportion of the claim which is covered by our modelled cost baselines. The implicit allowance will always be greater than zero if the claim relates to costs incurred historically and captured in the econometric cost models.

Calculating the implicit allowance is therefore a necessary (but not sufficient) condition to pass the need for adjustment criterion, to avoid double counting of allowances. Companies should clearly set out the value of the claim before and after the deduction of the implicit allowance.

Implicit allowances can be estimated using various approaches. There is no single correct approach. It may be appropriate to use a range of approaches to come to a robust estimate of the implicit allowance. Approaches applied at PR19 included:

[37] Need for adjustment is absorbed within the cost efficiency criterion for enhancement assessments.

- removal of an expenditure category from the models;
- removal of an explanatory variable from the models; and
- assessment of average unit costs related to the claim.

Companies must explain the approach it has taken to calculate the implicit allowance, and key assumptions made, in its cost adjustment claim submission. Evidence of underlying calculations would also be helpful to ensure we can replicate the results.

The implicit allowance should be calculated after the application of the catch-up efficiency challenge (including setting out assumptions made) but before the application of frontier shift. We provide additional guidance in the annex to this document in response to company feedback to our base cost consultation.

We have improved the cost adjustment claim pro forma within PR24 business plan tables relating to cost adjustment claims (eg automatic calculation of materiality, calculation of the cost claim after deducting the implicit allowance, etc.). We expect companies to calculate a value for the implicit allowance related to the claim they are putting forward, and fill in the tables accordingly (eg value of the claim before and after the deduction of the implicit allowance).

Materiality thresholds

The use of materiality thresholds for cost adjustment claims helps to (i) mitigate the risks posed by asymmetry of information; and (ii) proportionately focus our assessment on the most significant cost adjustments.

We will retain the same materiality thresholds used at PR19, which are set out in Table 2.2 below. We therefore apply a separate threshold for each of the PR24 controls. The higher thresholds in the retail and resources controls reflect their smaller overall value as a share of the appointed company business. Where a company raises a cost claim, we expect it to be contained within a single control.

Table 2.2: Materiality thresholds for cost adjustment claims at PR24

Control	Materiality threshold*
Water network plus	1%
Wastewater network plus	1%
Water resources	6%
Bioresources	6%
Residential retail	4%
Business retail	6%

* As a percentage of business plan (5-year) totex in the respective control.

We expect companies to demonstrate the claim is material. Companies should calculate the materiality of the claim as the net value of the claim relative to the company view of totex in that control for the period 2025-30, as shown below. The net value of the claim is the value of the full claim less the implicit allowance, as demonstrated in the business plan tables.

$$\text{Materiality} = \frac{\text{(gross value of the claim) – (implicit allowance estimate)}}{\text{(totex for the control in 2025-30)}}$$

Symmetrical cost adjustment claims

The cost adjustment claim process at PR24 will be more symmetrical, to protect customers from the risk of a one-sided process. Companies generally agreed with the use of symmetrical cost adjustment claims at PR24.

At PR24, we expect companies to submit symmetrical cost adjustment claims where the claim relates to costs incurred historically and subsequently included in our modelled cost baseline. But cost adjustment claims do not need to be symmetrical if costs have not been incurred in the past.

As mentioned above, each cost adjustment claim must be greater than the relevant materiality threshold. If a cost adjustment claim is greater than the relevant materiality threshold then it is sufficiently material to be applied as a symmetrical adjustment (if costs have been incurred historically).

In response to the draft methodology, SES water said that, wherever possible, explanatory variables should be the 'first best' solution to capturing drivers in the models. We agree. As we said in the draft methodology, the cost adjustment claim process should not be used to bypass the cost models. We expect companies to engage in the cost model development process and submit any new or refined base cost models to us in early 2023. We will review these models and consider incorporating them into the base cost modelling consultation in spring 2023.

Overall, we expect that most cost drivers will either be explained by explanatory variables included in the cost models or be non-material. We recognise that post-modelling symmetrical adjustments may be needed in exceptional circumstances (eg the PR19 growth adjustment). But we expect these to be exceptional and focused. Wessex Water expressed concern with this in response to our draft methodology. But we consider it is essential that cost adjustment claims are only applied in exceptional circumstances to ensure that the cost models are not bypassed.

We expect a company to indicate in its symmetrical cost adjustment claim submission how an upward adjustment to its modelled cost allowance would impact on cost allowances for

other companies. The company should provide the relevant evidence to replicate its calculations as part of its cost adjustment claim submission.

We provide an example of how a symmetrical adjustment could be calculated in the annex to this document. Yorkshire Water consider the example provided is too simplistic. We disagree. It would not be possible to provide an exhaustive set of symmetrical adjustment examples. We consider the example provided will help companies to prepare cost adjustment claims.

Overall, respondents to our draft methodology agreed that co adjustment claims should mostly be symmetrical. But SES Water raised concerns that symmetrical cost adjustment claims will increase the regulatory burden on companies and add more uncertainty to companies' business planning. We agree that companies will need to engage with other companies' cost adjustment claims through the summer 2023 cost claim consultation (discussed below). But we consider this is in the best interests of customers as it will protect them from the risk of a one-sided cost adjustment process (ie increases and decreases in cost allowances, instead of only increases in cost allowances). The cost claim consultation process is also important to ensure alignment to the modelling consultation process, given the use of industry-wide symmetrical adjustments at PR24.

Interaction with business plan incentives

Chapter 11 of the final methodology document sets out how we will use incentives (rewards and penalties) to encourage companies to produce quality and ambitious plans. We intend to take account of the quality of cost adjustment claims within the quality and ambition assessment (QAA).

Early cost adjustment claim submission and publication

We will have an early cost claim submission and publication in summer 2023. This will provide companies with an opportunity to comment on other companies proposed symmetrical cost adjustment claims alongside their business plans in October 2023. We consider this is important due to the absence of an initial assessment of plans stage at PR24. We will not provide feedback to companies on their cost claims through this process.

Symmetrical cost adjustment claims submitted to us in summer 2023 should be comprehensive. We will treat with caution any claims submitted in business plans that were not included in, or substantially changed from, the early cost claim submission.

In response to our draft methodology, Anglian Water and Thames Water raised concerns around the timing of the cost adjustment claim publication. Anglian Water said that it disagrees new cost claims submitted after the early submission should be treated with caution, because after seeing the base models companies may wish to withdraw a claim and/or should have the opportunity to submit a new or updated one. Thames Water asked for

the deadline for cost adjustment claims to be put back until after business plan submissions so they will know what the base cost models will be.

These comments appear to be driven by the assumption that we will release a decision document following the modelling consultation in spring 2023, with final decisions on the set of base econometric models at PR24, which may trigger new cost adjustment claims. For the avoidance of the doubt, we do not expect to publish a decision document following the modelling consultation in spring 2023. We will consider responses received to the modelling consultation for our draft determination. This means there will not be a new set of base models between the early cost claim submission and the submission of business plans. We do not expect new claims following the early cost adjustment claim submission, and any new claims submitted as part of business plans will be treated with caution. Similarly, we do not see any reason to ask for cost adjustment claims to be submitted following business plan submissions.

Anglian Water asked that the publication is no later than the end of May 2023. We will allow companies two months following publication of the modelling consultation in spring 2023 to prepare and submit symmetrical cost adjustment claims to us. We will aim to publish cost adjustment claims as soon as possible after that. We recognise the importance of allowing companies enough time to review other companies' cost adjustment claims ahead of business plan submissions.

2.4.4 Setting a stretching but achievable efficiency challenge

In a competitive market, less efficient companies would be unable to charge a premium to customers to cover their inefficiency. As monopoly providers of an essential service, water companies do not face competitive market pressures in most of the services they provide. We must therefore set efficient cost allowances to protect the interests of current and future customers.

For PR24, it is important we continue to incentivise and challenge water companies to deliver productivity and efficiency improvements going forwards. The water sector is likely to face increasing cost pressures at PR24 as it strives towards meeting a series of ambitious long-term targets. So, companies will need to improve their productivity to meet long-term challenges and affordability of customer bills.

We think that water companies can do more to improve efficiency. Following privatisation water sector productivity growth was 3 to 4% per year between 1994 and 2000. Since 2011,

productivity growth in the water sector has stagnated.[38] This compares to relatively strong productivity growth for comparator sectors.[39]

A stretching but achievable cost efficiency challenge encourages lagging companies to catch-up with the leading companies in the sector at a fast pace (ie **catch-up efficiency**), and encourages leading companies to accelerate their improvement (ie **frontier shift efficiency**). We have considered responses to our draft methodology, and our approach to setting the catch-up and frontier shift efficiency challenges at PR24 are set out below.

Catch-up efficiency

Like in PR19, we will use our comparative econometric benchmarking analysis to identify relative efficient companies within the sector. We will use this information to set a catch-up efficiency challenge to the less efficient companies in the sector.

In response to our draft methodology, Yorkshire Water asked for more detail on how we define a 'stretching but achievable' catch-up efficiency challenge. We set out more details on how we intend to set the catch-up efficiency challenge at PR24 below. But we cannot be too definitive now given the level of stretch we set depends on a number of unknowns (eg econometric model robustness, historical efficiency improvements, business plan forecasts).

Catch-up efficiency benchmark

At PR19, we set the residential retail cost efficiency benchmark at the upper quartile, which we also used at PR14.

We set the wholesale water base cost efficiency benchmark at the fourth most efficient company, and the wholesale wastewater base cost efficiency benchmark at the third most efficient company. This was slightly more stretching than the upper quartile efficiency benchmark used at PR14. We note the CMA set the wholesale water and wastewater catch-up efficiency benchmark at the upper quartile in the PR19 redeterminations when an additional year of outturn data was added to the econometric models (2019-20).[40] They considered this balanced their objective of setting a challenging benchmark while acknowledging the limitations of the econometric modelling.[41]

[38] Water UK study shows around 0% per year growth 2011 to 2017. Frontier economics for Water UK, 'Productivity improvement in the water and sewerage industry in England since privatisation', 2017, p. 3. Note this doesn't fully account for changes in quality.
[39] ONS multi-factor productivity data shows water sector productivity growth of -1.8% per year 2010 to 2021. This compares to an average of 1.1% per for manufacturing and 0.4% for the economy. ONS, 'Multi-factor productivity estimates', April 2022.
[40] Competition and Markets Authority, 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations. Final report', March 2021, Paragraph 4.494.
[41] Competition and Markets Authority, 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations. Final report', March 2021, Paragraph 4.494.

Ofgem set the catch-up efficiency benchmark on a glidepath from the 75th to the 85th percentile at the most recent gas distribution price review (RIIO-GD2). This was more slightly stretching than the upper quartile benchmark used at RIIO-GD1.[42] The CMA concluded that this decision was not wrong in the RIIO-GD2 energy licence modification appeals.[43]

In response to our draft methodology, several companies expressed concern with setting a more stretching catch-up efficiency benchmark than the upper quartile at PR24.[44] It is too early in the process to set the catch-up efficiency benchmark. We will exercise our regulatory judgement at the draft and final determinations to consider whether to set a more stretching catch-up efficiency benchmark than the upper quartile at PR24, taking into account a range of evidence such as:

- econometric model robustness and quality;
- catch-up efficiency challenges set at previous price reviews and by regulators in comparator sectors;
- historical and forward looking cost efficiency analysis (discussed below); and
- the scope and need for the sector to improve performance, including consideration of external cost benchmarking analysis (discussed below).

Time period used to estimate the catch-up efficiency challenge

We intend to use a combination of historical and (where appropriate) forecast efficiency evidence to set the catch-up efficiency challenge at PR24. We will consider whether we can place more weight on forward looking efficiency evidence than we did at PR19 (ie by comparing company business plan forecast costs with the outputs from our econometric benchmarking models). Ofgem set the catch-up efficiency challenge based solely on forward looking evidence at RIIO-GD2.[45]

In response to our draft methodology, Anglian Water and Severn Trent Water expressed concern that using forecast efficiency evidence to set the catch-up efficiency challenge would introduce endogeneity into our cost assessment approach. We recognise this limitation. But think the potential benefits outweigh this limitation if forecasts are robust. For example, it would enable us to introduce more of a 'forward look' into our base cost assessment approach, including future efficiency gains.

[42] Ofgem, 'RIIO-2 Final Determinations – GD Sector Annex (REVISED)', February 2021, Paragraph 1.11.
[43] Competition and Markets Authority, 'Energy Licence Modification Appeals 2021', March 2021, Paragraph 12.178.
[44] Severn Trent, Hafren Dyfrdwy, South West Water, Thames Water, United Utilities, South East Water.
[45] Ofgem, 'RIIO-2 Final Determinations – GD Sector Annex (REVISED)', February 2021. Ofgem, 'RIIO-2 Final Determinations – GD Sector Annex (REVISED)', February 2021, Table 11: Final Determinations Decision on Efficiency Benchmark, page 82..

External cost efficiency benchmarks

We will consider cost efficiency in comparator sectors (that is, external benchmarks), where appropriate. This will ensure that our efficient cost allowances do not perpetuate inefficiencies within the sector. In response to our draft methodology, Northumbrian Water, South West Water and SES Water support the use of external cost benchmarks. But Wessex Water do not think external benchmarking would represent well targeted regulation because of the practical challenges involved.

Earlier this year we commissioned PWC to undertake a benchmarking study of companies' retail activities.[46] They considered how an efficient cost to serve could be set, the different management approaches in the sector, and how performance has changed since their report in 2017.[47] They found some improvements in company performance, although opportunities for improvement remain. Some of their findings are as follows.

- there is considerable scope for lower performing water companies to catch-up to higher performing water companies. They find that variation in performance between water companies reflects different levels of efficiency;
- debt management costs can be challenged further. For example, through more targeted campaigns;
- further efficiencies in customer services can be found, for example by taking advantage of channel shifting and addressing high levels of staff attrition;
- the roll-out of smart meters is likely to reduce the cost of meter reading and bring other benefits; and
- there does not need to be a trade-off between cost and service performance.

We will consider PWC's findings in our PR24 draft and final determinations. We will also consider whether further benchmarking of companies' retail activities against new appointments and variations (NAVs) would be helpful.

We recognise it may be more challenging to develop reliable external benchmarks for wholesale activities given the differences in activities between sectors. There may be specific activities that are suitable (eg smart meter installations, excavations, obtaining new power supplies, telemetry links, etc.). Companies should consider external benchmarks when developing their PR24 business plans to demonstrate cost efficiency, where appropriate.

Other issues relating to the catch-up efficiency challenge

At PR19, we applied the same wholesale wastewater catch-up efficiency challenge to wastewater network plus and bioresources.

[46] PWC, 'Retail services efficiency review 2022', December 2022.
[47] PWC, ' Retail Services Efficiency benchmarking – Report for Ofwat', September 2017.

At PR24, we intend to set separate catch-up efficiency challenges for wastewater network plus and bioresources price controls. Several companies raised concerns with this approach in response to the draft methodology because of substitution effects. But we consider the work undertaken to improve cost allocation helps to address this issue. It will also support our approach to regulating bioresources at PR24 where we consider that setting an efficiency challenge tailored to the bioresources control will help to drive efficiency and be consistent with our approach to regulating bioresources in a more market-oriented way.

Consistent with our PR19 approach, we intend to apply the catch-up efficiency challenge from the start of the PR24 price control period, with no gradual catch-up over each year of the price control (eg no glide path). Customers should not pay for cost inefficiency. We would only consider applying a catch-up efficiency glidepath if it was in the best long-term interests of customers (eg allow us to move towards a more stretching efficiency benchmark at the next price review).

Frontier shift efficiency

Over time we expect the productivity of companies to improve as they adopt new technologies or new ways of working. These productivity improvements shift the efficiency frontier for the sector, and therefore apply to all companies. These improvements are in addition to the catch-up efficiency challenge.

To set an appropriate frontier shift efficiency challenge at PR24, we will consider:

- on-going efficiency improvements in the economy that the water sector should be able to emulate;
- efficiency improvements driven by the £200 million innovation fund; and
- additional efficiency improvements that might be possible as the water sector 'catches up' to the productivity in competitive sectors.

We will also consider real price effects. Real price effects are a measure of how much we expect water company costs to change due to input price inflation, relative to the indexation we use in the price review. In PR24, we will index wholesale controls to the Consumer Price Index including owner occupiers' housing costs (CPIH) as a measure of inflation. We do not intend to index retail controls to CPIH, as detailed in Chapter 3 of the final methodology.

Any real price effects for wholesale expenditure will be additional to the change in CPIH. In PR19, we applied a real price effect for labour costs, and introduced a true up based on manufacturing wage costs. We will consider whether a labour real price effect and accompanying true up remain appropriate in PR24. We will also reconsider whether a real price effect is needed for other inputs (eg energy and materials).

In response to our draft methodology, several companies requested more detail on our approach to frontier shift efficiency and real price effects in the final methodology. We disagree. We will need to consider the most up to date information when setting frontier shift efficiency and real price effects at the draft and final determinations. So, we do not consider there is any benefit from publishing further information now.

Reducing perverse incentives when setting efficient cost allowances

Our approach to setting efficient base costs means that the most efficient companies may receive a cost allowance which is higher than they forecast in their business plans. This provides a strong incentive for companies to seek efficiencies and submit stretching business plan forecasts.

We do not intend to 'cap' allowances if company forecasts are significantly below our efficient cost allowances at PR24. Such an approach could disincentivise companies to submit stretching business plan forecasts at future price reviews. But we do not rule out the use of capping completely as it may be needed to protect the interest of customers in exceptional cases. We will consider this issue further at draft and final determinations.

2.4.5 Cost sharing mechanism

Cost sharing refers to the policy treatment of over- or underspend against efficient cost allowances we set for water companies:

- the cost sharing rate on underspend captures the share of underspend that the company gets to keep; and
- the cost sharing rate on overspend captures the share of overspend that the company needs to bear.

For example, when a company has a 50% underspend rate, it keeps 50% of its underspend with the other 50% transferred to customers. If a company has a 55% overspend rate, it bears 55% of this overspend with the other 45% borne by customers. As this example suggests, cost sharing rates can be asymmetric with a different rate for overspend and underspend.[48]

An appropriate design of a cost sharing incentive mechanism can achieve multiple regulatory objectives. Firstly, it addresses information asymmetry between us and water companies by helping to reveal efficient costs:

[48] Throughout this section we refer to cost sharing rates in the following format (x:y) where 'x' captures the applicable cost sharing rate on overspend compared to PR24 cost allowances and 'y' captures the applicable cost sharing rate on underspend compared to PR24 cost allowances.

- **ex ante** – we can incentivise a company to reveal its forecast efficient costs in its business plan in exchange of receiving more favourable rates. The outcome is a robust cost challenge to the rest of the sector in the same price control period.
- **ex post** – once the price control period starts, the company has an incentive to reveal its efficient cost and gain a share of its outperformance. The outcome is reducing both current price control period costs (through customer share in-period) and future costs (as they are derived using cost models using backward-looking data).

In addition, cost sharing allows for the inherent cost forecasting risk to be shared between customers and companies. By sharing the burden of overspend risks that companies face within the control period, cost sharing acts to reduce the level of risk that companies price into their business plans every five years and encourages them to respond effectively to unforeseen events. Therefore, cost sharing results in effective risk sharing that can reduce costs for customers.

In PR19, we implemented a 'sliding scale' cost sharing approach. This involved varying the level of cost sharing rates companies can attain depending on:

- business plan quality; and
- a direct comparison of the level of costs in company business plans compared to our view of efficient costs.

Companies with more efficient plans attained more favourable cost sharing rates with the best rates at symmetric 50:50. Companies which fell significantly short of our expectations in our PR19 business plan categorisation or proposed costs that were significantly higher than our view got the least favourable rates.

We set out our final decisions on the approach to cost sharing in PR24 below including our consideration of stakeholder responses.

Use of lower cost sharing rates for enhancement expenditure and to maintain asset health

Early indications of the scale of PR24 enhancement expenditure suggests that it is likely to be much larger than in PR19. Therefore, we are continuing to consider the application of lower enhancement cost sharing rates to recognise the relatively larger influence of companies' enhancement programmes on PR24 business plans. In the PR24 draft methodology, we set out our proposal not to apply different cost sharing rates to base and enhancement expenditure. We recognised enhancement costs can be less certain than base costs. But we did not consider cost sharing should be used to address this potential difference for two reasons:

- our assessment of enhancement costs places some reliance on the company view of enhancement costs. This reduces the risk of overspending against enhancement cost allowances and the need for higher cost sharing with customers; and
- different cost sharing rates could create perverse incentives to reallocate spending between base and enhancement. Lower rates on enhancement expenditure could encourage companies to allocate base costs to enhancements, reducing the accuracy of our base cost models and creates the risk of double funding (ie through base and enhancement).

We consider that the application of lower enhancement cost sharing rates can more effectively account for the potentially different characteristics of the two types of cost (base and enhancement) as recognised by the CMA in the PR19 redetermination. [49] Our overall objective is to strike an appropriate balance between two key considerations. On the one hand, we want to maintain strong cost efficiency incentives and avoid the potential for creating perverse incentives. On the other, it's important to tailor the cost sharing mechanism to the risk profile of the two different types of costs where possible.

We will continue to consider having lower cost sharing rates on enhancement cost at draft and final determinations, where we are satisfied that the base and enhancement cost boundary is sufficiently clear. We consider that this could help to mitigate the risk of perverse incentives while recognising the potentially lower certainty of enhancement costs and upcoming challenges for the sector to deliver the expected large PR24 enhancement programmes.

We will not explicitly link the setting of PR24 cost sharing rates to asset health.

It is important that PR24 cost sharing rates do not encourage underspending on asset health. The proposed strength of cost sharing rates close to or at 50:50 would support efficient asset health expenditure in PR24 as this would encourage companies to take forward whole life cost solutions. If we significantly reduce cost sharing rates for PR24 (to encourage more spending on asset health) this could distort incentives in the current control period, as it could discourage companies from spending money now, for example on asset health.

Cost sharing rates on their own will not address asset health-related issues. We discuss our wider cost assessment approach to asset health in Section 3 below.

PR24 cost sharing rates – strength and use as a business plan incentive

We consider that cost sharing is an effective tool to incentivise high quality, efficient business plans. It helps to encourage ambitious plans that deliver for customers and the

[49] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021, para 6.103 and para 6.105.

environment and challenge the rest of the sector. Therefore, we are retaining the application of differential cost sharing rates based on business plan quality in PR24.

At PR24, we will only use business plan quality to determine cost sharing rates, with better cost sharing rates for companies with the most ambitious PR24 plans (ie 'Outstanding' and 'Standard') and lower rates for companies with the poorest quality plans (ie 'Inadequate'). This retains the core principle that higher quality business plans should be rewarded with more favourable rates.

At PR19, we also set cost sharing rates on a sliding scale based on relative cost efficiency (ie companies' business plan forecasts compared to our view of efficient costs). We do not intend to do this at PR24. As considered in the CMA's PR19 redeterminations, this approach could lead to unintended consequences around the incentives for companies to bid low in their business plans irrespective of their view of efficient costs. Setting cost sharing rates based on an 'in the round' assessment of business plan quality (including deliverability and scope) will help avoid these incentives.

We will also retain the option for companies with poorer plans to attain more favourable rates if they improve their business plans by the end of the PR24 process. There will be a high bar and the overall package of business plan incentives that these companies receive will be poorer than those who provided their best plan in their first submission. We provide more detail on how we will use incentives (rewards and penalties) to encourage companies to produce quality and ambitious plans in Chapter 11 of the final methodology document.

We want to continue to incentivise high quality business plans through cost sharing rates. But high asymmetric cost sharing rates could prevent lower whole life cost solutions being taken forward as it could discourage companies from spending more in the current control period (where they would bear a high proportion of costs) and save money in the future (where they would retain a lower proportion of savings). We have therefore reduced the scale of asymmetry in cost sharing rates compared to PR19. But continue to consider that some degree of asymmetry for poorer quality business plans is important to discourage companies from underspending unnecessarily.

We therefore set cost sharing rates closer to 50:50, with lower, more symmetric cost sharing rates for poorer quality business plans. We retain the 50:50 for the top two categories based on our quality and ambition assessment ('Outstanding' and 'Standard'). But reduce the strength and asymmetry of rates for the bottom two categories to 55:45 for the 'Lacking Ambition' and 60:40 for 'Inadequate', respectively. In addition, as explained in the previous section, we will continue to consider the merits of having lower cost sharing rates on enhancement cost at draft and final determinations.

A key objective of our approach is to avoid significant distortions of company decision making while retaining the core features of cost sharing to incentivise efficiency and share risk with

customers. Reducing rates closer to 50:50 will better manage the intertemporal investment incentives across price control periods.

Using rates that are closer to 50:50 supports our principle of a 'fair bet' for companies. Moving away from the significant rate asymmetry that existed in the PR19 period (eg with 75:25 rates for 'significant scrutiny' companies) provides a more balanced incentive. Table 2.3 below summarises our proposed cost sharing rates across the four business plan categories.

Table 2.3: Cost sharing rates for each business plan category

Business plan category	Overspend rate	Underspend rate
Outstanding	50	50
Standard	50	50
Lacking ambition	55	45
Inadequate	60	40

In response to our draft methodology, four companies argued against setting asymmetric cost sharing rates based on business plan quality. [50] The companies supported symmetric 50:50 cost sharing rates. Dŵr Cymru said that asymmetric cost sharing rates introduce a skew in the balance of risk and return which undermines the assessment of financeability. Northumbrian Water argued that rates should be symmetric to avoid potentially encouraging companies to submit low rather than efficient business plan cost forecasts as considered by the CMA in the PR19 redetermination process. Southern Water argued that Ofwat's assessment of business plan quality is inherently subjective and could distort company decision making in a way that may not be in customers' interests. Wessex Water said that since Ofwat's cost assessment framework is imperfect, the incentive for companies to align with Ofwat's view of efficient cost could result in not revealing their true forecasts of efficient costs. The Consumer Council for Water argued that the variation in cost sharing rates should be greater to better incentivise companies to submit stretching and well evidenced plans.

We remain of the view that some asymmetry in cost sharing rates is appropriate to complement our quality and ambition assessment. We note that the Competition and Markets Authority (CMA) supported the principle of using cost sharing rates to maintain a distinction between companies as part of the overall package of information revelation incentives. [51] The CMA also set the cost sharing incentives at 55:45 for the appealing companies. Our policy to award more favourable cost sharing rates to "Outstanding" and "Standard" companies

[50] Dŵr Cymru, Northumbrian Water, Southern Water and Wessex Water
[51] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021, para. 6.101 and para 6.105.

compared to "Lacking ambition" (55:45) and "Inadequate" (60:40) companies is consistent with the CMA's redetermination in that respect.

The CMA did not support the degree of asymmetry used by Ofwat at PR19 due in part to concerns over companies submitting low-cost business plans (although the CMA recognised there was limited evidence of this).[52] Our simplified PR24 framework that moves away from the PR19 sliding scale approach helps to mitigate this theoretical incentive to submit low-cost business plans as our quality and ambition business plan assessment will consider more than cost efficiency, including deliverability and credibility of business plans.

We consider the use of more symmetric cost sharing rates at PR24 compared to PR19 also helps address company responses. The more symmetric cost sharing rates promote a better balance between the need to set strong efficiency incentives and the need to mitigate the risk of over or under performance, which was also deemed important by the CMA.[53]

Application of bespoke cost sharing rates to unmodelled costs

We retain differential rates for material cost items where companies have limited management control.

As explained in the Section 2.4.1, in PR19 we used bespoke cost sharing for business rates and abstraction charges. We set the rates at 25:25 to recognise the limited management control of companies over those costs. Consequently, companies would bear 25% of the costs of over and underspending against our allowances.

We retain cost sharing for business rates at the same level of 25:25. There is a similar level of uncertainty in relation to business rates at PR24 as there was in PR19. But we will not include bespoke cost sharing arrangements for abstraction charges at PR24. We are not aware of any further changes to abstraction licence charges in the period 2025-30.

Coverage of PR24 cost sharing

We will not apply cost sharing to the bioresources control. This is consistent with the approach to the bioresources price control in PR19. In addition, we will not apply business rates cost sharing for bioresources in PR24. This differs from our PR19 approach where we applied 25:25 cost sharing for bioresources business rates totex. In response to our draft methodology, three companies argued we should retain the 25:25 cost sharing for bioresources business rates at PR24.[54] But we consider removing cost sharing rates for business rates in bioresources is appropriate given the incremental reform towards a more

[52] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021, para. 6.103.
[53] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021, para. 6.105.
[54] Yorkshire Water, Thames Water and Wessex Water.

market-based approach in bioresources. Companies do not benefit from business rates cost sharing in a competitive market. Our PR24 approach to bioresources is set out in detail in Appendix 4.[55]

As a result of government policy developments in relation to the proposed statutory obligation on English companies to achieve TAL at wastewater treatment works (WWTWs) in areas covered by nutrient neutrality since the publication of our PR24 draft methodology, we would also not exclude costs associated with nutrient neutrality mitigation from cost sharing. Section 5.4.5 sets out our final approach to nutrient neutrality.

Managing the interaction with PCDs

We will use price control deliverables (PCDs) to protect customers against potential non- or partial delivery of PR24 enhancement schemes. PCDs will act to claw back the expenditure allowance related to that outcome where companies have not delivered the outcomes and outputs consistent with their funding. PCDs are considered in more detail in Section 5.4.4.

Since cost sharing calculations are based on a comparison of allowed and actual totex, PCDs impact on this calculation. The overall objective is to ensure that the comparison between the two is made on a like-for-like basis.

In PR19, we implemented PCDs via bespoke performance commitments that claw back revenue allowances where a company does not deliver a scheme. This approach took account of cost sharing in the calculation of scheme specific ODI rates to reflect that a proportion of any underspending would already be returned to customers through cost sharing. We will retain this approach for PR24 and calculate PCD adjustments outside the scope of the PR24 cost reconciliation model, taking account of cost sharing (as a minimum).

[55]Ofwat, 'PR24 Final Methodology – Appendix 4 Bioresources control', December 2022.

3. Funding for water companies to maintain good asset health and resilience

Resilience is the ability to cope with, and recover from, disruption and anticipate trends and variability, in order to maintain services for people and protect the natural environment now and in the future.

Alongside our other duties, we have a duty to act in the manner we consider best calculated to further the resilience objective. This is to secure the long-term resilience of water companies' water supply and wastewater systems and to secure that they take steps to enable them, in the long term, to meet the need for water supplies and wastewater services.[56] Resilience is also a priority of both the UK government's strategic policy statement (SPS) and Welsh Government's strategic objectives and priorities for Ofwat.[57,58]

We expect companies to provide resilient services for customers today and over the long term. Customers expect continuous water and wastewater services, and disruptions can have a significant impact on customers and the environment. Resilience is also critical to the delivery of many of the improvements identified by the UK government and Welsh Government and regulators such as reductions in leakage and pollution incidents.

Resilience has always been part of our regulation of the water sector. Water companies have a duty to maintain a water supply system and provide a wastewater system, so that they continue to meet their statutory security of supply and service obligations. These are legal obligations, which water companies must fulfil. Company business plans must reflect these obligations.

We fund companies to be resilient over the long term through a combination of base and enhancement expenditure.

[56] We must act in the manner we consider best calculated to achieve all our primary duties, including our resilience duty. Our duties as an economic regulator are set out in Ofwat, Our duties.
[57] One of the UK government's strategic priorities is that " Ofwat should challenge the water industry to plan, invest in, and operate its water and wastewater services to secure the needs of current and future customers, in a way which delivers value to customers, the environment and wider society over the long-term." This covers meeting long-term water resource needs, managing water demand delivering resilient drainage and wastewater services, greater resilience to flooding, asset health, security, corporate and financial resilience.
[58] The Welsh Government's strategic objectives and priorities for Ofwat include resilience and asset health. The Welsh Government's strategic objectives include to "adopt an outcomes focused approach that promotes an appropriate focus on addressing long-term risks, safeguarding long-term resilience and performance and ensuring that the timing of investment results in intergenerational equity."

3.1 Our final methodology policies

Investment to maintain resilience is mostly through base expenditure, which includes operating expenditure and capital maintenance expenditure. Historical base allowances have been sufficient for companies to maintain and improve outcomes and asset health metrics over previous periods and be resilient to in-period impacts of climate change. We expect companies to continue to make improvements from base expenditure in the future.

At PR24, we intend to reflect more of a forward-looking approach in our base expenditure assessment in three ways:

- considering additional cost drivers in the base cost models;
- consider using forecast base cost data to set efficient base cost allowances; and
- consider cost adjustment claims related to exogenous factors / cost drivers that require a step change in efficient capital maintenance expenditure. Cost adjustment claims should not be used to make up for previous underinvestment or under delivery.

We provide funding for companies to enhance resilience in several areas. Planning for and delivery of water resources management plans (WRMPs) and drainage and wastewater management plans (DWMPs) will make a significant contribution to enabling companies to be resilient over the long term. They allow companies to identify enhancement investment required to maintain resilience, including combatting many of the impacts of climate change such as increased flooding, storm overflow spills and droughts.

We expect companies to be able to demonstrate adoption of best practice approaches to resilience and evidence best value in their PR24 Business Plans. Companies should have an integrated resilience framework in place following the PR19 requirement that they prepare Resilience Action Plans to develop and implement systems based approaches to resilience in the round.[59] The integrated resilience framework should underpin the company's operations and investment plans, showing a line of sight between risks to resilience, planned mitigations, package of outcomes and corporate governance framework.

Through companies' integrated resilience frameworks we expect them to systematically assess risk from a broad range of hazards, including fluvial and coastal flooding. In line with the UK Governments SPS,[60] and the commitments outlined in the EA and Ofwat's Joint approach, which sets out how water companies should consider flood and coastal resilience in the context of their statutory duties,[61] we expect companies to provide greater resilience to flooding, regularly review and fully understand the current and long-term flood risk to their

[59] Ofwat, Resilience in the Round - Ofwat, September 2017.
[60] This included a specific section focussed on providing a greater resilience to flooding.
[61] Ofwat & Environment Agency, 'A joint approach for how water companies should consider flood and coastal resilience in the context of their statutory roles and duties', June 2022.

infrastructure and systems, identify opportunities to increase resilience, and deliver greater flood resilience for their own infrastructure and services.

Expenditure on the delivery of the Security and Emergency Measures Direction outcomes[62] and Network and Information Systems Regulations[63] will also contribute to improved resilience to security threats and operational incidents.

We retain the resilience investment category under enhancement, but with a refined definition, so that companies can request investment to manage increasing risks, or changing acceptance/acceptability of risk, from hazards that are beyond their control and not covered by other enhancement areas. We expect any such requests for investment to be set in the context of a long-term risk management plan, be supported by customers and be prioritised considering affordability. Where reducing system vulnerabilities addresses multiple hazards, within and beyond management control, costs should be proportionally allocated.

3.2 Changes from our draft methodology

Companies have suggested that they require additional investment to increase mains renewals. In response we have set out how companies can request additional expenditure for mains renewals, as well as setting out our expectation in relation to the current deferral of renewals. We do not consider that customers should pay twice for mains renewals.

Clarification of what risks can be included as resilience enhancement. Companies requested that the definition of qualifying risk should be broadened beyond 'increasing risk', to include other types of risk. We have reviewed our approach and widened our definition of risk to also include changing acceptance/acceptability of risk.

3.3 Stakeholder views

Companies were broadly supportive of our proposals to maintain good asset health and resilience, but sought clarification in the following areas:

- Six companies suggested that there is a need for a step-change in the level of asset maintenance and replacement/renewals at PR24.[64]
- Five companies challenged the requirement for risk to be increasing to qualify for resilience enhancement and proposed other types of risk for inclusion.[65]

[62] UK government, 'Water Industry Act 1991: Section 208', February 2022.
[63] Department for Digital, Culture, Media & Sport, Security of Network & Information Systems Regulations (NIS Regulations), April 2018.
[64] Affinity Water, Anglian Water, Northumbrian Water, Thames Water, Wessex Water, Yorkshire Water
[65] Anglian Water, Southern Water, Thames Water, Welsh Water, Wessex Water

- Affinity Water, Thames Water and United Utilities sought clarity on what specific hazards qualify under resilience enhancement.
- Severn Trent Water, Hafren Dyfrdwy, and SES Water challenged elements of the requirements for a data driven approach.
- Northumbrian Water, Portsmouth Water and South East Water raised questions as to how the slow impacts of climate change are dealt with.

3.4 Our final decisions and reasoning

This sub-section provides further detail on our approach to funding companies to maintain good asset health and resilience through efficient cost allowances, including consideration of stakeholder views.

3.4.1 Reflecting forward looking pressures in our base allowances

Investment to maintain resilience is mostly through base expenditure, which includes operating expenditure and capital maintenance expenditure. Historical base allowances have been sufficient for companies to maintain and improve outcomes and asset health metrics over previous periods and be resilient to climate change impacts.[66] In our base cost consultation, we showed that performance is on an improving trend for the three common asset health performance commitments at PR19 (mains repairs / bursts, unplanned outage and sewer collapses).[67] We expect companies to continue to make improvements from base expenditure in the future.

At PR24, we will capture more of a forward look into our base cost allowance in three ways

(i) Cost drivers in the base cost models

As in PR19, we intend to use forecast cost drivers in our base cost models to forecast efficient base cost allowances. This ensures our efficient base cost allowances reflect future changes in scale, density and complexity of water and wastewater networks.

We also collected additional cost driver information in August 2022, which we are considering ahead of the spring 2023 modelling consultation. For example, we have collected additional sewage treatment complexity data, which should help us to understand the impact of higher

[66] See section 5 of our base cost consultation for more details and analysis. Ofwat, 'Assessing base costs at PR24', December 2021.
[67] Ofwat, 'Assessing base costs at PR24', December 2021. Section 5 – Capital maintenance and asset health.

treatment complexity on base cost expenditure requirements in the future (eg due to phosphorus removal and ultraviolet treatment).[68]

(ii) Consider using forecast base cost data to set efficient base cost allowances

We will continue to consider whether to use business plan base cost forecasts to set efficient base cost allowances. We could do this either in the base cost models directly or in setting the catch-up efficiency challenge.

Several companies raised concerns with this in response to our draft methodology as they think it will introduce endogeneity into base cost assessment. But we consider forecast data can provide useful information about relative costs of companies and will reflect company views on future cost pressures. We recognise that forecast cost data can be subject to more bias than historical cost information. For example, the degree to which companies challenge themselves on future efficiency. So, we will use forecast cost data with caution.

(iii) Cost adjustment claims

We are open to considering company evidence on additional exogenous factors / cost drivers that require a step change in efficient maintenance expenditure through the cost adjustment claim process. Companies should provide compelling evidence for any adjustment, including:

- evidence of a clear link between the exogenous factors and maintenance expenditure requirements;
- evidence on how these exogenous factors are likely to change in the future;
- demonstrate good practice in asset maintenance; and
- demonstrate efficient use of base expenditure allowances in previous periods. Cost adjustment claims should not be used to make up for previous underinvestment or under delivery in maintenance.

3.4.2 The need for a step-change in the level of asset maintenance and renewals

In response to the PR24 draft methodology, six companies stated that there is a need for a step-change in the level of asset maintenance and replacement at PR24, focussing on a need to increase water mains renewal rates.[69] Companies presented a similar range of reasons for this, which reference the Economic Insights report produced for Water UK. [70] This set out that historical expenditure has not been sufficient to maintain asset health, citing various reasons

[68] Data on phosphorus removal is being collected through company annual performance reports. We have requested additional data on ultraviolet treatment and other potential future cost drivers through Ofwat, IN 22/02 Cost assessment data requests, May 2022.
[69] Affinity Water, Anglian Water, Northumbrian Water, Thames Water, Wessex Water, Yorkshire Water
[70] Economic Insights, 'Options for a Sustainable Approach to Asset Maintenance and Replacement', June 2022,

including a comparison to the mean European renewal rate of 1% per year, and the age of the asset base.

Previous renewal rates in England and Wales have been higher than recent rates, with 0.5% per year post 2008 and 1.4% per year pre 2008, resulting in 41% of mains which are less than 30 years old.[71,72] At PR19 companies were funded on the basis of plans to renew an average of 0.4% of water mains per year. So far this period (2020-2022) they have only delivered an average of 0.1% per year. Some companies have suggested that renewals had been deferred in favour of short-term interventions such as pressure management through the 2021-22 annual performance report query process. Concerns have been raised that this might be storing up long term issues. However, despite the low level of renewal rates, performance has continued to improve steadily against all key performance metrics (mains repairs/bursts, supply interruptions and leakage) over the long term.

We are concerned that current water mains renewal rates (0.1%) are un-sustainably low and that companies are not undertaking enough renewals to keep up with deterioration. Under the totex regime we give companies flexibility as to how they invest their base allowance.

We expect companies to manage cycles of maintenance across large, diverse asset bases within their long-term average cost allowance, and companies have a duty to maintain an efficient and economical system of water supply, including maintaining water mains.[73]

To better understand whether the reduction in renewals has had an impact on asset health we will collect additional data on the condition of water distribution mains and sewers using the methodology adopted for PR04 and PR09.[74] We have included additional business plan data tables to support this. We will use this data to assess the extent to which companies understand the state of their assets and to check if renewals are keeping pace with deterioration.

Companies can submit cost adjustment claims where they can evidence that a step change in capital maintenance/renewals is required to maintain asset health. We will take account of renewals companies have previously been funded to deliver when assessing claims to ensure that customers do not pay twice for mains renewals previously funded.

3.4.3 Investment to improve resilience

We continue to define operational resilience as the ability of an organisation's infrastructure, and the skills which run that infrastructure, to avoid, cope with and recover from, disruption

[71] Ofwat, Assessing-base-costs-at_PR24, February 2022
[72] Higher rates were largely driven by discolouration programmes which have now been delivered.
[73] UK Government, Section 37, Water Industry Act 1991.
[74] This broadly follows the grading methodology set out in UKWIR, Review of water mains serviceability indicators and condition grading: Volume II – mains condition grading, 2006

in its performance. We provide funding to improve resilience through both our base and enhancement allowances. For PR24, we will retain the resilience investment category under enhancement, but have refined our definition as set out below.

Our base expenditure allows companies to deliver resilient services day-to-day. Our base allowance has been sufficient for companies to improve asset health metrics historically.[75] We are considering how we may evolve our monitoring approach to provide a richer picture of operational resilience and asset health risks going forward, as proposed in our recently published operational resilience discussion paper.[76] We expect companies to continue to make improvements in resilience through good practice asset management[77] and through asset and operational interventions. Companies have made these improvements within base cost allowances in the past, including offsetting the in-period impacts of climate change, and in most cases we expect them to continue to do so in the future.

We provide funding for companies to enhance resilience in several areas. Water resources management plans and drainage and wastewater management plans will make a significant contribution to enabling companies to manage hazards, for example, related to droughts and sewer flooding respectively.

Expenditure on the delivery of the Security and Emergency Measures Direction outcomes and Network and Information Systems Regulations will also contribute to improved resilience to security threats and operational incidents. [78] [79] In the UK government's SPS we are expected to support and promote efficient delivery of water company Security and Emergency Measures Direction outcomes and obligations.[80] We are working closely with Defra and the Drinking Water Inspectorate to ensure efficient delivery of companies' legal obligations to protect against the wide range of new security threats and preparedness requirements, as part of Defra's Protective Security Guidance and Emergency Planning Guidance. We expect maintenance and replacement of existing security assets and systems to modern equivalent standards to be provided through base allowances. Enhancement allowances will cover new designations and step changes to a new improved level of service.

We recognise that WRMPs, DWMPs and the Security and Emergency Measures Direction do not cover managing increases in all hazards companies are exposed to, and set out within the draft methodology that companies can request investment under the resilience

[75] Also, where necessary, our cost adjustment claim process allows a company to provide evidence on the need to make an adjustment to our allowance due to an individual circumstance or where the historical cost base does not reflect future needs.
[76] Ofwat. 'Operational resilience discussion paper', April 2022.
[77] We set out our expectations for asset management in our 'Asset management maturity assessment – insights and recommendations report', September 2021.
[78] UK government, 'Water Industry Act 1991: Section 208', February 2022.
[79] Department for Digital, Culture, Media & Sport, Security of Network & Information Systems Regulations (NIS Regulations), April 2018.
[80] Defra, 'The government's strategic priorities for Ofwat', March 2022.

enhancement line to manage increasing risks from hazards that are beyond their control and not covered by other enhancement areas.

Companies requested that we widen our definition of risk qualifying for resilience enhancement to include risks poorly understood previously.[81] Understanding risks has always been part of the water companies statutory obligations and inherent in the service commitments companies make to their customers. We therefore do not consider we should widen our definition where companies have poorly understood risks. Funding to manage existing risk from all hazards is through base expenditure allowances, regardless of how well companies have understood the risk previously.

Companies also requested that investment be allowed where there is changing acceptance/acceptable standards of risk, for example if customers can be shown to view interruptions to supply above a set duration as unacceptable. While we agree that it is reasonable to include investment associated with a changing risk appetite within resilience enhancement where this is linked to hazards outside a company's control, most changes in risk levels will be reflected in the level of performance commitments, for example in interruptions to supply. We therefore consider that where companies propose to change their level of risk, they should, as a minimum, already be meeting their relevant performance commitments and propose stretching performance from base expenditure. The change in risk appetite must be a priority for both customers and the board, with support for the cost of risk reduction measures, both as a stand-alone package of measures and when set in the context of overall bill impacts.

In all cases consideration will need to be given to overlaps with base, and investment proposals must meet the seven key requirements set out below.

The revised resilience enhancement line definition therefore covers investment to manage increasing risks, or changing acceptance/acceptability of risk, from hazards that are beyond their control and not covered by other enhancement areas.[82]

Affinity Water, Thames Water and United Utilities requested a clearly defined/definitive list of hazards, as well as clarity as to which hazards can be included as resilience enhancement. We think providing a definitive list of hazards could narrow the focus of company approaches to managing risk and take ownership away from them. Companies should be identifying a broad range of hazards through their integrated resilience frameworks, and setting out which hazards they believe to be outside of their control. We also note that there are industry

[81] Anglian Water, Southern Water, Thames Water, Welsh Water, Wessex Water
[82] This should be from the customer perspective, in relation to risk not fully captured by existing performance commitments. The changing customer acceptance of risk and customer engagement for the proposed investment should be robustly evidenced.

documents available which provide lists of hazards that can be considered, although these should not be considered exhaustive. [83,84]

Example hazards include, but are not limited to source water pollution, fluvial or coastal flooding of company assets and mitigating failures of other infrastructure systems such as power networks. It is essential that the company fully sets out the hazard the investment is addressing. This investment category does not cover the failure of assets that are managed through maintenance. These are funded through base costs and are not within scope.

Northumbrian Water, Portsmouth Water and South East Water queried how the slow impacts of climate change are dealt with, such as the impact of climate change on distribution mains renewals. Companies have dealt with many of the maintenance impacts of climate change to date within base, while still managing to deliver service improvements. DWMPs and WRMPs enable assessment of the impacts of climate change on flooding, storm overflow spills and droughts, and elements of resilience enhancement will also account for climate change, using fluvial and coastal flood maps which incorporate climate change impacts. As set out in our base cost consultation, the broader climate change impacts on capital maintenance are less clear.[85] To date, companies have found it difficult to evidence that a step change in capital maintenance is required due to climate change. However, where evidence can be provided the cost adjustment claims can be used to request additional investment.

To provide greater clarity on our expectations for resilience, we expect investment plans for enhancing resilience to:

- be based on a clear and systematic risk assessment process that shows the investment is a priority.[86] This process should be set within a corporate risk management process and thus be aligned to drinking water safety plans where applicable;
- assessments should be data driven. Expert judgement is only used where necessary and the uncertainty in any assumptions is tested;
- risk assessments must address specific relevant hazards, and investments should be cost beneficial, and represent 'best value';
- optioneering must consider all types of mitigations including– resistance; reliability; redundancy; respond and recover (the 4Rs). Companies should be clear how solution options and the preferred solution have been robustly assessed and selected.
- evidence must be provided of the consideration of partnership approaches to establish that the overall management of 'system of system' risk is efficient, and financial contributions appropriately set. For example, any investment plans related to power supply resilience should be developed with the involvement of the Distribution Network

[83] Cabinet Office report, 'Keeping the Country Running: Natural Hazards and Infrastructure', 2011
[84] UKWIR 'Resilience Planning: good practice guide, 2013'
[85] Ofwat, 'Assessing base costs at PR24', December 2021.
[86] Companies should also have addressed any actions identified in their PR19 resilience action plans.

Operator (DNO) and flood resilience schemes developed in collaboration with the relevant Risk Management Authority (RMA), as set out in the EA and Ofwat's Joint Approach[87];
- potential impacts on common performance commitments should be assessed and accounted for. Where none can be determined, material investments should have a customer protection mechanism based on either outcomes or outputs; and
- where investments mitigate multiple risks, the costs should be proportionally allocated to the appropriate cost category, including base maintenance.

Investments should be prioritised and promoted based on an understanding of the current level of risk, how this changes under the proposed investment and compares to the risk appetite of customers and the company's board. We expect companies to have a clear line of sight between their organisational objectives, resilience planning framework, planned level of service, and requested investments and operational practice. Due to the discretionary nature of these investments, we expect companies to have the support of customers and, where appropriate, have an associated price control deliverable. The investments requested should be prioritised and affordable.

We have provided guidance to companies on developing long-term plans and common planning scenarios.[88] Companies should be clear on how any resilience enhancement investments interact with other aspects of its long-term plan, and evidence that it has fully explored any synergies.

Hafren Dyfrdwy, Severn Trent Water and SES Water challenged whether a data driven approach was appropriate for forecasting risk with a very low probability, specifically challenging the availability of appropriate data on low probability high impact events. We consider it is important that risks are quantified where possible. Evidence is often available on low probability events given the scale of water company assets. We understand that there are challenges to quantify the risk of some rare events or events that have never happened. In such circumstances expert judgement could be used, but companies should undertake robust sensitivity testing of any assumptions, and any uncertainty should be reflected in adaptive plans.

Optioneering should consider options that can support all types of risk mitigation, including provision of redundancy (eg improved supply flexibility, or optimised storage), as well as resistance, reliability, and respond and recovery measures.

Companies should consider and evaluate the costs and benefits of redundancy options alongside resistance measures (eg provision of flood protection), reliability measures (eg Uninterruptible Power Supplies, backup generators), or respond and recovery measures (eg remote stop/start capability, availability of critical spares or increased emergency response

[87] Ofwat, Environment Agency, 'FCERM – Draft joint approach (ofwat.gov.uk)' , June 2022.
[88] Ofwat, 'PR24 and beyond: Final guidance on long-term delivery strategies', April 2022.

crews). Companies should consider and evaluate the costs and benefits of all types of options to determine which offers best value.

Where the intervention also addresses hazards within company control, and/or impacts on performance commitments, costs should be proportionally allocated between base and enhancement, impacts on performance quantified, and an adjustment made to the company's performance commitments.

It is important that resilience enhancement is not used to make up for previous under investment. Therefore, we expect companies to ensure that existing systems are well maintained and fully operational to design standards, with all previously provided redundancy available (eg standby pumps), prior to requesting additional enhancement funding. Similarly, where resilience is enhanced by providing greater levels of redundancy (or any of the other of the 4Rs), we do not expect companies to diminish the gains made by lessening levels in other areas (in this example the resistance, reliability or response and recovery of the system). For example, we do not expect increasing levels of redundancy to be accompanied by lower maintenance levels that result in increasing asset failures. In both cases, we may require assurances that systems are being managed at previous levels of resilience and will continue to be managed at the enhanced level of resilience being funded.

4. Delivering service improvements to customers and the environment from expenditure allowances

We expect companies to set out business plans that will efficiently deliver a transformation in performance and meet the long-term requirements of customers, communities, and the environment in line with their legal duties. Performance commitment levels (PCLs) quantify the service levels companies are proposing to deliver for customers and the environment.[89]

Companies need to propose ambitious plans that demonstrate the sector's credibility following increased scrutiny from customers and other stakeholders. Companies should demonstrate ambition to deliver a transformation in performance levels alongside affordable bills. We expect companies to deliver improved performance through base expenditure allowances. But we recognise that companies will require enhancement expenditure to deliver part of their performance transformation.

We specifically expect companies to challenge themselves to improve performance efficiently through:

- identifying opportunities to deliver stretching levels of performance from their base expenditure allowances; and
- ensuring they maximise the benefits delivered by their statutory and non-statutory investment programmes across all areas of performance.

Companies should clearly articulate how they have assessed their capability to transform their performance and determined the associated efficient delivery costs. Companies should challenge themselves considering their performance relative to others and in the context of historical performance improvements and future opportunities to deliver more. Opportunities such as innovation and smarter use of data should enable companies to deliver more for customers, communities, and the environment.

This section explains how we will assess company proposals and ambition, and set the PCLs an efficient company can deliver through our efficient expenditure allowances, at PR24.

4.1 Our final methodology policies

We will adopt the following approach to determine if company business plan proposals represent the performance levels we would expect an efficient company to deliver through our efficient expenditure allowances:

[89] For further discussion of performance commitments and outcome delivery incentives, see Chapter 5 of the main document, Appendix 7 and Appendix 8.

1. We will determine if the level of performance deliverable from base allowances is set on a company specific or common sector level (considering where appropriate the influence of historical enhancement expenditure). See Section 4.4.1 for further detail.

2. We will identify the baseline, 'year 0' position at 2024-25, that we will expect companies to deliver improvements from. See Section 4.4.2 for further detail.

3. We will forecast the level of performance improvement we expect to be delivered through our efficient base expenditure allowances from the baseline position. This will account for the overall level of stretch expected across all performance commitments from base expenditure. See Section 4.4.3 for further detail.

4. We will adjust performance commitment levels (PCLs) from the level delivered by base allowances to account for impacts of enhancement expenditure to avoid customers paying twice for the same performance improvements, where necessary. This will include consideration of the:
    i. influence of historical enhancement expenditure; and
    ii. performance improvements we would expect an efficient company to deliver from our efficient enhancement expenditure allowances for the 2025-30 period.

    See Section 4.4.4 for further detail.

5. We will calibrate the level of performance expected from efficient expenditure allowances to ensure it is achievable. See Section 4.4.5 for further detail.

When applying the approach outlined above, we will:

- benchmark performance improvements proposed from efficient enhancement expenditure between companies;
- ensure PCLs reflect the requirement to deliver government targets and statutory requirements;
- continue to incentivise companies to improve performance over the long term, while returning benefits of improved performance to customers in a timely way; and
- maximise the use of outturn performance data to inform the setting of PCLs.[90]

We expect companies to:

- deliver improvements from their efficient base expenditure allowance;
- consider their level of performance relative to others when identifying the levels of improvement they can deliver from efficient base expenditure allowances;

[90] As stated in our draft methodology, our forecast of performance levels expected to be delivered from base. expenditure will be subject to change until final determinations where we will have four years of outturn data for existing performance commitments.

- identify opportunities to deliver improved and transformed performance;
- present performance improvements that represent best value over the long term;
- identify efficient costs to deliver transformational performance;
- account for opportunities to innovate and make smarter use of data; and
- reflect customer views and consider the expectations of other regulators, [91]
- propose additional cost drivers in our base cost models to capture regional factors that make it more or less challenging to meet a common performance level. If this is not feasible, companies can submit compelling cost adjustment claims.[92]

4.2 Changes from our draft methodology

The key changes to our draft methodology are as follows:

- we will publish historical performance data sets for PR24 performance commitments in early 2023 where available to enable all companies to challenge their PR24 improvement proposals on a consistent basis;
- we will collect and publish information on the influence of historical enhancement expenditure on the historical performance trends for the PR24 performance commitments in 2023. This will help to further understand the future levels of performance that can be expected to be delivered from efficient base expenditure allowances;
- we expect to set performance commitment levels for sewer collapses and mains repairs on a company specific basis but will consider if these performance levels should trend over time to a common level. This will be based on the information we have available to assess at draft determinations;
- We expect to set our performance expectations for unplanned outage performance from base expenditure at a common level; and
- we expect to set the water and wastewater performance expectations from base expenditure for both operational greenhouse gas emission performance commitments and storm overflows on a company-specific basis.[93]

4.3 Stakeholder views

The Consumer Council for Water (CCW) are supportive of our proposed approach. Most companies raised concerns regarding expectations of performance improvements. We provide a summary of the feedback below.

[91] We discuss the expectations of the Environment Agency, Natural England, Natural Resources Wales and the Drinking Water Inspectorate further in section 5.
[92] See section 2.4.3 for more details on the cost adjustment claim process. Note under exceptional circumstances companies can propose an adjustment to performance levels if supported by customers, see section 4.4.5.
[93] We discuss our approach to operational greenhouse gas emissions and storm overflows further in section 5.

- Most companies were concerned about unrealistic expectations of performance improvements deliverable from base cost allowances.
- Ten companies stated that either a common level should not be the starting assumption for developing PCLs in general or for specific performance commitments. Companies suggest that this is due to variation in operating environments, differing customer priorities, historical enhancement and factors not included within the base expenditure cost models.
- CCW agreed that baseline performance for 2024-25 should be on the basis that the PCLs set at PR19 have been achieved. They considered a high evidential bar should be set for moving from this position and adjusting base costs or performance expectations for the 2025-30 period. CCW stated it was clearly not in customers interests to pay twice for the same performance improvements.
- Several companies stated that PR19 PCLs should not be assumed as a baseline for PR24 performance improvements because they considered the PR19 final determination to be overly challenging.[94]
- The Environment Agency stated concerns that companies are not delivering the performance improvements from base expenditure allowances that they would expect.
- Several companies stated that at present the methodology provides insufficient detail of the approach to setting PCLs. They state that early sight of PCLs would be needed to ensure an effective business plan assessment process.[95]
- Eight companies stated that expectations of improvements from base expenditure should be captured in the productivity challenge we set. They stated our proposed approach double counts productivity improvements by assuming both improvements in cost efficiency and performance can be delivered.
- The Environment Agency and Natural England stated companies should not gain 'reward' for delivering statutory obligations.

4.4 Our final decisions and reasoning

This sub-section provides further detail on our approach to setting PCLs an efficient company can deliver through our efficient expenditure allowances, including consideration of stakeholder views.

4.4.1 Setting performance commitment levels on a common or company specific basis

In response to our draft methodology, several companies challenged the setting of PCLs on a common basis because of factors not captured in the base cost models, such as regional

[94] Affinity Water, Anglian Water, Northumbrian Water, South Staffs Water, South East Water, Wessex Water and Yorkshire Water stated this.
[95] Anglian Water, Thames Water, Wessex Water, Yorkshire Water and SES Water stated this.

climate and network configuration. Several companies specifically challenged the setting of common levels for individual performance commitments.[96]

We continue to consider that PCLs should be set on a common basis where possible. This is particularly important for performance commitments relating to customer service and reducing the environmental impact of water companies. There are significant benefits from setting common PCLs. Common PCLs aid comparison across companies, helping to set efficient and stretching performance, and make expectations clear across the sector. We also consider that customers should not expect varying levels of service across key performance commitments depending on the region they live in.

Our base cost models account for a range of regional factors as they include explanatory variables that cover key exogenous factors that impact companies. Some companies therefore receive a higher expenditure allowance than others in part because of the additional challenges they face in delivering services to their customers. Adjusting performance levels for the same regional factors that are accounted for by our base cost models would therefore double count the impact they have. We will consider setting company-specific performance commitment levels when there is compelling evidence that performance is materially affected by an exogenous factor not captured in our cost models and/or differences in historical enhancement expenditure allowances.

Our approach continues to provide a mechanism for companies to propose cost adjustments where they consider they are unable to deliver a common level of performance with our efficient cost allowance. We expect companies to present compelling evidence to demonstrate there are exogenous factors outside of our cost models that make it challenging to deliver a common level of performance. This evidence could be used to support: (i) alternative cost models that include these factors; or (ii) cost adjustment claims.[97]

For avoidance of doubt, even when we consider base expenditure delivers a common level of performance, the final PCL may be company specific after we have accounted for government and statutory requirements, the impact of enhancement expenditure over the 2025-30 period on performance, customer views and regulator expectations.

For each PR24 common performance commitment, the table below identifies whether we expect companies to deliver a common or company specific level of performance for customers and the environment from our efficient base expenditure allowance.

[96] Including as follows: Sewer flooding performance commitments (United Utilities, Dŵr Cymru), customer contacts about water quality (Anglian Water, South West Water, United Utilities), water supply interruptions (Anglian Water, SES Water), mains repairs (SES Water, Wessex Water) and sewer collapses (Wessex Water).
[97] See section 2.4.3 for details on the cost adjustment claim process.

Table 4.1: Expectations of common or company specific level of performance from our efficient base expenditure allowance for common PR24 performance commitments[98]

Common performance level	Company specific performance level
Water supply interruptions	Leakage
Internal sewer flooding	Per capita consumption (PCC)
Pollution incidents	Business demand
Unplanned outage	Bathing water quality
Serious pollution incidents	River water quality (phosphorus)
Compliance risk index (CRI)	Biodiversity
Discharge permit compliance	Mains repairs
Business customer experience in Wales[99]	Sewer collapses
Customer contacts about water quality	Operational greenhouse gas emissions - water[100]
External sewer flooding	Operational greenhouse gas emissions – wastewater
	Storm overflows

In response to our draft methodology, Southern Water questioned the transition from company specific PCLs at PR19 to common PCLs at PR24. The company say that we should make allowances for companies to set company specific glidepaths to a common level and detail how these will be set in the final methodology.

We will review the timescale over which we expect companies to achieve a common PCL as part of our draft determinations for PCs that we set on a company specific basis at PR19. At draft determination we will have an additional year of outturn performance data and company business plan forecasts to inform our decision making. We expect poorly performing companies (relative to other companies) to propose how they intend to transform their performance. Companies performing at or close to the frontier should identify opportunities to deliver further improvements. We note that for customer contacts about water quality the Drinking Water Inspectorate (DWI) has issued updated guidance in December 2022 regarding the reporting of customer contacts.[101] We have asked companies to estimate the impact of this change in reporting and we will evaluate restated company data and company forecasts

[98] Note we do not include C-MeX, D-MeX and BR-MeX in this table as it is not necessary to set PCLs for these performance commitments based on their current definitions. We plan to consult on these performance commitments prior to our draft determinations.
[99] We currently expect to set PCLs for Business customer experience in Wales on a common basis for the Welsh companies. However, we will review this assumption as we work with stakeholders in Wales to develop the design of this performance commitment
[100] For further discussion of operational greenhouse gas emissions both water and wastewater see section 5 and Appendix 7 – Performance Commitments, section 4.
[101] DWI, 'Information Letter 04/2022 Revised', December 2022.

to determine if a common level is appropriate when setting PCLs at the PR24 draft determination.

Hafren Dyfrdwy stated in its response to the draft methodology that it is the smallest water and sewerage company with low absolute numbers of actual incidents. Therefore, it may require company specific PCLs for some performance commitments.[102] The company should provide compelling evidence to demonstrate why a company specific level is required. We will review any such submissions at the PR24 draft determination.

In our draft determination we stated that we wanted to consider further outturn performance data to determine if it is appropriate to set the performance level delivered through base expenditure for asset health performance commitments on a common or company-specific basis. Wessex Water specifically responded that mains repairs and sewer collapses should be set on a company specific basis as historical company glidepaths had not been aligned. SES Water responded that mains repairs should be set on a company specific basis due to the linkages with the leakage performance that is also set on a company specific basis.

We are proposing that mains repairs and sewer collapses will be set on a company specific basis. However, we intend to review the performance data available at PR24 draft determination (eg 2022-23 outturn and company forecasts) to understand if performance should trend to a common level over time. For unplanned outage we expect to set our performance expectations from base expenditure at a common level. All but one company has a common PCL for 2024-25 and all companies met their PCLs in 2020-21 and 2021-22.

4.4.2 Setting the baseline for PR24 performance improvements

Several companies suggested that PR19 was overly stretching in response to the draft PR24 methodology. Companies therefore stated that assuming PR19 PCLs would be delivered as the baseline for PR24 performance commitment levels (PCLs) would compound this issue.

Performance across the sector is mixed as described in our 2020-21 service delivery report and 2021-22 water company performance report. Overall, companies met 61% of PCLs across water and wastewater for the performance commitments proposed as common performance commitments at PR24.[103] In some key areas we have observed companies responding to the challenge set out at the 2019 price review. For example, the 2021-22 water company

[102] This was the case for pollution incidents at PR19.
[103] Ofwat analysis of company performance for currentPR19 performance commitments that are comparable to the PR24 performance commitments. These are water supply interruptions, internal sewer flooding, pollution incidents, unplanned outage, compliance risk index, discharge permit compliance, customer contacts about water quality, external sewer flooding, leakage, mains repairs and sewer collapses. This data is taken from company annual performance reporting. Company performance for the majority of these performance commitments is summarised in Ofwat, 'Water company performance report 2021-22', December 2022 and Ofwat, Service and delivery report 2020-21, November 2022.PCC is excluded from the analysis due to the reasons stated in our 2020-21 service delivery report.

performance report shows that all companies met their PCLs for mains repairs and unplanned outage. But progress is not being made at the pace set out in PCLs in other areas. For example, the report highlights that only four out of 11 wastewater companies met their internal sewer flooding PCL in 2021-22.[104]

It is not in the best interests of customers and the environment to consider reducing the level of challenge at PR24 because companies are failing to improve from continued unacceptable levels of performance in some areas. In addition, the benefits of capital projects and improved ways of working should yield further benefits later in the 2020-25 period for companies delivering performance improvements.

We do not want to risk compensating individual companies for poor performance through customers paying twice for performance improvements. We therefore retain the expectation that companies will meet the PCLs they have been funded to deliver at PR19. We will use 2024-25 PCLs as the baseline position for PR24 PCLs, where applicable.

We continue to consider it may be appropriate to adjust the baseline position for individual performance commitments in the case of material under or outperformance across the sector. In its response, Wessex Water disagreed with our position of evidencing underperformance by looking at exogenous factors. They think this overlooks the concern that PCLs may be too stretching. It is important that we understand the drivers of under and overperformance to have confidence that any adjustments made are in the best interests of customers and the environment. Comments from CCW support this, stating that a high evidential bar is required for deviating from using PR19 PCLs as the baseline for PR24 PCLs.

Where PR19 PCLs do not exist for a performance commitment, we intend to establish the baseline position based on available data sources, such as shadow performance reporting, company forecasts and related historical data sets. We recognise that it may be necessary to request companies to back-cast data for these performance commitments.

For company-specific PCLs and bespoke performance commitments, we are mindful of greater asymmetry of information due to the absence of comparator data. Companies need to provide sufficient and convincing evidence that their proposed baseline position is appropriately justified. The baseline position should be set in the context of company outturn performance, forecast improvements and the PR19 PCL if appropriate.

4.4.3 Setting levels of performance improvement expected from base expenditure

Several companies stated that we should not expect performance improvements from base expenditure in response to our draft methodology. The Environment Agency also expressed

[104] Ofwat, 'Water company performance report 2021-22', December 2022.

concern that companies are not delivering the performance improvements expected from their efficient base expenditure allowances. Most companies were concerned about unrealistic expectations of performance improvements deliverable from base.

Companies need to deliver a transformation in performance to ensure they can meet the long-term requirements of customers and the environment. To deliver this transformation we expect companies to challenge themselves to deliver stretching levels of performance from their base expenditure allowance. Companies need to propose ambitious plans that demonstrate the sector's credibility following increased scrutiny from customers and other stakeholders. Water UK suggested that bottom-up engineering assessments should be considered as well as using top-down econometric models to understand more fully what base buys. We expect companies to undertake bottom-up analysis as part of their business planning process to identify opportunities to deliver more from base expenditure. But top-down econometric cost models are vital as they can capture interactions and trade-offs between different costs, reduce the risk of setting an unachievable cost challenge, and reduce information asymmetry.

Several companies stated that the draft methodology provided insufficient detail on PCL setting and that early sight of PCL setting was needed to support business plan development.[105] We expect to use all information available at PR24 final determination to set an appropriate level of performance to be delivered through base allowances. Therefore, our forecast of performance levels expected to be delivered from base expenditure will be subject to change until this point of the process where we will have four years of outturn data for existing performance commitments.

Providing an early view of PCLs may influence company business plan submissions. Companies may use this information as the benchmark, and not stretch themselves to go further. This may reduce the value of company forecasts as a measure of what individual companies consider can be delivered through base expenditure. It is important that companies take ownership of their performance and challenge themselves to innovate to maximise the benefits of what can be delivered for customers and the environment. Companies should be able to draw upon the knowledge of their asset base, outputs from studies and trials they have undertaken to produce ambitious plans. We therefore conclude that revealing a detailed expectation of performance levels expected in our final methodology is not in the best interests of customers and the environment. We do, however, set a performance expectation for a subset of performance commitments in Table 4.2 below.

[105] Anglian Water, Thames Water, Wessex Water, Yorkshire Water and SES Water stated this.

Table 4.2 Performance commitments for which we are setting a performance level to be delivered through base expenditure in the final methodology[106]

Performance commitment	Common performance level to be delivered through base expenditure
Serious pollution incidents	Zero incidents by 2025-26 with the zero level maintained throughout the 2025-30 period.
Discharge permit compliance	100% compliance
Compliance risk index	0.00

For the remaining performance commitments, we will consider the following information to assess company proposals and determine stretching performance improvements that can be delivered from base expenditure:

- PCLs set at PR19;
- historical outturn performance at an individual company and sector level;
- historical expenditure included in the base expenditure models at PR24;
- company forecasts of performance levels that can be delivered from base expenditure;
- performance levels of efficient companies; and
- the opportunity for transformational performance improvements (eg digitising sewer networks).

For performance commitments with company specific PCLs, we will consider the information listed above when assessing if companies are proposing an appropriate level of stretch. We expect companies with lower levels of performance relative to the rest of the sector to challenge themselves to make significant improvements to their performance levels. We expect companies performing at or close to the frontier to continue to seek opportunities to deliver improvements in performance. Where companies consider their ability to deliver performance is impacted by company specific factors, they should provide compelling evidence of the impact on them and other companies in their business plan submissions. We will also consider whether a glidepath towards a future common level of performance is justified for each performance commitment set on a company specific basis.

We intend to publish a historical performance dataset in early 2023. This dataset will include performance commitments with a confirmed definition and cover the 2011-22 period. We will use this data to determine PCLs at PR24, and companies can use this data to support the development of their business plans.

[106] For these performance commitments there may be situations where enhancement funding allowances are made in response to a changing external requirements such as a revised discharge permit consent.

4.4.4 Accounting for the impact of enhancement expenditure on performance

A common theme in company responses to our draft methodology was that most historical performance improvements had been driven by enhancement expenditure rather than base expenditure. They do not think this is adequately accounted for in the PR24 approach. A report by Reckon commissioned by Anglian Water, United Utilities and Wessex Water proposed the collection of additional data to further understand the influence of enhancement expenditure on performance trends.[107]

We intend to request further data from companies to identify as far as is possible the degree to which historical performance improvements have been driven by historical enhancement expenditure. We will publish this data allowing companies and ourselves to adjust historical performance trends to account for the influence of historical enhancement expenditure. We will also use this data to identify where it may be necessary to set company specific PCLs for individual companies to reflect the impact of historical enhancement investment.

We will additionally adjust PCLs to take account of future enhancement expenditure allowances using the data included in business planning tables. Many enhancement investments, particularly best value ones, will deliver additional benefits that will improve performance across a range of performance commitments. We expect companies to identify and quantify these additional benefits in their PR24 business plans to enable us to account for them when setting PCLs. This will protect customers from paying twice for the same performance improvements. Including the benefits of statutory investment plans in the setting of PCLs will help to ensure that companies are not 'rewarded' for delivering statutory obligations. This was a concern highlighted by both the Environment Agency and Natural England.

Final PCLs will also account for relevant statutory obligations and long-term performance targets. Where company plans do not account for these elements adequately, we will intervene to adjust proposed performance levels for individual companies and across the sector where necessary.[108]

South East Water referenced situations where enhancement expenditure was necessary to avoid an erosion in performance due to external factors or to align levels of resilience between companies. We expect company enhancement business cases to provide sufficient and convincing evidence to justify investment as enhancement. The business case should also account for the level of impact it has on all related performance commitments. We would

[107] Reckon, The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements, September 2022.
[108] In the case of national level targets, it may be necessary to adjust performance levels for multiple companies to reduce risk of non-delivery.

expect to challenge companies where significant expenditure appears to result in no benefits for customers or the environment or to make up for previous under investment.

Some companies referenced the need for enhancement expenditure to deliver performance improvements, referencing enhancement allowances made by the CMA for leakage reduction. Northumbrian Water additionally stated that the incremental costs of delivering performance improvements needed to be accounted for.

Overall, the CMA found that our performance commitment levels were achievable from base expenditure at a sector level, with the exception of leakage.[109] The CMA recognised that companies had in practice been able to improve service performance by new techniques and/or improving efficiency without associated cost increases. While the CMA made enhancement allowances for leakage reduction, these were lower than company requests reflecting inefficiency of the requested costs. For other performance areas such as water supply interruptions, sewer flooding and pollution the CMA made no adjustments to allowances for the delivery of our proposed performance levels.

We therefore still consider that companies have opportunity to deliver more from base expenditure and should challenge themselves to do so. Companies delivering a lower level of performance to customers and the environment relative to the rest of the sector should have even greater opportunities to deliver such improvements.

For all performance commitments, we expect companies to clearly articulate how they have assessed their capability to transform their performance and determined the associated efficient delivery costs. We expect companies to clearly account for what performance levels can be delivered through efficient base expenditure allowances.

We intend to set PCLs for bespoke performance commitments following an analogous method to that adopted for common performance commitments. For bespoke performance commitments, we recognise the information asymmetry between ourselves and the requesting company. We therefore expect companies to provide sufficient and convincing evidence of historical performance levels, the level of performance improvements delivered by base expenditure and the impact of enhancement expenditure.[110]

4.4.5 Assessing the overall level of stretch

Most companies were concerned about unrealistic expectations of performance improvements deliverable from base cost allowances. We do not consider that our approach as outlined above will result in unrealistic performance expectations. Our approach will

[109] Competition and Markets Authority. 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations, final report', March 2021, pp. 629-655.
[110] For further discussion of bespoke performance commitments, see Appendix 7: Performance commitments.

challenge companies to deliver a transformation in performance and at PR24 we will set stretching but achievable PCLs.

We expect an efficient company will meet its PCLs on average over time. Except for performance commitments where we expect compliance with statutory obligations, we are not setting PCLs as minimum standards of performance. This means that in some years, companies may not meet all their PCLs. This could be because of poor performance, but it could also reflect short-term operational priorities or the impact of external events. Our outcomes based regime allows companies to optimise how best to deliver the overall service package. This drives better outcomes than an overly prescriptive approach as it provides scope for companies to innovate, and incentivises them to go further where this will deliver value. This is supported by outcome delivery incentives that reflect customer valuations for improved outcomes and return funding when some outcomes are not delivered.

We will set specific PCLs in companies' draft and final determinations. As discussed in Section 4.4.3, we do not set PCLs in the final methodology as we want to use the outturn performance data available at draft and final determinations and ensure companies take ownership of developing ambitious performance improvement programmes.

We will assess the cost-service risk balance for individual performance commitments and in the round in our PR24 determinations. We have several tools that we will use to achieve an appropriate stretch, including setting PCLs aligned with what we expect an efficient company to deliver through their expenditure allowances.

Several companies commented that our proposed approach double counts productivity improvements by assuming both cost efficiency and performance improvements from base expenditure can be delivered together.[111] We do not consider that this is the case. Some companies have demonstrated that it is possible to be efficient on costs and service performance. For example, over the 2011-2020 period we observed that all cost efficient water companies significantly improved their water supply interruption performance. And Severn Trent Water and Northumbrian Water, both cost efficient wastewater companies, significantly improved their pollution performance over the 2011-2020 period. These improvements were delivered without additional funding beyond base expenditure allowances.[112] It is also not clear that productivity gains are double counted. For example, this will depend on how far quality improvements are accounted for in productivity growth in comparable sectors.

[111] Anglian Water, Dŵr Cymru, Hafren Dyfrdwy, Northumbrian Water, Severn Trent Water, United Utilities, Wessex Water and South East Water stated this.
[112] We have reviewed the performance of cost efficient companies based on our PR19 wholesale base cost models estimated using outturn cost data from 2011 – 2020.

Portsmouth Water and Wessex Water stated the need to account for 'missing' drivers from cost models when setting PCLs.[113] Similarly, both Anglian Water and Yorkshire Water proposed a performance adjustment claim process to enable companies to request a PCL adjustment relating to regional specific factors. CCW stated that a high evidential bar is needed for any company seeking a cost adjustment claim to deliver an expected common level of performance, or a PCL adjustment.

Companies should follow the cost adjustment claim process where they consider they have compelling evidence to show they require an additional cost allowance to deliver their proposed performance levels from base expenditure. We provide further detail of our expectations regarding the quality of submission we expect in Section 2.4.3.

For example, where companies do not consider they can deliver a common level of performance from base expenditure for the common level performance commitments included in Table 4.1, they should identify the efficient additional expenditure associated with delivering a common level through the cost adjustment claim process.

Companies may propose to deliver a company specific performance level in place of a common level under exceptional circumstances. To do this companies should provide compelling evidence that a common level is not justified on the basis of practicality, affordability or customer support. For example, if the additional expenditure associated with delivering a common service level is not supported by customers. In such cases companies should demonstrate that they have engaged with customers and stakeholders and accounted for their views in determining this is the best approach for customers and the environment. Companies should assess any cost savings resulting from the delivery of their proposed performance level and account for these in their base expenditure request. We may use this information to adjust base allowances to reflect the performance level to be delivered.

We provide further detail of our expectations regarding the quality of submission we expect in Section 2.4.3.

4.4.6 Incentivising performance improvements over the long term

Wessex Water stated that using historical data to set PCLs could dampen long term incentives for improved performance. They stated this had practical relevance for setting PCLs for company specific performance commitments. SES Water also stated the difficulty with forecasting PCLs beyond 2030 due to new techniques and technologies.

Our approach must continue to incentivise companies to improve performance over the long term, while returning benefits of improved performance to customers in a timely way. We

[113] For example, this included asset renewals and future reliability requirements that could be expected from companies.

intend to achieve this by reviewing the performance level that can be delivered from base costs at subsequent price reviews to account for new information, such as new technology.

It is important to maintain the incentive for companies to outperform. We compare company performance to performance improvements delivered at a sector level when setting PCLs on both a common and company specific basis. To maintain an incentive for outperformance we therefore would not propose to adopt frontier performance as a basis for determining the level of performance that can be delivered by base expenditure. This allows better performing companies to retain outperformance benefits between investment periods, incentivising performance improvements over the long term.

We expect to incorporate the following data into our assessment at PR29:

- PCLs set at PR24;
- historical outturn performance at an individual company and sector level;
- company forecasts; and
- impacts of enhancement expenditure.

This should provide companies with greater long term regulatory certainty, which should incentivise companies to innovate and improve performance over the long term.

We propose that our starting assumptions for deciding the performance level that can be delivered from base costs at PR29 would be:

- a 'year 0' position equivalent to the PCL for 2029-30, with adjustments made if there is sufficient and convincing evidence of material over or underperformance; and
- a performance improvement trend set less stretching than the frontier company, with glidepaths introduced where necessary.

5. Facilitating efficient investment over 2025-30 and the long term

Companies are responsible for maintaining water and wastewater services, meeting statutory requirements, relevant government targets and customers' needs. This section outlines what we expect from companies at PR24 and how we are supporting and facilitating delivery for the long term. This encompasses:

- planning needs and outcomes over the long term;
- delivering long-term targets quickly and efficiently;
- facilitating efficient long-term investment;
- delivering for customers and environment over the long term; and
- funding of improvements to treatment works under nutrient neutrality guidance in England.

5.1 Our final methodology policies

To **plan needs and outcomes over the long term** we expect companies take account of our feedback in their final strategic planning frameworks (WRMPs, DWMPs and WINEP/NEP). Companies should provide sufficient and convincing evidence that our feedback and challenge has been adequately addressed. We will take the quality of the final strategic planning frameworks into account when assessing company business plan proposals, including how well they align with long-term delivery strategy expectations, the consistency of submissions and whether our previous feedback has been adequately addressed.

Customers should not have to pay twice for the same service improvement. It is for companies to provide sufficient and convincing evidence that the benefits of previously-funded schemes or programmes (including investment agreed during 2020-25 such as green economic recovery) have been appropriately accounted for, so that they do not form part of the future need assessment. Similarly, company assets and systems need to be available and fit for purpose under both normal and peak operating conditions and also meet drinking water quality standards.[114] Company assets should be operated to deliver the levels of resilience that have been funded and are expected of customers.

We expect companies to **deliver long-term targets quickly and efficiently** and when described as an industry target, we expect each company to meet that target by the agreed date. Companies should deliver stretching improvements from base expenditure to support delivery of established long term targets.

[114] The Drinking Water Inspectorate has set out its expectations for long-term planning for the quality of drinking water supplies in DWI, 'Guidance Note: Long term planning for the quality of drinking water supplies', 2022

Given the potential increase in the size of the enhancement programme, it is also important that companies propose investment programmes of a scale that they are confident can be delivered, to avoid unnecessary bill increases at a time when many customers are under financial strain.

Companies should align plans with national government net zero targets, addressing both operational and embedded greenhouse gas emissions in doing so, and prioritising the elimination and reduction of greenhouse emissions before the use of offsets. Companies should seek to minimise the impacts on emissions from their enhancement investment programmes. We introduce a net zero challenge bidding competition to allow additional net zero specific enhancement funding for companies that set stretching targets from base, have emission monitoring and are efficient.

The impact of storm overflows on the health of our rivers is not acceptable. Companies must produce ambitious long-term plans that seek to develop and deliver innovative approaches to reduce harm. Our base allowances fund companies to maintain and operate assets that are compliant with companies' pre-existing legal obligations. We will provide enhancement funding where the targets set by government and the expectations of stakeholders and customers go beyond these requirements.

We expect all companies to plan to deliver the long-term water demand reduction targets for leakage and per capita consumption (as a minimum) on an individual company basis. Where company business plans indicate the sector is not on track to deliver long-term targets, we will intervene to adjust company performance commitment levels to ensure a glidepath that allows these targets to be achieved.

Comparisons of leakage performance across English and Welsh companies indicates that some companies have managed to achieve significantly lower leakage levels than others. Additionally, comparison with Europe indicates that there are countries operating at lower levels of unaccounted for water than England and Wales. We therefore expect companies with higher leakage levels to propose ambitious leakage reductions, going beyond existing national long-term targets.

To support the efficient delivery of demand reductions we expect all companies to consider smart meter installations as the standard meter installation type for residential and business customers. Companies should maximise the benefits available from technology and opportunities to collect increasingly detailed demand data on a near real time basis. We expect companies to provide detailed metering business cases to justify their proposed meter technology, the pace of delivery, the level of smart meter penetration they consider to represent 'full' smart penetration, and details of how they will support customers, including vulnerable customers.

We will provide feedback on company demand reduction proposals through the WRMP24 process and in our PR24 determinations we will adjust companies' proposed PCLs for leakage, per capita consumption and business demand where they lack ambition.

Companies should include proposals to reduce phosphorus pollution and, if relevant, make progress towards UK government targets and Welsh government priorities, in their WINEP/NEP programmes. We are keen to encourage water companies to meet these phosphorus targets sustainably and efficiently to improve river water quality as quickly as possible and introduce a related performance commitment with this aim. The introduction of an outcomes-based approach for WINEP/NEP will also give companies flexibility in how companies meet environmental targets quickly and efficiently.

We want to **facilitate efficient long-term investment** with companies using the appropriate financing and delivery vehicles for large scale investment. We provide clarity for how we expect multi-AMP investments to be funded and tracked. Companies can also request material preparatory or development work costs to manage clearly defined risks identified through long-term adaptive planning.

We recognise that to meet the ambitions of PR24 will require a substantial increase in investment, putting pressure on the delivery of the PR24 enhancement programme. We are aware that, to date, many companies have underspent their PR19 enhancement allowances, with companies, on average, having only spent 68% of their forecast enhancement cost allowance during the 2020-2022 period.

We want companies to ensure that they can deliver their proposed PR24 programmes. To support delivery, we will maintain and expand the scope of the transition expenditure programme at PR24. Through this we will allow companies to bring forward some planned investment from 2025-2030 to this price control period. For PR24, we will allow transition funding for 2023-24 (and 2024-25) to allow companies to make an early start on schemes included in a final WRMP24 or statutory requirements set out in final PR24 WINEP/NEP submissions, where early delivery helps reduce overall delivery costs in 2025-30 and helps earlier delivery of customer and environmental benefits. To allow transition expenditure we will require companies to have addressed any issues we have identified with the proposed schemes. We have also expanded the scope of the transition funding programme to cover investment which relates to a scheme we have approved for transition funding prior to the price control determination process, for example through Defra's accelerated process.[115] We will assess the efficiency of transition expenditure as part of the PR24 draft and final determinations, alongside other PR24 expenditure. As such these costs will be subject to the same scrutiny and challenge as all other enhancement costs.

[115] The accelerated process is an initiative from Defra to accelerate additional infrastructure investment delivery in 2023-24 and 2024-25 that would provide benefit for customers, communities and the environment. Defra asked companies to address water resilience (supply and demand), storm overflows and nutrient neutrality.

We want to ensure that company boards have challenged and satisfied themselves that their PR24 plans and the expenditure proposals within them are deliverable and that the company has put in place measures to ensure that they can be delivered. To support this, we will be requiring additional Board assurances on deliverability and supply chain availability.

Companies should **ensure delivery for customers and environment over the long term** by assigning the benefits of enhancement investment to performance commitments (common and bespoke). Where investment is material, and the outcome cannot be easily or directly linked to a performance commitment or investment protected by an ODI, companies should set out price control deliverables (PCDs). Customers should not lose out if improvements are not delivered. If companies fail to deliver improvements then the PCD payments, together with any related ODI underperformance payments and cost sharing arrangements, should return to customers more than the allowed cost of the enhancement, and should reflect any foregone benefits. PCDs should be spread across 2025-30 to reflect expected improvements within the 2025-30 period as well as at the end of the period.

An amendment to the Levelling-up and Regeneration Bill was laid on 18 November 2022, which proposes to create a statutory obligation on English wastewater companies[116] to ensure eligible treatment works achieve the Technically Achievable Limit (TAL) for phosphorus and/or nitrogen if they discharge to designated catchment areas subject to **nutrient neutrality**. If enacted, we expect the entire cost of all TAL upgrades to wastewater treatment works covered by the obligation would be added to companies' PR24 WINEP programmes and funded by water customers generally rather than by developers.

5.2 Changes from our draft methodology

The key changes since the draft methodology are focussed on facilitating deliverability and topics within the delivering long-term targets quickly and efficiently (net zero, storm overflows and demand management), and facilitating efficient long-term investment (transition funding) sub-sections.

Net zero greenhouse gas (GHG) emissions

We provide greater clarity on how we expect the transition to net zero greenhouse gas (GHG) emissions to be funded and incentivised at PR24. We provide further details on the operational GHG emission scopes to be reported in the common performance commitment and that are incentivised through additional funding. We will set the level of performance improvements expected from base expenditure on a company specific basis. We will also expect stretching improvements from base funding especially from companies that have poorer performance levels. We will allow companies to request net zero specific enhancement funding to be considered as part of a net zero challenge on an industry

[116] Companies holding appointments as sewerage undertakers whose areas are wholly or mainly in England.

comparative basis. All impacts of funding on emission levels (base and enhancement) will be accounted for in the PCL.

Storm overflows

The impact of storm overflows on our rivers is not acceptable. Companies must be compliant with their legal obligations, produce ambitious long-term plans and immediately begin to reduce harm from storm overflows, protect public health and improve people's enjoyment of the environment. We expect companies to fully explore innovative approaches to reducing harm, and we will intervene where we consider plans lack ambition.

Since the publication of our draft methodology Defra has published its storm overflows discharge reduction plan.[117] This plan details, for companies in England, targets to reduce the harm from storm overflow discharges to local ecology, improve public health and reduce the frequency of discharges between now and 2050, setting intermediate targets. In Wales, we expect companies to propose storm overflow investments where there is evidence that they will improve river water quality, drawing on the work of the Wales better water quality taskforce.

We expect all companies to set out how they will meet the requirements of the relevant government in an ambitious long-term strategy that seeks to develop and deliver innovative approaches. The long-term plan for storm overflow improvements should be aligned to the plan for commissioning river water quality monitoring to assure these improvements.

We will incentivise companies to reduce the harm from storm overflows through a performance commitment based on the average numbers of spills per overflow. This incentivises companies to deliver improvements through both base and enhancement allowances. There is understandable concern regarding the high levels of spills from storm overflows. Companies should set themselves a stretching company specific performance level, where appropriate, going beyond the initial 2025 target of 20 spills per overflow we proposed in our draft methodology. Companies should provide compelling evidence if they do not consider that they can meet this target by 2025. We will consider this evidence when setting the performance level for 2025 and the expected improvements to be delivered through base expenditure over the 2025-30 period. We expect all companies to provide evidence that the performance levels proposed reflect well-maintained assets compliant with legal obligations and take into account any enhancement investment delivering improvements beyond this.[118]

We expect companies to propose price control deliverables to incentivise more targeted areas of enhancement investment. We expect these to incentivise companies to, for example, focus on improving high priority storm overflows, deliver innovative solutions, or deliver broader

[117] Defra, Storm overflows discharge reduction plan, 22 August 2022.
[118] See section 4 for more details on how we will set performance commitment levels at PR24.

environmental benefits. We will set the balance of financial incentives between the common performance commitments and price control deliverables to reflect risk and the relative priorities of stakeholders.

Demand management

We will intervene to adjust companies' proposed PCLs where these are not forecast to deliver industry level long-term targets.

We expect all companies to consider smart meter solutions as the standard meter installation type. For English companies this is in accordance with the UK government expectations for water resources planning. For Welsh companies our view is that this is in accordance with the Welsh Government's strategic objectives for Ofwat which includes the environment and resilience.

Transition funding programme

We have adjusted aspects of the transition funding programme for PR24. In particular:

- we will allow transition funding for 2023-24 so that companies can make an early start on schemes included in a final WRMP24 or statutory requirements set out in final PR24 WINEP/NEP submission, where early delivery helps reduce overall delivery costs in 2025-30 and helps earlier delivery of customer and environmental benefits;
- we have also expanded the scope of the transition funding programme to cover investment related to a scheme we have approved for transition funding prior to the price control determination process, for example through Defra's accelerated process;
- we will apply a time value of money adjustment to transition expenditure incurred in 2023-24; and
- we will make a midnight adjustment to the RCV at the start of the 2025-30 period (31 March 2025).

We will provide our assessment and view on transition funding allowances at PR24 draft and final determinations. We will apply the PR19 cost sharing rates to expenditure incurred under the transition funding programme.

Deliverability

We provide clarity on the actions we have put in place to facilitate delivery of a substantially increased enhancement programme, including extension of the transition funding programme, introducing long-term delivery strategies, requiring additional board assurance on deliverability and supply chain availability, consideration of alternative delivery routes, and ensuring that if companies do not deliver improvements, they will return to customers more than the allowed cost of the enhancement.

5.3 Stakeholder views

Stakeholders were broadly supportive of our approaches to facilitate efficient investment over 2025-30 and the long term. The key responses received to our draft methodology proposals and any other relevant feedback are as follows.

Planning investment needs and outcomes over the long term

Some companies and several stakeholders welcomed the introduction of long-term delivery strategies into the business planning framework for PR24. Some flagged concerns about how these may be used to identify low-cost programmes and delays to investment. Some also requested us to consider in-period adaptive pathway triggers linked to funding mechanisms.

Delivering long-term targets quickly and efficiently

Net zero greenhouse gas emissions

We received positive stakeholder responses to our approach to incentivise and fund delivery of net zero reductions. There were key areas of feedback that can be summarised as follows.

- Some companies requested further clarity of what operational GHG emission scopes are captured in the common performance commitment and are suitable for enhancement activity funding. Several also suggested that embedded emissions should be included in our PR24 approach to avoid a narrow focus on operational emissions.
- Several companies raised concerns about how we would identify the efficient levels of GHG emission performance. This included how we may use normalisation to identify efficient companies and how we would ensure that those who have proactively tackled GHG emissions may be disadvantaged.
- Several companies wanted more detail on how the impacts of different types of investment would be accounted for in setting the performance commitment levels for GHG emissions.
- Most companies requested further information on how the net zero challenge would work in practice. Several companies also highlighted the need for the process to be proportionate and allow fair treatment of small/water only companies.

Storm overflows

Overall companies responded positively to our PR24 draft methodology consultation. In our draft methodology we proposed to incentivise companies through a performance commitment based on the average numbers of spills per storm overflow, although some stakeholders disagreed with this choice.

Water demand

Most feedback was aligned to sufficiently funding and incentivising companies to deliver demand management activities with a significant focus on smart metering. This included being clearer on the benefits of smart metering for customer engagement and leakage identification and setting targets for smart meter penetration.

Facilitating efficient long-term investment

Multi-period investments

Several responses were received that welcomed our focus on facilitating this type of investment, but a couple requested further detail on how it will work in practice.

Transition funding programme

We received six responses on transition funding and overall, companies and other stakeholders responded positively to the draft methodology consultation. Respondents supported the retention of the transition programme from PR19. They also supported the extension of the transition funding programme to 2023-24, to make an early start on the PR24 statutory requirements set out in companies' final WINEP.

Nutrient neutrality in England

Several respondents to the draft methodology expressed concerns that the policy position set out in the draft methodology is inconsistent with the proposed new TAL obligation subsequently announced by Defra. Other respondents expressed concerns that the UK government's proposed new obligation to upgrade wastewater treatment works (WWTWs) to TAL is potentially not cost beneficial and sub-optimal compared with a catchment-based approach to reducing nutrients.

Delivering for customers and environment over the long term

Several companies welcomed the introduction of PCDs but several also raised concerns about them being set on outputs and limiting companies' flexibility during delivery.

5.4 Our final decisions and reasoning

5.4.1 Planning investment needs and outcomes over the long term

Companies are responsible for maintaining water and wastewater services and meeting customer needs. This also includes meeting statutory requirements and relevant government targets. Planning investment needs and outcomes over the long term is critical in ensuring

that these requirements, targets and needs are achieved in a sustainable and cost-effective way.

The Environment Agency (EA) and Natural England's water industry strategic environmental requirements (WISER), [119] and the Natural Resource Wales (NRW) PR24 National Environment Programme (NEP) Expectations document,[120] give a strategic steer on the environment. WISER explains the statutory obligations on water companies and the regulators' expectations of the water companies, which are translated into the WINEP/NEP. We also support the WISER expectation that where environmental benefit and customer support is demonstrated then companies should go beyond statutory requirements where it is affordable and can deliver the best long-term solution.

We expect companies to have a clear long-term programme of investment to meet drinking water quality needs, with companies' plans clearly setting out the next five years of enhancement interventions. Company plans should take account of the of the Drinking Water Inspectorate (DWI) Guidance Note: Long term planning for the quality of drinking water supplies[121]. We continue to work closely with the DWI and companies across multiple areas of existing and emerging challenges that the industry faces to ensure that company plans submitted at PR24 are good value over the long term. It is for companies to provide sufficient and convincing evidence of the future risks and needs for PR24 and beyond. Aligned with the enhancement criteria we will continue to assess the best option for customers; cost efficiency; and customer protection elements of PR24 proposals.

Long-term delivery strategies

Planning for future needs and delivery of outcomes over the long term is critical in ensuring that these are achieved in a sustainable and cost-effective way.[122] To help facilitate long-term investment planning and outcomes delivery, we have introduced long-term delivery strategies, to be presented as part of companies' PR24 submissions.[123] Anglian Water, SES Water and Severn Trent Water welcome the introduction of long-term delivery strategies and their role in evidencing enhancement investment at PR24. British Water suggests that long-term delivery strategies should help remedy the cyclical investment profile found in the water industry. It also flags concerns that the capacity in the supply chain will be tested if programmes of investment are expanded too dramatically and a rapid escalation can lead to inefficiency and an unsustainable market. The policies we outline in this section aim in part to address these types of issues with a focus on low regret best value investment over long

[119] Defra, Water industry strategic environmental requirements (WISER), May 2022.
[120] Natural Resources Wales, 'NRW PR24 NEP expectations 2022' – draft issued July 2022.
[121] DWI, 'Long term planning guidance for drinking water quality', September 2022.
[122] We discuss the use of outcomes delivery incentives (ODIs) in Chapter 6 and Appendix 8 - Outcome delivery incentives.
[123] Ofwat, 'PR24 and beyond: Final guidance on long-term delivery strategies', April 2022.

time horizons, adaptive planning, and multi-period investments all playing a part to mitigate risks, smooth investment and ensure efficient delivery for customers.

Long-term delivery strategies should set the long-term context for how the five-year business plan and associated investments will deliver for customers, communities, and the environment both now and in the future, over at least 25 years. Companies must take ownership of all their strategic plans to drive the best outcomes in the long term. Companies in Wales should be able to demonstrate that their long-term delivery strategy and five-year business plan reflect the outputs of the collaborative approach in Wales, as well as learnings from wider stakeholder and customer engagement.

Severn Trent Water requested that the assessment of long-term delivery strategies is based on the substance of evidence provided rather than the strict adherence to our guidance. South East Water and South West Water agree that the strategies are welcome but do also flag concerns that strategies could be used to push for low-cost interventions or identify where investment can be delayed. Long term delivery strategies should evidence that proposed investments are scheduled to be delivered at the right time to manage the likely range of uncertainties and risks companies will face in the future in a low regret best value way.

Long-term delivery strategies will form a key part of the evidence to justify the scale and timing of need for enhancement expenditure in 2025-30 and provide early sight of future investments. Long-term delivery strategies will also form part of the evidence base that the investment proposed is the best option for customers in relation to whether operational, phased or modular, or more flexible options may be more appropriate.

Ensuring that the right interventions are made at the right time is key for delivering efficiently both now and in the long term. We expect companies to set out adaptive pathways as part of their long-term delivery strategies to show how they will plan for uncertainty and adapt to changing information. Ensuring companies only propose well-evidenced, low regret investment is key given competing priorities that the industry faces in the short term. Low-regret investments should be flexible, modular and avoid low utilisation interventions where possible.

Low-regret investments are those that can deliver outcomes efficiently under a wide range of plausible scenarios. Each investment does not necessarily have to mitigate every future scenario to be low regret – this is the role of the alternative pathways and associated investments. Low regret also does not mean delaying necessary investment to future periods, or that least cost solutions take precedence over proven best value ones. We expect companies to evidence low-regret best value proposals by showing that the selected investment, and the timing of that investment, is optimal given a wide range of plausible scenarios and their likely occurrence. This includes our common reference scenarios.

Scenario testing and adaptive planning as part of long-term delivery strategies will enable companies to evidence their decision-making in the short term whilst also identifying and planning for future uncertainties over the long term.[124] The sensitivity of enhancement investments to future needs and uncertainty should be explored in business plans.

It is for companies to evidence why an enhancement investment is needed now and to the scale that is proposed in the context of the long term. Where requested investment relates to meeting a future adaptive pathway, the factors influencing the difference between core and alternative pathways should be clear. The timing and measurement of the trigger point should be well-evidenced and clearly relate to the uncertainty or risk being mitigated. Anglian Water, United Utilities and WaterUK request that in-period (2025-30) triggers are considered in particular where these may be linked to future regulatory decisions and policy changes. United Utilities and Anglian Water suggested a mechanism like a two-sided price control deliverable (PCD) could be used make the adjustments. We continue to expect the trigger dates should be focused beyond 2030, where the need for investment is most uncertain. Uncertainty in the immediate short term (2025-30) is much more limited and mitigated through the overall totex and outcomes framework (with base totex allowances accounting for historic management of uncertainty).

Strategic planning frameworks and statutory environmental programmes

Long-term investment plans will be informed, in part, by several current strategic planning frameworks. These current frameworks include WRMPs, regional water resource plans and DWMPs. These frameworks are complemented by the water industry national environment programme (WINEP) in England and the national environment programme (NEP) in Wales.

Meeting expectations and addressing feedback

We have clearly set out our expectations for the key strategic planning frameworks and environmental programmes through a range of guidance documents. This includes the water resources planning guidance,[125] WINEP options development guidance[126], and the DWMP guiding principles,[127] which we developed jointly with other relevant regulators and in liaison with companies. We also provided specific feedback and guidance relating to long-term delivery strategies and the strategic planning frameworks. In the November 2021 strategic planning framework expectations letter, we outlined our key areas of focus for these planning frameworks.[128] These expectations were developed based on previous experience of WRMP

[124] We expect all companies to follow the approach agreed between Ofwat, the Environment Agency and the regional water resources planning groups to test the Ofwat common reference scenarios for abstraction reductions at PR24.
[125] Environment Agency, Natural Resources Wales, Ofwat, 'Water resources planning guideline', updated April 2022.
[126] Environment Agency, WINEP - Options Development Guidance (shared with regulators and water companies), updated July 2022.
[127] Defra, Welsh Government, Environment Agency, Natural Resources Wales and Ofwat, 'Guiding principles for drainage and wastewater management plans', February 2022.
[128] Ofwat, 'Ofwat's expectations for strategic planning frameworks at PR24', November 2021.

development and delivery, WINEP/NEP engagement, and early engagement with DWMPs. Our expectations for the long-term planning frameworks have not changed since November 2021. The key areas identified in the letter that we expect to be incorporated and addressed through regional planning 2024, WRMP24, DWMP24 and the WINEP/NEP options development and appraisal process are as follows:

- identification of optimised long-term programmes using long-term targets;
- full consideration of a wide range of options to meet long-term challenges;
- development of a best value plan using efficient costs and robust valuation of benefits;
- presentation of an adaptive plan to address known issues and future uncertainties tested against a suitable range of scenarios;
- demonstration that stakeholder and customer views have been taken into account; and
- identification of partnership opportunities to enable co-funding and co-delivery.

Building on the approach taken for WRMP19,[129] we have continued an intensive early engagement and feedback process to support companies and to challenge them to generate the best long-term plans to meet the needs of customers, communities and the environment. For example:

- **WRMPs:** We held structured pre-consultation meetings with all companies before the end January 2022 and written feedback was provided. [130] We have followed up with further sessions held with each company during April-June 2022. We will continue to proactively engage and feedback as appropriate with consultation responses to the draft WRMPs due during spring 2023.
- **Regional water resource plans:** We provided feedback on regional group method statements in January 2021 and responded to the emerging regional plan consultation in February/March 2022.[131] We have regularly engaged with regional groups through the regional co-ordination group and to follow up on our written feedback. We will continue to proactively engage and feedback as appropriate with consultation responses to the draft plans due during spring 2023.
- **DWMPs:** We held meetings with all water and sewerage companies during February and March 2022 to understand the progress being made with DWMPs. We provided written feedback in a letter to all DWMP steering group stakeholders in April 2022. We have carried out a detailed assessment of companies' draft DWMPs which were published for consultation in summer 2022. In our written responses to draft plans, and during the joint regulators' follow-up meetings during October 2022, we reiterated our expectations for final DWMPs and highlighted the improvements required to deliver DWMPs to a standard to support business planning and investment business cases. Working collaboratively with the companies, we have finalised standardised data tables to be completed alongside

[129] Ofwat, 'Ofwat's engagement on WRMP19', 2018.
[130] Ofwat, 'Ofwat WRMP24 pre-consultation meeting company template briefing pack', November 2021.
[131] Ofwat, 'Ofwat's engagement on WRMP24', 2022.

final DWMPs to enable consistent reporting of DWMP metrics and help the flow of performance and cost data into business plans.

- **WINEP/NEP:** We held early engagement meetings with all companies and the environmental regulators in September 2022. This has helped gain an insight into the scale and scope of the PR24 WINEP/NEP as companies undertake options identification, appraisal, and selection in advance of the final WINEP/NEP in spring 2023 and will inform the final business plan data tables. We provided feedback to all companies following the meetings to help inform their approach. We intend to hold further meetings with all companies in January to February 2023 when they will have a more detailed understanding of their likely WINEP/NEP options and costs for all drivers. We will continue to engage and feedback as the programme develops to ensure it represents good value when submitted in business plans.

The feedback we provide will support companies to deliver better plans to inform the long-term delivery strategies and business plans, enabling better outcomes for customers, communities and the environment. We will continue to regularly engage with companies, regional groups, regulators and government and provide feedback on the strategic planning frameworks and environmental programmes as they become finalised during 2023 in advance of business plan submissions.

We have a clear expectation that companies take account of this feedback in their final plans. Anglian Water welcomes the engagement and feedback we are undertaking to support the development of WRMPs, DWMPs and WINEP. It also agrees that business plans should reflect the comments Ofwat has made during the WRMP, DWMP and WINEP processes. Companies should provide sufficient and convincing evidence that our feedback and challenge has been adequately addressed. This will allow us to focus our assessment at PR24 on the efficiency of schemes promoted via WRMPs and other frameworks. These frameworks are due to be finalised in advance of business plan submission meaning that companies need to ensure that the final WRMPs adequately address the feedback provided.

We will take the quality of the final strategic planning frameworks into account when assessing company business plan proposals, including how well they align with long-term delivery strategy expectations and whether our previous feedback has been adequately addressed. These will be factored into our quality and ambition assessment of company business plans.

Consistency of strategic planning frameworks and business plans

We expect consistency between final WRMPs, WINEP/NEP submissions[132], and where relevant, DWMPs[133], with the company long-term delivery strategies and business plans at PR24. This consistency should include the scale and timing of need, the performance levels forecast to be delivered, and associated investments and requested enhancement costs.

Any areas of variance between final (and published) planning frameworks and business plan submissions need to be fully explained, supported by compelling evidence. This should also include the reasons for changes and include confirmation that customers and the environment are not, or will not, be worse off. WRMPs, DWMPs and WINEP/NEP are prepared in advance of business plan submissions and costs will be presented in 2020-21 prices. All costs in the business plan data tables, data table commentary and narrative should be consistently presented in the 2022-23 price base. Companies should inflate costs to 2022-23 prices using financial-year average CPIH.

We will consider the consistency between the final strategic planning frameworks and environmental programmes with the PR24 submissions when assessing company proposals which will inform our quality and ambition assessment.[134] We need final strategic planning frameworks (eg published final WRMP24) before business plan submissions. These form a key part of the evidence for enhancement investments (aligned with long term delivery strategies) and we cannot do the tests that plans are consistent and have addressed feedback without them being finalised in time. We will take account of missing, delayed or incomplete final plans when undertaking the quality and ambition assessment and when we apply our enhancement assessment criteria.

Moving towards a more outcomes-based approach for WINEP/NEP

We support a move towards a more outcomes-focused WINEP/NEP. This is consistent with our preferred approach for other enhancement expenditure. Wessex Water raised a concern that we were underestimating the amount of change required to enable a more outcomes focused WINEP. The WINEP for PR24 is already more company led and many more elements can be defined at an outcome level compared to PR19. However, there are still areas of the WINEP that remain outputs focused. The wider Ofwat framework also supports an outcome led approach where we set the outcomes (including by setting performance commitments) we expect companies to deliver and then the efficient totex allowances needed to support the

[132] Final WINEP submissions refers to the version that is agreed and published in March-May 2023.
[133] Any amendments to the assumptions used to develop final DWMPs (published in spring 2023), such as performance levels and improvements delivered by base expenditure, should be updated and presented in revised final DWMP data tables with business plan submissions. Any changes from published final DWMPs will need to be supported with compelling evidence of what the change is, why it was needed, and the impacts. Building on our feedback provided to companies in October 2022, where final DWMPs do not provide the expected level of long-term context for optimum investment proposals these will need supplementing with further justification in the long-term delivery strategies and PR24 investment business cases.
[134] See Appendix 12 - Quality and ambition incentive.

delivery of these outcomes. This allows companies to go further to meet targets if they can do so efficiently, knowing that they will receive outperformance payments. Companies are also protected by cost sharing where any additional investment causing overspend is only partially covered by companies with customers also contributing.

In line with Action 1 from the WINEP Roadmap, we are working with the Environment Agency to develop more outcomes-based approaches to the WINEP for PR24. This includes issuing a joint letter with the EA inviting English companies to submit proposals for the Advanced WINEP (A-WINEP) alongside standard WINEP submissions.[135] Proposals submitted as part of the A-WINEP should be those that would not be possible within the standard WINEP framework for PR24, and yet clearly offer greater benefits for the environment and customers. A core aim of this work is to establish the management and governance frameworks necessary to operationalise an outcomes-based approach more widely for PR29 and beyond to deliver better environmental outcomes.

In Wales, we are keen to continue discussing with Natural Resources Wales whether an outcomes-based approach would be appropriate to elements of the NEP. This is consistent with Welsh Government's strategic objectives to adopt an outcomes-based approach.

We do not expect an outcomes-based approach to the WINEP/NEP would require significant changes to our regulatory approach, for example as our proposed performance commitments already cover the key areas of focus for an outcomes-based approach such as river and bathing water quality. However, we will consider how the outcomes regime should adapt if necessary, to support a more outcomes-focused approach, such as whether any further performance commitments are required. Other elements that might help to facilitate an outcomes-based approach, such as considering best value and encouraging opex solutions, are set out in Section 6.

Delivery of previously funded improvements

We received clear agreement from CCW that it does not expect customers to pay twice for the same service improvement and that there should be absolute certainty that new investment requests are not covered by base or previous enhancement funding. We continue to strongly agree that customers do not expect companies to be funded twice for the same service improvement. As part of justifying the need for investment in any enhancement requests (including those within strategic planning frameworks), companies should provide sufficient and convincing evidence that the benefits of previously funded schemes or programmes (via historic base or enhancement allowances) have been appropriately accounted for. Under or non-delivery of previous investments, or current/future base activities should not contribute to, or form part of the future need assessment. This previous funding includes any additional funding agreed during 2020-25 including the green economic recovery final decisions[136] and

[135] Joint Ofwat and EA letter issued to all English companies in September 2022
[136] Ofwat, Green economic recovery: Final decisions, July 2021.

transitional funding programme. If schemes have not been delivered in 2020-25, then we expect them (or alternatives that deliver the same benefit) to be delivered in 2025-30 without additional funding.

This expectation applies to all areas of service improvement including those justified through the strategic planning frameworks and environmental programmes. We expect to recognise the need for investment in supply and demand solutions as set out in final WRMPs. As such, the assessment of need for investment should be fully justified through agreed final WRMPs. In exceptional circumstances, we may require additional justification at PR24 on the scale and timing of need or that an option is best value, for example if material concerns that we have raised during the draft WRMP/regional plan consultation process have not been adequately addressed. Or if insufficient evidence has been provided to show that proposed schemes do not overlap with previously funded investments which have not been delivered. To support tracking of funded benefits justified by final WRMP24 we will set PCDs on the additional supply-demand balance benefits to be delivered and track the resultant company water available for use (WAFU).

Availability of full asset capability

It is the responsibility of water companies to maintain and manage assets such that they are in a condition to deliver outputs as planned for, such as an assumed flow or level of serviceability, when required. This is in accordance with their duty under sections 37 and 94 of the Water Industry Act 1991. It is a company's duty to ensure that it maintains an efficient and economical water supply and a sewerage system to effectually drain its area and effectually deal with the contents of those sewers. Company assets and systems need to be available, reliable and fit for purpose under both normal and peak operating conditions. The assets should be operated to deliver the levels of resilience that have been funded to meet the expectations of customers. Customers should not be asked to provide additional enhancement funding for base activities, such as maintenance or delivering the performance levels expected from base expenditure allowances. These expectations need to be appropriately accounted for, and clearly explained, in the strategic planning frameworks and subsequent enhancement funding requests. Where material investment is proposed for low utilisation assets, we expect business plans, supported by long-term delivery strategies, to fully evidence the proposed option's suitability over smaller, modular or operational type interventions.[137]

We continue to consider how we will check that the planned level of asset resilience is being adhered to outside of the PR24 process. We set out in our operational resilience discussion paper how we are proposing to evolve our monitoring approach to provide a richer picture of operational resilience for customers and stakeholders.[138] We propose to develop an integrated

[137] See Chapter 3 of consultation document.
[138] Ofwat, 'Operational resilience discussion paper', April 2022.

monitoring framework that is informed by the outcomes regime and complemented by wider monitoring activities.

5.4.2 Delivering long-term targets quickly and efficiently

Government and regulators have set several targets and ambitions in recent years which aim to drive the industry forward in terms of customer service and environmental protection. These include targets the UK government expects to set under the Environment Act 2021 through secondary legislation.[139] Long-term targets are important for giving companies time to identify, plan and deliver efficient best value solutions.

It is for companies to propose and justify efficient glidepaths to achieving the range of long-term targets. This should be supported by the long-term delivery strategy. A linear profile from the performance at the end of 2024-25 to the future target performance is unlikely to be optimum considering the different costs and benefits of interventions available to reach these long-term performance levels. It may be that companies can go faster than the linear interpolation over 2025-30 or it may be best value over the long term to have slightly slower improvements to allow preparatory interventions (eg smart networks and meters) to be in place to accelerate improvements in later periods at a lower overall cost. Where described as an industry target or that all companies need to meet a specified level, we expect each company to meet that target by the agreed date. For the avoidance of doubt, we expect company business plans to identify investment and set performance levels consistent with achieving these targets on a company-specific basis over the long term.

There are several long-term regulatory and governmental targets that we want to see business plans making significant improvements towards in the short term and achieving efficiently over the long term. Those areas listed below[140] also have significant overlap with common performance commitments, interact with changes to how we normally fund enhancement improvements and are covered in more detail in this section:

- net zero greenhouse gas emissions;
- combined sewer overflow spills;
- water demand; and
- water body nutrient loading.

Net zero greenhouse gas emissions

Water companies have a key role to play in the overall delivery of the UK government and Welsh Government target of net zero emissions by 2050. To achieve net zero in a phased

[139] These targets were previously consulted on in Defra, Update on progress on Environmental Targets, October 2022
[140] Note this is not a complete list of long or short term regulatory and government targets.

manner by 2050, the UK government has set a series of interim targets, notably an overall 78%[141] cut in UK emissions by 2035, with the Welsh Government committing to a cut of 89% by 2040.[142]

The UK government's SPS expects water companies to have regard for the policies and proposals set out in the UK Net Zero Strategy,[143] and to contribute to net zero by 2050. [144] The Welsh Government expects that water companies develop clear, robust plans for how they are proposing to address the impacts of climate change and how they plan to achieve net zero.[145] We have a key role in scrutinising and challenging companies' business plans regarding companies' contribution to net zero targets. In January 2022, we published our net zero principles position paper.[146] In it we set out our expectations that companies' plans align with national government net zero targets, addressing both operational and embedded emissions in doing so, and prioritising the elimination and reduction of greenhouse emissions (GHG) before the use of offsets.

There is still uncertainty in how water companies will meet these targets over the long term and the likely costs and benefits of individual investments at PR24. There is also uncertainty in the ability to robustly measure and track all emissions, in particular embedded emissions, on a consistent basis. However, there are opportunities and technologies available for companies to adopt during PR24 which could have a significant impact on their GHG emissions and overall transition to net zero.[147] Into the longer term, we expect new technologies to emerge which would enable faster progress at lower costs. Companies must, therefore, continue to review emerging technologies and engage with innovation in this area.

In the draft methodology we considered several options to incentivise efficient net zero transition. This was supported by advice from Frontier Economics on options to incentivise efficient net zero investment.[148] Frontier Economics identified three main options to incentivise and fund net zero improvements, ranging from an adapted PR19 toolkit to a full bidding competition for all net zero related improvements. These three options are summarised below:

- **Adapted PR19 toolkit:** Builds on the approach taken at PR19 for delivery of other outcomes and applies them to net zero.

[141] The carbon budget for the 2033-2037 budgetary period is 965,000,000 tonnes of carbon dioxide equivalent. The recommended pathway requires a 78% reduction from 1990 to 2035. Climate Change Committee, The Sixth Carbon Budget: The UK's Path to Net Zero, December 2020.
[142] Welsh Government, 'The Climate Change (Interim Emissions Targets) (Amendment) Regulations', 2021.
[143] UK government, 'Net Zero Strategy: Build Back Greener', October 2021.
[144] Defra, 'The government's strategic priorities for Ofwat', March 2022.
[145] Welsh Government, Net Zero Wales Carbon Budget 2 (2021-25), 2021
[146] Ofwat, 'Net zero principles position paper', January 2022.
[147] Ofwat, Net Zero Technology Review, August 2022.
[148] Frontier Economics, 'Incentivising net zero – a report for Ofwat', 2022.

- **Full net zero bidding competition:** Introduces a bidding competition for all enhancement investment having an impact on operational GHG emissions.
- **Combining the PR19 toolkit with net zero challenge bidding:** Maintains the robust assessment of enhancement costs with scope for companies to request enhancement expenditure where the primary driver is to reduce operational GHG emissions with allowances based on efficient unit costs of proposals.

GHG emission scope coverage

Anglian Water, Severn Trent Water, South East Water, United Utilities and Yorkshire Water requested further clarity for the coverage for the operational GHG emissions reporting aligned to the performance commitment.[149] While we expect companies to estimate impacts on all GHG emissions, enhancement investment and incentives to reduce operational GHG emissions will be aligned to the emission scopes as measured by the common operational GHG emission performance commitment. This will ensure an accurate baseline for the performance commitment as well as consistency between companies' methodology through the Carbon Accounting Workbook. We will align the operational GHG emission performance commitment reporting to the updated and expanded definition to be used for the 2022-23 APRs following consultation in early 2023. The current APR reporting includes:[150]

- Scope 1 – Direct emissions from the burning of fossil fuels, process and fugitive emissions, travel in company owned or leased vehicles.
- Scope 2 - Purchased electricity, heat, electric vehicles.
- Scope 3 – Business travel on public transport and private vehicles used for company business, outsourced activities, purchased electricity and heat (transmission and distribution).

Setting expected performance levels from base expenditure

Hafren Dyfrdwy, Severn Trent Water, Thames Water and Yorkshire Water requested that our approach should not disadvantage companies that have made historic GHG emission reductions. They suggest that companies who have proactively tackled GHG emissions may be disadvantaged because lower cost options have already been delivered. It was recognised that the draft methodology tried to mitigate this through minimum performance expectations that will inform performance commitment levels, but stakeholders thought it was unclear how this will also be factored into the assessment of efficient costs.

We agree that the focus and drive to net zero is not new for PR24. Climate change impacts and the contribution of GHG emissions are increasingly well understood, and some companies have already proactively made reductions in their GHG emissions. Companies

[149] See Appendix 7 - Performance commitments for more discussion on the scope of the common performance commitment for PR24.
[150] See Appendix 7 - Performance commitments for more detail.

need to deliver a transformation in performance to ensure they can meet the long-term requirements of customers and the environment. To deliver this transformation we expect companies to challenge themselves to deliver stretching levels of performance from their base expenditure allowance. We expect companies with worse levels of operational GHG emission performance relative to the rest of the sector to challenge themselves to make significant improvements to their performance levels from base. We anticipate those poorer performing companies being able to deliver their stretching improvement using the cheaper solutions available to them through base activities. Companies performing at or close to the frontier should continue to seek further opportunities to deliver improvements in base performance.

Several companies opposed the use of a scale factor normalisation to compare company performance levels.[151] In conclusion, although volume measures are likely to be the most appropriate way to normalise performance, other factors may also impact performance. This makes normalisation useful for simple comparisons but not robust enough at this stage to set common performance commitment levels.

We still expect to use normalised company performance separately for water and wastewater services (eg operational GHG emissions per Ml/d of distribution input) as a key analysis tool in our review of proposed company stretch through base expenditure. Where companies consider their ability to deliver performance is impacted by company specific factors, they should provide compelling evidence of the impacts on them and other companies in their business plan submissions. These comparisons will be used to test comparative levels of stretch and to set company specific performance levels to be delivered from base expenditure.

Accounting for the impact of enhancement on performance

Anglian Water and Dŵr Cymru highlight that standard enhancement activities can increase GHG emissions and the impact can vary depending on the activity. Differences in scope and scale of enhancement activities between companies may result in variable impacts on GHG emissions. However, we still expect all companies to deliver standard enhancement activities in a way that reduces the impact on emissions, for example through nature-based solutions or treatment process innovations, where these are appropriate and evidenced as best value. We will benchmark the proposed GHG emission impact of common enhancement activities between companies to ensure an efficient impact is represented in adjusted performance levels. This may result in different emission impacts between companies based on the scale and type of their funded enhancement programmes.

[151] These discussion points are covered further in Appendix 7 - Performance commitments.

Net zero challenge

Stakeholder feedback was generally positive about our emphasis on achieving and incentivising net zero via a bidding process. Portsmouth Water, SES Water and South East Water raised a concern about fairness and impact of a bidding competition on small companies including limited resources to support developing detailed bids with an uncertain outcome. South Staffs Water and South West Water also raised a concern that not all companies have the same opportunities to self-generate renewable energy. Affinity Water, Anglian Water, Dŵr Cymru, Severn Trent Water, Southern Water, South Staffs Water, Thames Water and Yorkshire Water requested more clarity on the net zero challenge bidding process.

For PR24 we will introduce a net zero challenge competition building on the PR19 toolkit. We continue to consider this approach represents a good balance between driving the changes needed to address net zero without adding undue complexity. Based on the difficulties highlighted in stakeholder responses in setting a common performance commitment level, making a clear distinction between company specific and net zero challenge enhancement requests will be difficult. Therefore, we combine these to create a net zero enhancement challenge where companies that are stretching themselves and have efficient proposals will be prioritised for additional enhancement funding to tackle operational GHG emissions.

A bidding market encourages innovation both in the short and longer term and helps expose more reliable emission abatement unit costs. In the short term, the most efficient companies are incentivised to go further, while not requiring the same of all companies who might not be able to achieve reductions at the same low cost. We will aim to concentrate funding on those companies with more mature approaches to emission reductions and more efficient solutions but retain flexibility to allocate all companies some net zero specific enhancement funding if necessary.[152]

In summary, the funding of operational GHG emission reductions and impact on the operational GHG emission performance commitment level will be based on the following components:

Base allowances. Companies need to justify with sufficient and convincing evidence both their starting positions in 2025-26 and reductions from base over 2025-30. We expect all companies to make improvements, but companies with lower levels of performance relative to the rest of the sector to challenge themselves to make the most significant improvements to their performance levels. We will compare company performance (using normalised emission levels) separately for wholesale water and wastewater services to ensure that targets are ambitious and achievable.[153] We will set performance expectations from base expenditure on a company specific basis.

[152] We provide more details of the options to incentivise progress to net zero and our appraisal of these in the impact assessment in Appendix 14 - Impact assessment.
[153] Discussed in Section 4.1

Standard enhancement activity. Where emission reductions are delivered as part of standard enhancement activities, these will be funded where there is sufficient and convincing evidence to support that they represent best value over the long term (at meeting the primary enhancement driver and the net zero reductions). We expect companies to fully explore the impact of enhancement activity on GHG emissions and will look at company forecasts and ambition in this area to minimise any impacts (including benchmarking emission impacts where possible).

Enhancement via a net zero challenge. Companies are expected to propose net zero specific investment where the primary driver is to reduce operational GHG emissions. Companies will present all the net zero schemes or programmes of work that they consider suitable for delivery in PR24, including the individual scheme costs and benefits. From this they should clearly identify the schemes that form part of their long-term strategy for meeting net zero. The long list of net zero specific schemes or programmes should go beyond what may be optimal at a company level. We expect this to help identify schemes that at a company level are close to being optimal for its company specific glidepath, that from an industry viewpoint look much better value. We will consider eligible company proposals for the net zero challenge on a competitive basis based primarily on the unit rate of emission abatement delivered for each investment. The net zero challenge is different to standard enhancement funding primarily as where appropriate we will fund schemes based on the unit cost presented up to the determined efficient unit cost.

We expect enhancement funding for the net zero challenge to be directly linked to company activities that will have GHG emission monitoring in place (allowing a reliable measured baseline and reduction to be recorded). We will prioritise funding via the net zero challenge based on companies having the following:

1. stretching operational GHG emissions reductions through base expenditure; and
2. efficient net zero enhancement bids on a cost per unit of operational GHG emission (£ per tCO_2e) abated basis.

The larger competitively funded component will be complemented by additional scrutiny of the investment proposals to mitigate risks of the operational GHG emission focus at PR24. The costs and benefits of each scheme/programme (where reducing operational GHG emissions is the primary driver) will be reported in business plan data tables together with a forecast of overall GHG emission impact (to justify the investment impact as being long term best value when accounting for all GHG emission scopes). We also encourage companies to start to report robust measurements of GHG emissions for a wider range of Scope 3 activities than will be covered by the common performance commitment. This will provide more transparency for stakeholders that emissions more broadly are reducing and makes the transition to full reporting at PR29 easier.

Where the choice of solution (and its cost) is heavily dependent on mitigating embedded emissions (outside the operational GHG emission performance commitment definition) we expect these embedded emission reductions to be appropriately tracked, most likely through a price control deliverable (PCD).

Storm overflows

The impact of storm overflows on our rivers is not acceptable. Companies must be compliant with their legal obligations. They must produce ambitious long-term plans and begin immediately to reduce harm from storm overflows and protect public health and improve people's enjoyment of the environment. We expect companies to fully explore innovative approaches to reducing harm, and we will intervene where we consider plans lack ambition.

The UK government's SPS expects us to challenge water companies to demonstrate how they will significantly reduce the frequency and volume of sewage discharges from storm overflows, [154] and its storm overflows discharge reduction plan sets targets for companies in England up to 2050[155]. In Wales, we expect companies to propose storm overflow investments where there is evidence that they will improve river water quality that are not funded through base allowances. These proposals should draw on the work undertaken as part of the DWMP process and the work of the Wales better water quality taskforce. Meeting these expectations needs a determined effort from companies to improve operational and maintenance regimes as well as identifying and prioritising efficient investments to improve performance.

We expect companies' plans in this area for 2025-30 to be set within the context of a longer term plan to efficiently reduce harm; consider affordability, customer and stakeholder views; and other, competing, investments. We expect enhancement investment in this area may be significantly higher than historical levels to meet the challenge of reducing harm. To address this challenge water companies should think long-term and explore new technologies and solutions, strengthen supply chains, build new partnerships and take a system-based approach to meeting environment objectives. Our approach is intended to support companies to make the most of these opportunities and promote programmes of work that explore unknowns to deliver efficiencies over the longer term. We further expect companies to gain efficiencies by planning at a catchment level and delivering at scale, aligning with the strategic frameworks including DWMPs. In England, storm overflow improvements should be accompanied by the commissioning of river water quality monitors to assure these improvements.

We recognise that the reduction of spills from storm overflows will come from base and enhancement expenditure, both during 2020-25 and over 2025-30. Companies are required, through their statutory obligations, to have systems in place to ensure catchments are effectually drained and sewage is effectually dealt with. Companies have long-standing

[154] Defra, 'The government's strategic priorities for Ofwat', March 2022.
[155] Defra, 'Storm overflow reduction plan, August 2022.

environmental obligations including, for example, environmental permits set by the Environment Agency and their general duty under section 94 WIA91, as supplemented by the Urban Wastewater Treatment (England and Wales) Regulations 1994 (UWWTR)), compliance with which is funded through base revenue. We expect all companies to be compliant with these. Companies should only seek enhancement investment when they can demonstrate that the investment is needed to meet a requirement, including government targets, beyond these pre-existing legal obligations, and we will require evidence for instance, that enhancement revenue is not being sought in relation to a compliance issue on a pre-existing permit or other UWWTR related requirement. We are currently investigating how all water and wastewater companies in England and Wales are managing their sewage treatment works and we reserve the ability to revisit our PR24 methodology and/or our draft and final determinations in view of relevant findings.

In our draft methodology we proposed to incentivise companies through a performance commitment based on the average numbers of spills per storm overflow. Overall companies and other stakeholder responded positively to our PR24 draft methodology consultation.[156]

All companies recognised the need to do more to reduce the harm from storm overflows, albeit some suggested that companies may need go at different paces due to regional circumstances and affordability constraints.

A number of alternative performance commitments were proposed. For example, Anglian Water proposed the focus should be on incentivising companies to tackle storm overflows discharging to high priority water bodies, ie SSSIs, special areas of conservation, etc.

United Utilities considers our imposition of the 2025 spills target to be a deviation from the agreed PR19 package. Wessex Water had the view that achieving this target is not captured in historical base costs. In a recently submitted paper[157], United Utilities stated that it believes that our proposed target of 20 spills per storm overflow by 2025 is insufficiently stretching for some companies and impossible for others including itself.

Although some stakeholders disagreed with this choice of performance commitment, we propose to continue with it. The proposed performance commitment covers investment across base and enhancement and thus incentivises companies to maximise benefits in both areas. It is a simple metric that is widely understood and is based on a data set that is available, and the best surrogate we currently have for environmental harm, as environmental impacts are not consistently monitored at all points of discharge. The Environment Act 2021 requires continuous river water quality monitoring in England. When this (or other similar information including model-based approaches) is available we will review this performance commitment at subsequent price reviews.

[156] Further stakeholders' views on the storm overflow performance commitments are given in Appendix 7 – Performance commitments, Section 4.8.
[157] United Utilities Water. Storm overflow incentives for PR24. October 2022.

In our draft methodology, we set the initial level of this performance commitment at 20 spills per storm overflow. This level was partly based on commitments from Anglian Water, Northumbrian Water, Severn Trent Water and South West Water for 2025.[158] We expect all companies to reduce their use of storm overflows to meet this target and go further where their legal obligations require. We expect companies to deliver the commitments they made in their river water quality action plans. Where companies do not consider that they can meet the 20 spills target by 2025 they should provide compelling evidence as to why. As set out in Section 4, we will consider this evidence in setting the performance commitment level for 2025 and the expected improvements over 2025-2030.

Companies should challenge themselves to go beyond our proposed target where appropriate. Evidence from storm overflow event duration monitoring data reported by companies and published by the Environment Agency revealed that a significant proportion of storm overflow discharges are due to operating reasons including poor asset maintenance[159]. Companies were funded at PR19, and previous price reviews, to operate and maintain their assets in line with their relevant obligations and therefore the costs for doing so are assumed within the data used to determine base costs allowances. Therefore, we do not accept the points raised by United Utilities and Wessex Water that reducing the harm from storm overflows is unfunded.

We expect companies to provide evidence that the 2025 PCL reflects well-maintained assets compliant with legal obligations. Companies all have common duties related to their sewerage system, but we are conscious that the frequency of spills from storm overflows can be affected by regional factors including climate. We will consider whether evidence provided by one company in setting its PC level is relevant in setting the PC level for others. This will address the concern raised by United Utilities that our PC is insufficiently challenging for some companies.[160]

We expect companies to propose price control deliverables (PCDs) alongside this common performance commitment. This reflects the magnitude of the investment in this area, the acceptance of the need to improve, and the range of expected outcomes, ie. focus on high priority areas, partnership working and opportunities to deliver in catchment-based solutions and other innovations such as flow controls in sewers. The PCDs should incentivise more targeted areas of enhancement investment, such as reducing harm to high priority habitats, and be designed to ensure there is no overlap with the performance commitment. We expect PCDs to incentivise companies to, for example, focus on areas of importance to UK and Welsh governments, stakeholders and their customers. We will set the balance of financial incentives between the performance commitment and PCDs to reflect risk and the relative priorities of respective government, stakeholders and customers. On assessing these plans, we may consider adjusting PCDs where companies lack ambition.

[158] Ofwat, 'Ofwat response to wastewater company river water quality action plans', June 2022.
[159] Environment Agency, 'Event duration monitoring – Storm overflows – Annual Return', May 2022.
[160] United Utilities, 'Storm overflow incentives at PR24', November 2022.

There are a range of potential interventions available to companies to reduce the impact of storm overflows. Amongst others, these range from influencing customer behaviour to reducing surface water discharges, to sustainable drainage systems, to controlling flows in sewers, and installing attenuation storage tanks, for example. We want to ensure that the best value solutions are delivered by companies. We do not incentivise companies to follow the short-term least cost solution, nor create unintended consequences such as increased rates of flooding. Where appropriate, we will consider benchmarking costs at the scheme type level, ie, attenuation tanks, discharge diversions, sustainable drainage systems, sewer sealing, etc. This recognises that the most appropriate solution may be site specific, and should not discourage catchment-based solutions that deliver broader benefits. We anticipate that companies will propose a blend of solution types but may consider adjusting or imposing PCDs where we feel companies have not challenged themselves to deliver these broader social and environmental outcomes.

Companies can make use of Advanced-WINEP to promote catchment wide programmes of work where this can't be achieved through standard WINEP and is not already required to meet pre-existing environmental obligations. This includes systems-thinking at a catchment scale, integrating investment to manage storm overflow discharges with other drivers.

Long term water demand reductions

We expect companies to challenge themselves to transform their performance and do more to reduce demand. Reducing demand is a key element for ensuring secure supplies of water for customers and protecting the natural environment by lowering the volumes of water abstracted. Effective demand management can also support economic growth, making water available to support development.

Demand reduction has an important role to play in both the short and longer-term. Some demand reductions activities can be delivered relatively quickly providing an opportunity to increase resilience while new strategic supply solutions are developed over the long-term.[161]

When proposing demand reductions, companies should not be constrained by the agreed long-term targets and should look beyond these to identify stretching and optimal performance levels. For example, it may be more beneficial for companies in water stressed areas to reduce demand beyond the long-term targets to optimise their overall programme in achieving drought resilience in a best-value way.

Wildlife and Countryside Link responded that we should further encourage companies to invest in water efficiency. MOSL and individual retailers recommended that we expect companies to develop enhanced metering strategies for both residential and business

[161] Companies should ensure they consider a twin-track approach which considers demand management options alongside any supply options when developing their water resource management plans (WRMPs). Environment Agency, Natural Resources Wales, Ofwat, 'Water resources planning guideline', updated April 2022.

customers. This sentiment was echoed by Waterwise calling for a metering target for all households and businesses. We consider that our final methodology drives companies to fully explore and propose investment to deliver efficient and effective demand management strategies. This includes activities to reduce leakage and reduce consumption, such as smart metering and good quality customer engagement. As discussed further in this section we want companies to set their own optimal glidepaths for meeting or going beyond long-term demand targets. However, we do set some scenarios for full smart meter penetration to test the robustness of their plan against. We also introduce a water efficiency fund to drive innovation and efficiencies in this area.

We will review those companies with relative high levels of per capita consumption, leakage, business consumption and distribution input per capita compared to the rest of the sector. For these companies the proposed demand reduction targets will need to represent a transformation in performance that delivers stretching levels of performance in comparison to the rest of the sector.

Where we assess that companies have not proposed suitably ambitious or stretching demand reduction targets, we will intervene to set more challenging PCLs.[162]

Long-term demand targets

There are three long-term targets relating to water demand that are applicable to PR24. These are:

- a 50% reduction in leakage by 2050 from a 2017-18 baseline163;
- per capita consumption of 110 l/h/d achieved by 2050164; and
- a long-term water demand target that the UK government expects to set through secondary legislation.165

As stated in our draft methodology we expect companies as a minimum to meet these expectations and targets at a company level, ensuring delivery of the national level targets where applicable.

[162] This will apply principally to the three common performance commitments relating to demand reduction: leakage, per capita consumption and business consumption.
[163] Defra, 'The government's strategic priorities for Ofwat', March 2022; Water UK, 'Letter to the Secretary of State – leakage', October 2018 and Welsh Government, 'The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022', 2022.
[164] Environment Agency, 'Meeting our future water needs: a national framework for water resources', March 2020 and Welsh Government, 'The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022', 2022.
[165] The UK government will set both the details of the target and statutory deadlines, through secondary legislation. A target of a 20% reduction in distribution input per head of population by 2037 from a 2019-20 baseline was previously consulted on by Defra in 'Consultation on environmental targets', 2022.

In exceptional circumstances, we will allow companies to propose reductions at a company level that are lower than the national target. However, we expect companies adopting this approach to provide compelling evidence to justify why this represents the best value approach to meeting a supply-demand balance or delivering long-term strategic outcomes. We also require a company delivering lower levels of reduction than the national target to evidence that it has secured agreement on a bilateral basis with another company (or companies), within a regional group or at a national level that ensures the national level targets will be delivered. Where possible these agreements should ensure that all customers benefit from the arrangement. Ultimately it will be the company proposing lower levels of reduction than the national target that will be held responsible should it not be met either through its company ambition or the agreement not holding.

We expect companies to clearly articulate in their WRMPs and business plans how they have coordinated to ensure delivery of national targets. If national targets are not delivered by companies' final WRMP and business plan submissions, we will assess the gap and intervene to adjust company performance commitment levels to ensure a glidepath to delivery of these targets is achieved. We will provide additional efficient funding to meet these PCLs where we consider this appropriate.

We expect both English and Welsh companies to deliver a 50% reduction in leakage and achieve a per capita consumption level of 110 l/h/d by 2050. We discuss this further in the following sections.

Leakage

The UK government's SPS expects Ofwat to challenge water companies to halve leakage across the industry by 2050 and to monitor progress against this.[166] The Welsh Government's strategic objectives and priorities for Ofwat include resilience and the environment, which reducing leakage will contribute to. Our view is that challenging Welsh companies to deliver the 50% reduction by 2050 is consistent with this and aligns with the Welsh Government's guiding principles for developing WRMPs.[167] As such, we have a minimum expectation for all companies to plan to meet the 50% reduction by 2050 on an individual basis. We therefore expect a 50% reduction to be delivered at a national level in both England and Wales.

As discussed in box 5.1 below, comparisons within the sector indicates a wide variation in relative leakage levels. Additionally, comparison with Europe indicates countries operating at lower levels of unaccounted for water than England and Wales. When setting targets companies should challenge themselves against the best performers both in the sector and internationally. Comparative challenges should consider, for example, leakage as a percentage of overall distribution input, leakage per kilometre of mains and leakage per

[166] Defra, 'The government's strategic priorities for Ofwat', March 2022. The reduction is from a 2017-18 baseline.
[167] Welsh Government, 'The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022', December 2021.

property. We therefore expect companies with higher relative leakage levels to challenge themselves to go beyond the 50% reduction target. Additionally, as discussed above, under exceptional circumstances, we will allow companies to propose reductions at a company level that are lower than 50%.

Box 5.1 Leakage level comparisons

England and Wales

There is a large variation in relative leakage levels between companies in England and Wales. This will reflect in some regions the historical and future levels of statutory enhancement expenditure. Companies should consider their relative position when setting ambitious proposals for long-term leakage reduction. We expect companies with higher relative leakage levels to challenge themselves to go beyond the 50% reduction target as the delivery of a 50% reduction from 2017-18 levels may not result in a significant improvement over the frontier leakage levels delivered by others in 2021-22.

Table 5.1 Relative leakage levels across English and Welsh companies in 2021-2022 and 2017-18 [168]

Comparative leakage metric	2017-18			2021-22		
	Sector average	Frontier performer	Worst performer	Sector average	Frontier performer	Worst performer
Leakage as a percentage of distribution input	22.4%	15.7%	26.0%	19.7%	13.0%	23.3%
Leakage per kilometre of main (metres cubed per kilometre per day, m^3/km/d)	9.5	4.9	22.1	8.4	4.5	18.7
Leakage per property (litres per property per day, l/prop/d)	125.3	80.4	178.4	109.4	64.3	148.4

Europe

International comparisons of leakage levels can be challenging to make due to variances in reporting definitions between companies and the assumptions and extrapolations inherent in calculating leakage levels or non-revenue water. EurEau, the European federation of national associations of water services produced its overview report on European drinking water in 2021. The report provided values for non-revenue water at a national level for its

[168] Ofwat analysis of data provided by companies through annual performance reporting 2017-2022. For a summary of leakage performance in 2021-22 see Ofwat, 'Water company performance report 2021-22', December 2022.

members.[169] While the report questions the reliability of making comparisons between companies, it is useful to consider the English and Welsh companies' levels in comparison to the average levels observed. Based on the information in the report we can review the 2017-18 levels for England and Wales with Europe in terms of percentage of distribution input and cubic meters per kilometre per day.

Table 5.2 Relative non-revenue water levels across English and Welsh companies and European countries

Comparative leakage metric	England and Wales	Europe		
	Sector average (2021-22)	Average mean performer	Frontier performer	Upper quartile performer
Non-revenue water as a percentage of distribution input	22.5%	25.1%	5.0%	20.0%
Non-revenue water per kilometre of main (metres cubed per kilometre per day, m^3/km/day)	9.6	7.4	1.4	3.4

If English and Welsh companies deliver a 50% reduction in leakage by 2049-50 we estimate this would be equivalent to a non-water revenue level of 5.4 m^3/km/d or 14%. [170] Part of this difference may be due to reporting variations. However, even considering this, the figure suggests that English and Welsh companies have the opportunity to do more to reduce levels of non-revenue water to align with better performing European companies. It also suggests there may be opportunities to learn from best practice and innovative approaches adopted by European companies.

Per capita consumption (PCC)

The UK government's SPS expects Ofwat to hold water companies to account for their contribution towards reducing personal water consumption to 110 litres of water per head per day (l/h/d) by 2050.[171] The Welsh Government's SPS expects Ofwat to encourage and incentivise the sustainable and efficient use of water resources. We therefore have a minimum expectation for all companies to plan to meet the 110 l/h/d level by 2050. In 2021-22

[169] EurEau, 'Europe's Water in Figures An overview of the European drinking water and waste water sectors', 2021 edition
[170] We calculate this level based upon companies' water balance submissions provided in response to Ofwat, 'IN 22/02 Cost assessment data requests', April 2022. We include leakage, water taken unbilled and distribution system operational use in the total. We have forecast mains length in 2049-50 based on a simple linear growth approximation from 2021-22 levels. We retain the 2021-22 values for water taken unbilled and distribution system operational use in the total but reduce leakage levels by 50% from 2017-18. We assume distribution input remains equivalent to the 2021-22 level in 2049-50 (increased growth balanced by increased water efficiency).
[171] Defra, 'The government's strategic priorities for Ofwat', March 2022.

the sector level PCC across English and Welsh companies is 146 l/h/d. We consider that applying this level to all companies aligns with the expectations of both UK government and Welsh Government and helps support industry comparisons and improvement.

We also propose to introduce a new fund of up to £100 million to facilitate the development of transformative improvements to water efficiency at a regional and national level to help to reduce demand for water. The purpose of the fund will be to deliver major nationwide or regional programmes, innovative incentive schemes and educational programmes that can provide measurable and sustained demand reductions in public water supply effectively, efficiently and with long lasting results. This fund may capture and overlap with similar interventions identified in company WRMPs but bring them together to deliver more for customers, meaning that company specific investment on water efficiency initiatives may reduce compared to draft WRMP24.

We expect companies to account for changes in government policy and expectations, for example water efficiency standards in new homes and water labelling, in their PCC reduction proposals. In line with our regional water resource plan feedback, where company forecast delivery is reliant on government policy companies should clearly articulate which policies are being relied on, the assumed benefits of this and assumed dates of implementation.[172]

The UK government expects to set a long-term water demand target through secondary legislation. We expect English companies to demonstrate how they will deliver against this target. The company activities to reduce overall water demand will interact with their ambitions on leakage and PCC.

Options for reducing demand

In response to our draft methodology Natural England stated it would like greater focus on how companies will work with customers on behaviour change to reduce usage. Natural England considered this was more important for reducing water stress in the long term than reducing leakage.

In response to this challenge, we expect companies to set out a best value approach to delivering the long-term demand reductions that will ensure resilient supplies for customers and protect the environment within their WRMPs. The final WRMP24 should demonstrate that companies have considered a wide range of demand reduction options across the residential and business customer base, the timing of their delivery, and flexibility through adaptive planning. We expect the decision-making process followed to be clear and transparent. This will identify a preferred programme and profile of reduction to deliver the long-term targets.

[172] Ofwat, Regional water resource planning emerging plan responses, February to March 2022.

As a statutory consultee, Ofwat will provide feedback to companies based on their draft WRMPs. We expect companies to respond to this feedback and provide evidence that it has adequately addressed the points raised in their final WRMPs.

We expect companies to account for the improvements that are deliverable through base expenditure when planning to deliver these long-term targets. Where any enhancement expenditure is requested, we expect companies to provide sufficient and convincing evidence within an enhancement business case.[173] This should include consideration of:

- the company's performance levels relative to others;
- how the reduction represents best value over the long term;
- how best practice and innovation has been incorporated into their plans;
- how the company is building upon its learnings from the current period (2020-25); and
- evidence that costs are efficient.

In response to our draft methodology Arqiva stated that we should not penalise water companies adopting smart metering by setting tougher targets for them where they have qualified for enhancement spend. Waterwise specifically questioned if smart metering roll-out was to be considered under base or enhancement expenditure at PR24.

Multiple stakeholder responses highlighted the importance of smart metering to drive water efficiency and consumer behaviour change. Stakeholders, including those in the business retail market, identified the benefits of smart metering for businesses and retailers and how the development of common data standards to ensure interoperability across the sector would be beneficial to all parties involved in driving demand reductions.[174]

We recognise that smart metering has a key part to play in the continued drive for water efficiency and consumer behaviour change. We set out our expectations with regards to smart metering technology, data interoperability and the development of smart metering business cases in box 5.2 below. Our expectations apply to the installation of meters for both residential and business customers. We will support smart metering enhancement requests where these form part of best value programmes justified by final WRMPs and are supported by sufficient and convincing evidence in business cases.

In reference to the request for clarity on expenditure allocations we expect companies to account for the implicit base allowance for meter replacement when developing enhancement business cases for metering in their PR24 business plans. As at PR19 we will consider enhancement allowances for the costs associated with upgrading to a smarter technology when meters are replaced. We will make allowances where companies provide

[173] Our expectations in relation to the improvements to be delivered through base expenditure and the evidence companies should provide in enhancement business cases are included in Sections 4 and 2.2 respectively.
[174] Stakeholder providing responses on smart metering referenced in this section in addition to Arqiva and Waterwise include Strategic Panel for the business retail water market, Business stream, Everflow, MOSL, UKWRC, Water Plus, Wave, Pennon and the Wildlife and Countryside Link.

sufficient and convincing evidence to support their business cases and demonstrate they have accounted for all the benefits delivered through smart metering. In response to Arqiva's feedback, it is essential that companies quantify the multiple benefits from smart metering programmes, for example reductions in PCC and leakage. This ensures that companies do not, for example, receive outperformance payments for PCC and leakage performance commitments for improvements that are already funded through base or enhancement expenditure. Accounting for both the implicit base allowances and the benefits of smart meters in metering business case will ensure that customers do not pay twice for improvements. [175]

Box 5.2 Leakage reduction activities

We expect companies to maximise the leakage reduction they can deliver from their base expenditure allowances when developing leakage reduction proposals for their WRMPs and business plans. We expect companies to maximise the use of lower cost options to reduce leakage and to make innovative use of technology and data to best target leakage reduction activities.

We anticipate companies will need to use a range of interventions to meet their demand management targets. It will be for companies to provide evidence for the scale and pace of implementing each of these activities and the scheduling decisions made over the long term. A least regret best value programme is likely to involve:

- optimisation of existing activities following sector best practice as a minimum and seeking opportunities to go beyond this, including for example leak-free network installation and reducing leakage run-times;
- maximising the efficient use of pressure management across the network;
- realising the benefits of smart metering and smart networks; and
- targeted replacement of supply pipes (see below); **prior to**
- larger scale network asset renewal.[176]

We will review the programmes of leakage reduction and the glidepath for leakage reduction over the long-term that companies propose within their draft WRMPs. We will challenge where companies do not provide sufficient and convincing evidence to demonstrate they are adopting an efficient best value approach to deliver reduction over the long-term.

[175] See A1 Enhancement and cost adjustment claim assessment criteria for further details of our assessment approach for enhancement expenditure. See Ofwat, 'Final determinations - Ofwat', December 2019 and Competition and Markets Authority.
[176] We note that adaptive pathways for leakage reduction are discussed in 'A Leakage Routemap to 2050' published in 2022 by Water UK. However, to date Water UK has not been able to provide the underlying data that would enable us to validate the scenarios presented, making it difficult to place weight on this study.

We will encourage and support water companies to develop a consistent approach to address leakage on customers' own pipes in line with the expectations set out in the UK governments SPS. We will review company proposals to address customer supply pipe leakage in draft WRMPs. In our statutory response we will provide our view on any actions that may need to be taken at an individual company or sector level.[177]

Box 5.3 Smart metering

We continue to recognise the benefits of smart metering for delivering demand reduction across the residential and business customer base through the reduction of consumption and identification of leakage.[178] In their WRMPs and business plans we expect companies to consider smart meter solutions as the standard meter installation type. For English companies this is in accordance with the UK government expectations for water resources planning. For Welsh companies our view is that this is in accordance with the Welsh Government's strategic objective for Ofwat which include the environment and resilience.[179]

Companies should consider the benefits of increasingly detailed demand data that can be read without directly accessing the meter and provided on a near real time basis. Companies should provide sufficient and convincing evidence for the smart metering technology they propose to adopt. Where companies propose to continue to install older visual read meter technologies, they should provide compelling evidence to justify this.

We have previously set our expectation that companies should test their long-term delivery strategies against our common reference scenarios for technology.[180] These scenarios describe futures where full adoption and operationalisation of smart metering becomes increasingly cost-beneficial by different dates:

- full smart meter penetration by 2035 (faster technology scenario)[181]; and
- full smart meter penetration by 2045 (slower technology scenario).

[177] We also note that Water UK identified that by December 2022 it would be able to provide sufficient information to have a fully informed debate on what the best route is for this asset group. Water UK, 'A Leakage Routemap to 2050', 2022.
[178] Smart meters can help to encourage and support more efficient use of water by customers and identify wastage, including leaks in customer properties.
[179] Welsh Government, 'Strategic Priorities and Objectives Statement to Ofwat issued under section 2B of the Water Industry Act 1991', July 2022
[180] Ofwat, 'PR24 and beyond: Final guidance on long-term delivery strategies', April 2022, pp. 37-41
[181] 'Full' smart meter penetration does not need to refer to 100% penetration where this would involve prohibitive costs.

We expect companies to explore the potential impact of technological development on the relative costs and benefits of options and the optimal sequencing of demand management activities (including interdependencies and synergies). The testing of these scenarios should help inform development of company enhancement business cases for metering investment. We will assess these business cases against the criteria described in Section 2 and Annex A1. We will additionally expect metering business cases to include sufficient and convincing evidence to clearly describe and justify the following:

- the meter penetration percentage the company considers representative of full smart meter penetration;[182]
- the year by which it expects to achieve full smart meter penetration;
- the blend of meter technologies it expects to use to achieve full smart meter penetration;
- the profiled glidepath for delivery of full smart meter penetration;
- how the common reference scenarios (and any other scenarios used) has tested the robustness and informed the choice of metering strategy;
- how it will support customers, including vulnerable customers, such as through communication around bills, help with leakage and switching to social tariffs; and
- how customers will be protected from non-delivery of the metering programmes primary and wider outputs, for example through use of PCDs.

We expect companies to collaborate across the sector to introduce national standards relating to the data collected from smart meters to ensure interoperability across the sector. We expect companies to engage with other stakeholders across the sector as part of this collaboration to gain their views on smart metering and their experience from previously completed studies and investigations. For example, MOSL have projects focused on the role of metering and metering technology in the non-household market. We initially expect the sector to present proposals for developing these standards alongside business plan submissions in a joint document approved by all companies. This should propose how to standardise data access and presentation. This would enable a standard approach to reading the data, enabling data to be readily accessible for development by third parties. This would support data sharing and innovative uses of the data. We will consider how delivery of interoperability and national standards has been included in our assessment of individual company business cases.

Companies should ensure all meters comply with the appropriate regulations governing cold water meters, and that their metering systems comply with their obligations under competition law.

[182] We expect companies to be able to express the metering percentage both including and excluding void properties.

Phosphorus discharges

Nutrient pollution is detrimental to the environment because it can lead to eutrophication in our rivers, lakes, and estuaries by stimulating algal and aquatic plant growth and often resulting in depletion of dissolved oxygen. This disrupts natural ecosystems including wildlife and can lead to waterbodies falling into 'unfavourable condition'. Nutrient pollution (particularly phosphorus and nitrogen) originates from several different sources, particularly agricultural pollution and effluent discharged from wastewater treatment works. [183] [184]

The UK government's SPS expects us to challenge water companies to improve their environmental performance to enhance the quality of the water environment, and deliver against applicable targets set under the Environment Act 2021.[185] The UK government expects to set a long-term target to reduce phosphorus loadings through secondary legislation.[186] This will build on the 50% reduction in phosphorus by 2027, which has been funded through the 2019 price review and the 2020-25 WINEP programme. The Welsh Government has not published specific targets but at the July 2022 Welsh River Pollution summit eight areas of intervention were agreed to ensure focus on reducing phosphorus loads in Welsh waterbodies, particularly special area of conservation (SAC) rivers.[187]

We expect companies to include proposals to reduce phosphorus pollution and, if relevant, make progress towards UK government targets and Welsh Government priorities, in their WINEP/NEP programmes. We recognise that target the UK government expects to set under the Environment Act 2021 through secondary legislation is likely to be longer term and will need expenditure over several price review periods. We are keen to encourage water companies to meet any phosphorus targets and objectives as efficiently as possible. It is important to deliver the environmental improvements needed for phosphorus, and we encourage companies to consider new approaches. However, profiling delivery to manage the bill impact is also critical and companies should ensure the best value long term solutions are delivered. This would be facilitated by moving towards an outcomes-based approach for the WINEP/NEP.

Consistent with this approach, we intend to introduce a new river water quality performance commitment.[188] We propose this will measure the reduction in phosphorus from water

[183] Environment Agency, 'Phosphorus and Freshwater Eutrophication Pressure', October 2019. Figure 6 states that 60-80% of the Phosphorus load discharged to English rivers is from sewage treatment works element, but this proportion is decreasing. 20-30% of the Phosphorus load is from agricultural sources, but this proportion may be as high as 50% by 2027.
[184] Environment Agency, 'tate of the water environment indicator B3: supporting evidence', October 2022. States that 36% of water bodies are affected by pollution from wastewater and 40% by agricultural pollution from rural areas.
[185] Environment Act 2021, available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted.
[186] A target of a 80% reduction in phosphorous loadings from treated wastewater against a 2020 baseline was previously consulted on in Defra, 'Consultation on environmental targets', May 2022, p. 17.
[187] Mark Drakeford MS, First Minister, 'Written Statement: River Pollution Summit at the Royal Welsh Show', August 2022.
[188] As detailed in Appendix 7 – Performance commitments, Section 4.7.

company activities. This will cover both the reduction in the amount of phosphorus discharged at wastewater treatment works and phosphorus stopped from entering waterbodies from wider partnership working including by using nature-based solutions and catchment management.[189] Using a performance commitment will incentivise companies to operate their plants as efficiently as possible to achieve the highest possible phosphorus removal, rather than focusing on simply meeting permitted levels. For the improvements covered by WINEP/NEP, we intend to have PCDs to ensure that companies deliver the actions that are funded.

Phosphorus removal will also be impacted by nutrient neutrality where a plan or a project, such as a new housing development, is likely to have an adverse nutrient impact on protected sites. Funding of improvements to treatment works in areas under nutrient neutrality guidance will contribute to the target expected to be set under the Environment Act 2021. Additional nutrient mitigation measures will need to be arranged by developers – or other bodies bringing forward plans or projects in affected catchments – to ensure that residual nutrient loads are mitigated. Our approach to nutrient neutrality is set out in Section 5.4.5.

Innovation fund

The Innovation Fund was established at PR19 to grow the water sector's capacity to innovate, enabling it to better meet the evolving needs of customers, society and the environment. Since then, we have awarded £63 million to 40 projects to companies working collaboratively, including with suppliers and innovators, to deliver transformational innovation. At PR24 we propose to retain and increase the size of the Innovation Fund to around £300 million. We aim to consult in early 2024 on how the fund will continue to stimulate and increase innovation in the water sector.

5.4.3 Facilitating efficient long-term investment

As well as better long-term planning and investment identification, we need the mechanisms in place to facilitate the efficient delivery of long-term investment that also adequately protects customers.

Handling uncertainty and flexibility in the environmental programmes

We are not convinced that a WINEP/NEP enhancement uncertainty mechanism, similar to the PR19 mechanism included for amber WINEP/NEP schemes, is required for PR24. We included an uncertainty mechanism in PR19 due to large parts of the WINEP requirements not being confirmed before the final determinations. The Environment Agency subsequently confirmed that the entire original programme was required. Companies are developing their environmental programmes with the WINEP and NEP draft lists being made available between

[189] For further details, see Appendix 7 – Performance commitments.

November 2022 to January 2023, with them to be finalised during March to May 2023. However, Severn Trent Water and Southern Water had concerns that some areas of the WINEP, specifically around the proposed Environment Act targets and nutrient neutrality, are not yet completely defined.[190] Portsmouth Water also flagged concerns on risk of timing alignment between WINEP and PR24 business plans. We still consider that there will be significant certainty on the environmental requirements to be delivered at PR24 as the WINEP/NEP requirements will be largely known in advance of business plan submissions. Although this removes most of any uncertainty, we will continue to engage with the EA and NRW and will adapt our approach if requirements are not fully defined before business plan submissions.

Most of the PR24 WINEP/NEP delivery will be informed by evidence, monitoring, and the significant number of investigations completed as part of PR19. We recognise that there may still be residual, predominantly longer-term, uncertainty in the environmental programme. However, the current framework, which includes the outcomes framework (which rewards companies for improving environmental performance), totex allowances with cost sharing (where additional costs are shared with customers) and transitional funding, together with the additional clarity on multi-period and preparatory work funding, provide the flexibility to manage this. We will protect customers by taking account of the impacts of funded WINEP/NEP on common performance commitments and price control deliverables. We expect all WINEP/NEP funded schemes to be associated with an outcome-based performance commitment or output-based price control deliverable, to ensure that funded schemes are progressed, or funding is returned to customers.

We are keen that the delivery of solutions in WINEP/NEP is progressed as quickly as possible, where this is in customers' interests and remains affordable. In the past, we have funded a programme of investigations through WINEP/NEP looking at future environmental improvements. These investigations either allow the Environment Agency/Natural Resources Wales and companies to expand the body of knowledge, eg chemical treatment investigations, or allow companies to further explore investment needs and identify potential solutions. These solutions are often funded and delivered in the following price control period. For example, at PR19 we funded a large programme of investigations, many of which covered storm overflows. Where the investigation concluded that further interventions are justified these will be reviewed, cost benchmarked, funded and delivered at PR24. This allows investment to be appropriately planned and helps to ensure that intervention and enhancement expenditure is required. In other areas of enhancement funding, the activity of identifying needs and development of solutions is implicit within our base totex allowance, as asset management and investment planning are day-to-day company activities.

We set out proposals to encourage efficient delivery for both storm overflows and phosphorus removal to improve water quality in Section 5.4.2. We also recognise for the targets the UK government expects to set under the Environment Act 2021 through secondary legislation,

[190]The UK government will set both the details of the target and statutory deadlines, through secondary legislation.

profiling of expenditure over more than one price review period is likely. [191] At PR24, there will be WINEP/NEP investigations in areas such as chemicals removal, protecting bathing and shellfish waters, biodiversity and marine conservation zones, and in exploring the technically achievable limits for nitrogen.

We want to ensure that the necessary improvements are delivered as quickly as possible. However, it is important that the right approaches are identified to ensure that the intended outcomes are delivered, and they are delivered efficiently. In Section 5.4.1 we set out our support for moving towards an outcomes-based approach for WINEP/NEP. We consider that timely delivery is best supported through the totex and outcomes regime. This encourages companies to go further than their commitments and receive outperformance payments through outcome delivery incentives for doing so. In areas of investigations covered by PR24 performance commitments and outcome delivery incentives, such as bathing waters, companies will receive outperformance payments for going beyond existing commitments. This will allow them to deliver additional improvements during the price control period if it is cost effective to do so.

If the potential outcomes of an investigation are not covered by the outcomes regime, companies should bring forward proposals where they consider that they can deliver investigations and the resulting solutions in the same period. We expect that these proposals will be for a bespoke performance commitment. We are open to alternative solutions, such as including a scheme in WINEP/NEP that could go ahead if investigations established it was necessary. The funding for the scheme would be provided as part of PR24 and would be clawed back if the investigations established that it was not needed.

Multi-period investments

Some investments may span multiple price control periods, notably where schemes take longer than five years to construct. These have been requested, funded, and delivered in previous price reviews, including at PR19. The Environment Agency and Thames Water welcomed our focus on facilitating multi-AMP programmes. Thames Water and Arqiva wanted further clarity and detail on how multi-AMP programmes will be funded, with Thames Water wanting us to build more on the Thames Tideway and PR19 conditional allowance mechanisms and Arqiva focussing on funding of multi-period demand management strategies. Thames Water would still prefer further changes to the funding of multi-period investment programmes, with it not believing five-year price control periods suitable for what it calls strategic enhancement programmes. We continue to consider our multi-period funding approach, and alternative mechanisms such as direct procurement, provides sufficient surety of funding and flexibility to deal with any challenges associated with facilitating efficient long-term investments. Longer term funding settlements can reduce delivery flexibility, reduce the ability to adapt to changes and make it difficult to hold

[191] These targets were previously consulted on in Defra, Update on progress on Environmental Targets, October 2022

companies to account for delivery during the intervening period. The PR19 conditional allowance gated process was a one-off intervention to support Thames Water to deliver performance improvements in the interest of customers. Given the resource requirements to manage the process and the slower progress than anticipated, we do not consider it a business-as-usual mechanism to be used at PR24.

We want to further facilitate multi-period investments, where these are best value over the long term, while also protecting customers. Where these schemes are delivered through Direct Procurement for Customers (DPC) or Specified Infrastructure Projects regulations (SIPR) where relevant, most of the risks with these long-running investments, such as double funding, cost overruns and non- or under-delivery, will be mitigated through contractual arrangements. We still expect suitable schemes to be proposed to be delivered through DPC by default. However, large-scale investments that are unsuitable for DPC but require protections to be in place may need bespoke funding and delivery arrangements to allow schemes to proceed, such as separate longer-term price controls.

Bespoke arrangements could be necessary where the investment is significant compared to the overall company totex (for example, £500 million or 10% wholesale totex) and the delivery is likely to be multi-period, as has been applied historically for Thames Tideway and Havant Thicket reservoir. A bespoke mechanism may be required where companies need greater surety over funding or where there is a benefit from increased reporting transparency. Where DPC is not suitable, we expect companies to identify and propose appropriate arrangements where they can clearly demonstrate that such arrangements drive benefits for customers, provide incentives for efficiency or provide benefits from transparent treatment in a separate control. Companies should only present bespoke arrangements by exception and the justification for using them over the preferred arrangements will require full explanation in business plans, supported by compelling evidence.

For other multi-period schemes (non-DPC or bespoke delivery), we are keen to incentivise companies to deliver schemes efficiently and provide companies sufficient surety so that these schemes can proceed. We will apply the following principles in funding and tracking delivery of these multi-period enhancement schemes:

- where companies plan to deliver and request funding for a small proportion of overall delivery costs of a multi-period scheme in 2025-30 (eg <20%), we will allow funding of these based on the evidence submitted. We do not intend to apply any additional tracking of delivery of these schemes, beyond any potential interactions with current processes (eg WRMP annual reviews); and
- where companies plan to deliver and request funding for a large proportion of the total delivery cost of a multi-period scheme (eg >20%), we would allow funding of these based on the evidence submitted. We would then expect that the funded proportion of the scheme is delivered during 2025-30 as forecast. This way, companies are exposed to cost sharing on the proportion of scheme expenditure covered in the 2025-30 period. For the

proportion of expenditure covered in subsequent periods, companies would then request a new expenditure allowance in the subsequent price review, where we would look at updated evidence on scheme costs and deliverables. Future requests should take account of the allowed costs and outturn expenditure and delivery in the preceding period.

To support the identification and assessment of costs and benefits of multi-period schemes, including consideration of best value, companies should submit ten years of forecast data in the business plan data tables. This includes ten years of forecast enhancement costs, cost drivers and benefit data for investments starting in 2025-30.

Funding preparatory work for uncertain and long-term options

We will allow enhancement funding in cases where preparatory or development work is needed to start work on schemes even where there is still uncertainty of need. This will be where investment may be necessary for preparatory work in advance of an adaptive pathway being triggered. This would be the case where it is unclear whether an adaptive pathway trigger is likely to be met in a following price control period, but work is required this period to ensure that the potential need can be subsequently met.

Companies should provide compelling evidence that undertaking the preparatory work at risk now, is quantifiably better value than waiting until the next price control period or when there is more certainty of need. We want to ensure that development work funded through enhancement at PR24 is delivered by companies. We therefore expect all requests for enhancement funding for preparatory work to align with the following key principles:

- the scheme should be connected to an alternative adaptive pathway set out in a company long-term delivery strategy to meet a defined externally driven uncertainty;
- the scheme requires a material enhancement allowance and has a long lead-in time to develop and deliver which covers more than one price control period;
- the preparatory investment in the scheme in this price control period is better value for money than delaying the investment until there is certainty of need in a subsequent price control period;
- the scheme is the best option to meet the need and the proposed funding allowance is efficient and appropriate for the preparatory work; and
- there is appropriate customer protection in place to ensure that the preparatory work is progressed.

Preparatory investment, such as pre-planning application activities and investigations or part-delivery of the scheme, would be over and above normal option investigation, development, and appraisal activity, which is covered through base expenditure allowances. This distinction was clarified in the long-term delivery strategy final guidance.[192] The base cost models already use data that includes historic option investigation and scheme

[192] Ofwat, Final guidance on long-term delivery strategies, April 2022, p 29.

development and appraisal costs (including for several significant scale infrastructure projects proposed at PR19). This means that base model allowances already include implicit allowances for these activities. Pre-planning application activities would be akin to the activities listed under gate three for the strategic schemes, as set out in the PR19 final determination for strategic regional water resource solutions.[193] The activities associated with gates one and two for the strategic regional water resource development funding are considered base activities[194], and were only allowed as enhancement allowances at PR19 for named schemes to stimulate companies to do the right thing in investigating large water resource projects. If the option is subsequently found not to be best value at meeting the future need and then not progressed, we would anticipate that customers should not fund further development costs for new options in future price reviews. Companies should clearly identify where these funding requests are made and link these to their long-term delivery strategy.

The use of preparatory work to facilitate future uncertain options should work in parallel with other elements of adaptive planning. This includes an expectation that companies consider the value, for customers, of the risk reduction that comes from options that maintain the flexibility to change course, defer, or abandon schemes.

Strategic regional water resources development funding

As a specific sub-set of preparatory or development funding, and due to the need for water companies to step up to meet future long-term challenges and targets, we are keen to see progress on the delivery of strategic regional water resource solutions as part of PR24. To facilitate this, in the PR19 final determinations we intervened to allow £469 million of funding for the investigation and development of strategic regional water resource solutions. These solutions were expected to be 'construction ready' by 2025-30, so they could proceed if required. [195]

Nineteen strategic regional water resource solutions have passed through the Regulators' Alliance for Progressing Infrastructure Development (RAPID) gate one assessment process, and two further solutions having already passed RAPID gate two assessment process. It is anticipated that only a small number of these will be identified in WRMPs and regional plans and need to be construction ready in the period 2025-2030. Our approach will be to ensure a balance of avoiding developing them too early whilst accounting for the length of time it can take to develop large infrastructure, including environmental surveys and undertaking planning processes.

[193] Ofwat, Strategic regional water resource solutions appendix, December 2019, pp 14-15
[194] These activities include solution design and cost and benefit calculations to have sufficient evidence to feature in final strategic planning frameworks and business plan submissions (this includes all associated activities to deliver these submissions such as optioneering, modelling, option appraisal and decision making, and feasibility).
[195] Ofwat, Strategic regional water resource solutions appendix, December 2019, p 3

We received no feedback on this in the draft methodology and therefore we will continue development funding for PR24. We still consider providing development funding is in the interests of customers to incentivise companies to accelerate and enhance the development of large water resource solutions (beyond what is expected from base), to ensure that they can meet future needs identified through the WRMP process in an efficient and timely way.

To achieve this, we will allow additional funding at PR24:

a) for the efficient costs of completing development of solutions to be construction ready in 2025-30 where there is an evidenced need (supply-demand balance deficit) to be addressed and the solution is justified best value within a final WRMP and regional plan. We will also fund the efficient costs of running a direct procurement for customers tender process for solutions that are best value to proceed or, where this is not feasible, to fund the efficient construction costs of those solutions. The additional development or construction funding will take account of previous funding for these activities, the expected outputs anticipated from previous funding, and the overall project costs in line with our policy on multi-period investments; and

b) for necessary development costs of solutions already being investigated which will need to be ready to start construction in 2030-35. We expect this to be a subset of the solutions that are already in the gated process or can also be a new solution identified through the WRMP24 process, where these are a clear alternate to currently progressing solutions as identified by an alternative pathway to mitigate a clearly defined future risk or uncertainty. We will apply this funding to an expected volumetric benefit (water available for use) to be investigated which will help streamline the gated process and allow flexibility for schemes to change within the development allowance. We expect companies will have learnt from their experience in developing solutions in 2020-25 and will continue to improve their approach, make efficiencies and share best practice.

We expect that any pre-planning application activity costs (as described above) for solutions which require to be construction ready beyond 2035 will be covered through base cost allowances, unless there is compelling justification to suggest that, due to project development timings, material activity is necessary in 2025-30 which also won't result in abortive costs.

Where solutions do not appear to be progressing sufficiently to meet established needs, we will set incentives and potentially reprofile agreed development funding to expedite the development of solutions, with the aim of bringing forward construction activities to meet the gap in the development progress. Companies should focus on allocating the necessary resources to deliver solutions. We expect the funding envelope for the future development requirements in PR24 to be limited and targeted at delivering large infrastructure solutions to be ready when they are needed (based on agreed final WRMP24) and to maximise value for money for customers.

Transition funding programme

The transition programme was introduced at PR14 and retained at PR19. Under the transition programme, we allowed companies to bring forward planned investment from the relevant regulatory period (eg 2020-25) to the last year of the previous regulatory period (eg 2019-20).

The purpose of the transition programme is to make efficient use of resources and minimise whole life costs, where it is efficient to bring forward an investment, and to enable statutory deadlines early in the next regulatory period to be met.

Under the totex and outcomes framework, companies have flexibility to defer and bring forward investment as appropriate and efficient. The outcomes and totex regulatory frameworks are aimed at encouraging long-term planning, and investment aimed at minimising whole life cost. Companies can bring forward investment if it is efficient for them to do so.

However, the transition programme may allow companies to respond efficiently to new information related to the next price control period. The programme can also help to smooth investment in the sector and address the issue of investment cyclicality around price reviews.

Companies and other stakeholders agreed with our draft methodology proposal to retain the transition funding programme at PR24. They also supported our proposal to allow transition funding for 2023-24, to make an early start on WINEP statutory requirements.

We will retain the transition expenditure programme at PR24. Where companies propose transition expenditure, we expect them to make the case for why it is efficient to bring the investment forward, and why it was not part of its outcomes and long-term planning in PR19.

To support delivery and facilitate greater smoothing of investment over the current and next price control period, we have expanded the scope of transitional expenditure to 2023-24. To allow transition expenditure for 2023-24 we consider that it is important that schemes have been through a statutory process to ensure appropriate check and challenge. We have therefore narrowed the scope of 2023-24 transition expenditure to cover both schemes in a company's final WRMP24 or statutory requirements set out in final PR24 WINEP/NEP submission, as long as any issues that we have identified with any schemes have been addressed. This would allow companies that are on track to deliver with their PR19 investment programme, to make an early start on their PR24 programme.

We have also expanded the scope of the transition programme to 2023-24 to include schemes we have approved for transition funding prior to the price control determination process, for example through Defra's accelerated process.[196]

As such, our criteria for allowing expenditure under the transition programme for 2023-24 are:

- the company provides sufficient and convincing evidence to justify the early start; and
- the expenditure relates to schemes included in a final WRMP24 or statutory requirements set out in final PR24 WINEP/NEP submission, where early delivery helps reduce overall delivery costs in 2025-30 and helps earlier delivery of customer and environmental benefits; or
- investment relates to a scheme we have approved for transition funding prior to the price control determination process, for example through Defra's accelerated process.

Companies are eligible for transition funding for the 2024-25 period provided they meet the following criteria:

- the company provides sufficient and convincing evidence to justify the early start; and
- the investment has early statutory deadlines in the next price control period; or
- the expenditure relates to early design and planning of large, non-routine investments; or
- the expenditure relates to schemes included in a final WRMP24 or statutory requirements set out in final PR24 WINEP/NEP submission, where early delivery helps reduce overall delivery costs in 2025-30 and helps earlier delivery of customer and environmental benefits; or
- investment relates to a scheme we have approved for transition funding prior to the price control determination process, for example through Defra's accelerated process.

For the avoidance of the doubt, the transition funding programme should not be used to propose investments that have deliverables that are already required in this price control period (2020-25) or that have been previously funded, or to propose base cost investments.

Although the expenditure will be incurred in 2023-24 and 2024-25, for the purpose of cost performance incentive, it will be considered as expenditure incurred in the following regulatory period (2025-30).

In the context of our price control framework, it is important to ensure that companies are not financially incentivised to delay making investment. As such, we will implement a time value of money adjustment to the transition funding programme incurred in 2023-24 for PR24, using the allowed return. This will take account of the time value of money between the

[196] The accelerated process is an initiative from Defra to accelerate additional infrastructure investment delivery in 2023-24 and 2024-25 that would provide benefit for customers, communities and the environment.

time when the company incurs the expenditure and when it recovers the expenditure through revenues.

As part of the transition programme at PR19, we assumed any expenditure incurred in the final year of the previous regulatory period (eg 2019-20) would be treated as if incurred in the first year of the next regulatory period. This means it would only be added to the RCV on 31st March of the first year of the new control period (eg 31st March 2021). For PR24 transition expenditure (both 2023-24 and 2024-25), we will make a midnight adjustment to the RCV at the start of the new control period (ie 31st March 2025). This will allow a timely recovery of the efficient costs incurred in delivering the schemes, which we consider is important given the potentially larger size of the transition programme at PR24. If there is material operating expenditure in transition funding, we will consider allowing companies to recover this in the first year of the new price control, rather than through a midnight adjustment to the RCV.

At PR24, we expect transition expenditure to be requested under the network plus controls and the water resources control. We do not expect transition expenditure to be requested in the bioresources and retail controls, as it is unlikely companies will face early statutory requirements for these controls.

Our decisions under the transition programme do not reflect the result of an efficiency assessment, but only an acceptance that companies can bring forward part of their enhancement allowance, for the specified purpose. The efficiency of transition expenditure will be assessed as part of our overall totex assessment at PR24 as part of the draft and final determination process. As such these costs are subject to the same scrutiny and challenge as all other enhancement costs.

Anglian Water agreed with our draft methodology proposal that transition funding expenditure for 2023-24 would be undertaken at risk and we would publish our view on transition allowances at the draft determinations. Northumbrian Water asked if we could make early decisions in principle (for example, for 80% of the funding) to allow companies to make an early start on statutory requirements.

Our assessment and view of transition expenditure allowances will be provided at draft and final determinations. Where it is efficient for a company to bring forward investment, enabling an early start can minimise whole life costs and deliver early customer and environmental benefits. But we consider companies to be best placed to bear the risk of undertaking expenditure in 2023-24. Our criteria for acceptance of transition investment are clearly set out, and will enable companies to consider whether a scheme would qualify as transition expenditure. The scope of 2023-24 transition expenditure is also limited to expenditure covered by statutory requirements and processes, which provides companies with greater certainty on the need for the investment. Transition expenditure will be subject to the same scrutiny and challenge as all other costs as part of our assessment.

We will apply the PR19 cost sharing rates to expenditure incurred under the transition expenditure programme at PR24. This will avoid distortions between cost sharing on different types of expenditure incurred in 2020-25.

5.4.4 Delivering for customers and environment over the long term

We expect customers to receive the performance and outputs they have funded through enhancement allowances. We expect companies to identify how customers will be protected against under or non-delivery of funded enhancements.

Where investment is material, and the delivery of benefits cannot be easily or directly linked, or the costs fully covered by a performance commitment and outcome delivery incentives companies should set out price control deliverables. PCDs will set out the key outcomes or outputs of enhancement expenditure, so that stakeholders and customers know what to expect from the funding provided. Where these outcomes or outputs are not delivered, PCDs allow funding to be returned to customers. At PR19 we implemented bespoke and scheme delivery type performance commitments for material areas of investment. Our expectation for PR24 is for companies to build on this to ensure delivery in a wider number of areas. This change will help to address concerns about the non-delivery of funded investment programmes. We are using a different term, 'price control deliverable', to distinguish between a mechanism to return funding to customers for investment or outputs that have not been delivered, and performance commitments which are monitoring outcomes, where there is benefit in outperforming commitment levels.

Wessex Water and Yorkshire Water agree with the introduction of PCDs as a distinct way to protect customers against non-delivery of funded interventions.

We expect PCDs to be proposed by companies based on the principles below:

1. **Benefits of the investment not linked to or fully protected by PCs.** Companies should use PCDs where performance commitments are not expected to provide adequate protection to customers either because i) benefits of the investment will be delivered outside the control period, ii) benefits cannot be directly linked to performance commitment levels, iii) outperformance delivery incentives rates are set significantly below costs, and/or iv) collars on outperformance delivery incentives would mean that investment would not be fully protected.

2. **PCDs should be used to protect customers for material enhancement investments.** We would not expect immaterial enhancement lines or projects to require PCDs, although similar activities of work (including across enhancement lines) should be combined to ensure full protection and reduce duplication.

3. **Outcomes over outputs/inputs.** Where possible, PCDs should be set at an outcome rather than an output level. Where the outcomes cannot be easily observed or measured, companies should set PCDs at an output level (eg water supplied, additional storage capacity). Output PCDs may also be appropriate where it would be disproportionate to track multiple outcomes where there is no obvious alternative to the proposed solution (eg a PCD on number of meters to be installed can be used to track the delivery of a company's metering programme).

4. **Level of aggregation PCDs could be set at a scheme, programme or benefit level.** Companies should set PCDs at the highest level possible to retain flexibility over the benefits to deliver using the most efficient solutions. This will also help minimise the number of PCDs required. PCDs at a scheme level may still be required to track the delivery of major schemes.

PCDs should be used where the delivery is for a quantity of a certain output, such as volume of wastewater storage or volume of water to deliver. They can also be used for delivery of specific investments that include named schemes. Even with scheme-specific PCDs, we expect the output of a scheme (eg capacity or volume) should form part of the specification in the PCD. We do not anticipate having PCDs on all enhancement lines, programmes of work or schemes. However, we expect companies to fully consider them in all areas where investment is material and where the benefits are not easily tracked through performance commitments. PCDs should cover each of the key outputs or benefits identified for enhancement proposals. PCDs can apply to direct outputs or benefits of investment (primary driver) but also wider benefits which have been used to justify best value investment and are material enough to require tracking. Benefits captured in PCDs should be measurable, verifiable and have a material impact on the choice of solution or impact on totex allowances. In business plans companies will need to explain how they propose to measure the outputs or benefits captured in PCDs. They also need to explain what assurances they will give in relation to the meeting or not of each PCD.

Where similar outputs are being tracked for various investments, these outputs can be aggregated into common PCDs if the measured output/outcome is the same and unit costs of delivery are similar across investments. For example, if a number of investment programmes deliver additional biodiversity, these benefits can be grouped into one biodiversity PCD reflecting all funded biodiversity benefits (where this is not adequately protected via ODIs).

Box 5.4 Further guidance for price control deliverable design

Companies should build on some of the scheme-specific performance commitments (eg for the delivery of new water treatment works for South West Water[197]) or output-based

[197] Ofwat, '[PR19 final determinations: South West Water – Outcomes performance commitment appendix, December 2019]', December 2019, pp. 116-120.

performance commitments (eg for the delivery of smart meters for Thames Water[198] and Anglian Water[199]) that were introduced at PR19 when developing PCDs to present in their business plan submissions.

The green economic recovery scheme delivery requirements are also really valuable references for companies when designing PCDs.[200] [201] This includes examples of scheme delivery protection mechanisms as well as delivery of outputs.

We expect PCDs to define what is to be delivered and the units of measurement. For scheme delivery PCDs this may be broken down into the percentage of project delivered through defined milestones, as well as the overall expected output of the scheme, eg new water treatment works with a Peak Week Production Capacity of X Ml/d. For volumetric output PCDs, the unit of measure (eg number, area, volume, or flow rate) and expected number of the units to be delivered for the funding should be defined. Delivery of milestones or number of units should be associated with a cost that will be returned for non-delivery which should be directly related to the requested funding to deliver the activity. The anticipated timing of delivery of milestones or units should be presented as part of the PCD.

As part of the PCD, companies should explain how progress is measured, tracked and reported. This includes how engagement and feedback from relevant regulators feeds into assurance that the outputs and outcomes have been delivered as expected.

PCDs should also be used where the full benefits of an investment are not expected to materialise over the 2025-30 period. This could be for large multi-period schemes where the intermediate milestones and outputs are tracked by PCDs during 2025-30 with the expected deliverables, costs and benefits for the subsequent period (ie after 2030) described in the PCD for transparency. Quantifying the outputs or impact on outcomes in future periods should not be restricted to scheme delivery PCDs. PCDs should be used to present the likely impacts on outputs and outcomes (eg PCLs) for beyond 2030 where applicable. This gives customers and stakeholders visibility of the forecast impact on long-term performance, for which the investment may have been justified, and some additional regulatory certainty on the performance impacts (scope and scale) that Ofwat may need to take into consideration in the outcomes regime at PR29.

Where companies set out PCDs, they should also set out the associated payments. The level of payment should set the amount of funding to be returned to customers for each unit of

[198] Ofwat, 'PR19 final determinations: Thames Water – Outcomes performance commitment appendix', December 2019, pp. 142-144.
[199] Ofwat, 'PR19 final determinations: Anglian Water – Outcomes performance commitment appendix', December 2019, pp. 92-94.
[200] Ofwat, 'Green economic recovery final decisions', July 2021.
[201] Ofwat, Addendum to green economic recovery final decision, August 2022

output or benefit that is not delivered by the end of the price control period. The payment level should have regard to the impact of cost sharing so that the allowed enhancement funding in full (as a minimum) is returned to customers for non-delivery. We do not expect companies to share in savings for non-delivery of funded enhancement schemes. The calculation of any funding returned to customers should take the value of time into account, so that the company is not better off by underdelivering the funded improvement than by returning funding to customers.

PCD payments will apply in addition to any outcome delivery incentive (ODI) payments a company will need to make if it does not meet its PCLs. Failing to deliver in full the outputs or benefits that PCDs are intended to capture can have an impact on performance tracked by PCs and therefore can lead to ODI payments. Where the impact on ODI payments is likely to be material, companies can net off the impact of under- or non-delivery on ODI payments from PCD payments. Where companies propose to do this, they need to explain how the combination of PCD, cost sharing and ODI payments will more than cover the cost of the protected enhancement so that companies are worse off if they under-deliver or do not deliver the funded improvement.

To track the link between PCD and ODI payments and reconcile these payments at the end of the control period, companies should set out how their investment is expected to impact performance tracked by PCs in the proposed PCD. ODI payments will not get net off from PCD payments if the former payments are not made because of ODI caps and collars. We will set out further guidance on how companies should set out PCDs and their interaction with outcome delivery incentive payments.

Affinity Water, Anglian Water and Yorkshire Water expressed concerns that if PCD is set at an output level this reduces the scope for companies to deliver in a different way than originally forecast. While PCDs could limit the flexibility a company has adapt its investment programme, it is important that customers are protected from non-delivery. To maximise company flexibility, companies should define outputs as broadly as possible. However, PCDs should continue to cover the key features of the proposed scheme, particularly where these contribute to option selection and the proposed cost allowance. This should, on balance, protect customers from under or non-delivery of funded enhancements while mitigating the risk of adverse impacts on innovation and efficiency.

South West Water raised a comment in relation to how PCD payments are set for nature-based solutions. It said that payments for missed PCDs for nature-base solutions should be set on the difference in costs between traditional solution and the nature-based solution so that PCDs do not put companies at financial detriment if their ambition for greater nature-based solutions cannot be realised in full. We expect companies to set out realistic (rather than optimistic) benefit forecasts for proposed nature-based solutions in their business plans. Companies should set out how customers will be protected from under- or non-delivery of funded improvements for material investments where outcome delivery incentives

do not provide adequate protection, regardless of whether the investment involves traditional or non-traditional solutions. As already mentioned, PCD payments, together with any related ODI underperformance payments and cost sharing arrangements, should return to customers more than the allowed cost of the enhancement, and should reflect any foregone benefits.

Deliverability

We recognise that to meet the ambitions of PR24 is likely to require a substantial increase in investment. This will put pressure on water companies' ability to deliver the PR24 enhancement programme. We are aware that, to date, many companies are behind with their PR19 enhancement programmes, with companies, on average, having only spent 68% of their forecast enhancement cost allowance during the 2020-2022 period.

We want companies to ensure that they can deliver their proposed PR24 programmes. To support delivery, we will maintain and expand the role of the transition expenditure programme at PR24, introducing transitional funding for both 2023-24 and 2024-25 for certain aspects of the enhancement programme. This will allow companies to mobilise and grow their delivery teams early so that they can hit PR24 running, and spread their investment over a longer time period. We have also introduced long-term delivery strategies to enable companies to take a long-term focus to phase investments over time and make sure they undertake the right investments at the right time. Companies should consider alternative delivery routes, such as DPC, where these could reduce deliverability risk.

Customers should not lose out if improvements are not delivered. To ensure this, if companies fail to deliver improvements then the PCD payments, together with any related ODI underperformance payments and cost sharing arrangements, should return to customers more than the allowed cost of the enhancement, and should reflect any foregone benefits.

We want to ensure that company boards have challenged and satisfied themselves that their PR24 plans and the expenditure proposals within them are deliverable and that the company has put in place measures to ensure that they can be delivered. To support this, we will be requiring additional Board assurances on deliverability and supply chain availability. This includes setting out the steps the Board has taken to satisfy itself that supply chain risk is manageable and delivery plans account for.

- The ability of the company and its supply chain to expand its capacity and capability at the rate required to deliver the increased investment.
- The impact of similar levels of growth across the sector and any overall sector and supply chain capacity constraints.
- Key supply chain risks and capacity constraints, such as the availability of specialist resource or components, e.g. river quality monitors, smart meters or SuDS designers.

5.4.5 Nutrient neutrality in England

Companies are subject to statutory requirements in relation to the removal of nutrients. Ahead of every price control period, a programme of works to reduce nutrients is agreed with the Environment Agency, Natural England and Natural Resources Wales to ensure wastewater treatment works (WWTWs) comply with the permitted level of nutrients in their discharge permits. These works are included in the water industry national environment programme (WINEP) in England and the national environment programme (NEP) in Wales. We engage on the optioneering process and assess the cost efficiency of the agreed schemes.

The UK government's SPS expects us to challenge water companies to improve their environmental performance to enhance the quality of the water environment.[202] The UK government expects to set a long-term target to reduce phosphorus loadings through secondary legislation.[203] This builds on the 50% reduction in phosphorus by 2027, which has been funded through the 2019 price review and the 2020-25 WINEP programme. The Welsh Government has not published specific targets but at the July 2022 Welsh River Pollution summit eight areas of intervention were agreed to ensure focus on reducing phosphorus loads in Welsh waterbodies, particularly special area of conservation (SAC) rivers.[204]

What is nutrient neutrality?

Nutrient neutrality (NN) is the term given to an approach developed by Natural England and Natural Resources Wales as part of their roles as statutory consultees in the local planning and environmental assessment process. Natural England (for England) and Natural Resources Wales (for Wales) advise local planning authorities on whether a plan or a project they are assessing as part of a Habitats Regulation Assessment, such as a new housing development, is likely to have an adverse effect in terms of nutrient impact on protected sites,[205] including Special Areas of Conservation, and whether mitigation measures would be needed to offset this impact. The advice from Natural England and Natural Resources Wales is that compliance with the Habitats Regulations requires that new construction development activity should not add to the nutrient burden at protected sites in unfavourable condition. Natural England's approach includes tools and guidance to help developments demonstrate they do no harm, so planning permission can be granted. Natural England's nutrient neutrality advice only applies to England and covers the effects of total nitrogen and phosphorus. Natural Resources Wales' advice only applies to Wales and covers phosphorus. Furthermore, the UK government and Welsh Government have adopted different approaches to the funding of investment needed for NN mitigation. The proposed new TAL obligation

[202] Defra, 'The government's strategic priorities for Ofwat', March 2022.
[203] Defra, 'Consultation on environmental targets', May 2022, p. 17.
[204] Written Statement: River Pollution Summit at the Royal Welsh Show (1 August 2022) | GOV.WALES
[205] A protected site is a water-dependent place (eg river, estuary or lake) that is designated as protected under the Conservation of Habitats and Species Regulations 2017 (as amended). See UK government, 'Changes to the Habitats Regulations 2017', January 2021. The 2017 regulations (as amended): https://www.legislation.gov.uk/uksi/2017/1012/contents

announced by Defra only applies to English water companies. There is currently no plan by Welsh Government to apply the same obligation to Welsh companies, with customers not expected to pay for NN mitigation. Therefore, the policy proposals below are focused on England, but otherwise may apply to both England and Wales.

Tackling nutrients in the current price control period (2020-25)

Nutrient burden from new developments is not a new issue. However, it has become more acute since the 2018 Dutch Nitrogen case, the effect of which is that development could not proceed near habitats sites[206] unless it could be proved that the development was not causing additional harm to a site already in unfavourable condition.[207]

Natural England has advised a total of 74 local planning authorities (LPAs) where habitats sites are in unfavourable condition due to excess nutrients that, to comply with the requirements of the Habitats Regulations, projects should only be given consent if they will not cause additional pollution. Natural Resources Wales has also published information and advice on where NN applies in Wales.[208]

The practical impact of Natural England's and Natural Resources Wales' advice is that local planning authorities now need to be satisfied that NN can be achieved before granting permission for new development. This has resulted in an additional requirement on developers to demonstrate they can mitigate and fully offset the impact of their development on the nutrients discharged to the environment in areas affected by NN advice. In turn, this means new housing developments are being delayed while local planning authorities, developers and other stakeholders explore the scope for mitigation measures.

Achieving nutrient neutrality could involve additional investment in removing nutrients from wastewater at treatment works. But developers also have different options for mitigating the effects of nutrient pollution through schemes that remove phosphorus or nitrogen. For example, they could:

- construct nature-based solutions (such as wetland or woodland) that remove nutrients; or
- buy 'nutrient credits' from third parties offering nutrient mitigation services.

[206] Sites designated under the Conservation of Habitats and Species Regulations 2017.
[207] Court of Justice of the European Union, 'Joined Cases C-293/17 and C-294/17', November 2018.
[208] Natural Resources Wales, 'Principles of nutrient neutrality in relation to development or water discharge permit proposals' and 'Advice to planning authorities for planning applications affecting phosphorus sensitive river Special Areas of Conservation', October 2022.

Nutrient neutrality in the PR24 regulatory framework

The rest of this section sets out our final approach towards NN in the PR24 regulatory framework, including:

- our final approach to NN expenditure in PR24; and
- interaction with other nutrient mitigation schemes and measures.

We have considered stakeholder views and the most recent UK government policy decisions in relation to NN.

Our final approach to NN expenditure in PR24

The starting point for considering the treatment of NN in the PR24 framework is how it fits in with companies' wider environmental requirements to remove nutrients. Under Natural England's guidance[209], planned environmental improvements in the 2025-30 period that would have happened in the absence of NN, but nonetheless would lead to an improvement in phosphorus or nitrogen standards, do not 'count' for NN mitigation. The key principle is that it would be inappropriate for individual developers to obtain NN mitigation from planned environmental improvements that also benefit the environment. NN mitigation needs to be separate and additional to planned environmental improvements to ensure no net deterioration of the relevant site in unfavourable status.

We considered two scenarios in our PR24 draft methodology of how schemes could be treated in that respect. In scenario 1, the scheme was planned (in the company's WINEP programme) to meet a general environmental improvement, and hence would be part of the WINEP whether NN existed or not. Thus, developers would need to find alternative schemes to use as mitigation. In scenario 2, the scheme would not be part of the WINEP had NN not existed, so developers could contribute towards each scheme.

After we published our PR24 draft methodology, the UK government announced a proposed new statutory requirement for wastewater companies to upgrade WWTWs impacting on protected sites[210] by 2030 to achieve the highest technically achievable levels (TAL) for nutrients (Phosphorus (P) and/or Nitrogen (N)). [211] We note the TAL that is set by the Environment Agency is currently 0.25 mg/l for P and 10 mg/l for N. As part of the announcement, the UK government confirmed its decision that all schemes required by the proposed new obligation will be considered as needed for environmental improvement.

[209] Natural England, 'Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites', March 2022.
[210] Habitats sites failing to achieve favourable conservation status due to nutrient levels.
[211] Government sets out plan to reduce water pollution - GOV.UK (www.gov.uk), 20 July 2022.

Several respondents to the draft methodology expressed concerns that the policy position set out in the draft methodology is inconsistent with the proposed new TAL obligation subsequently announced by Defra.[212] As pointed out by respondents, the practical impact of the decision is that all schemes required by the proposed new obligation would fall under scenario 1, meaning they would be included in water companies' PR24 WINEP programmes and funded by customers as general environmental improvements. No schemes would fall under scenario 2 where they could be used by developers to demonstrate nutrient mitigation for NN purposes.

Some respondents were concerned that improving WWTWs to TAL might not count as mitigation and claimed that this is inconsistent with UK government statements.[213] We clarify that the TAL schemes do not count for mitigation insofar as developers cannot buy credits from water companies and use them to demonstrate mitigation. However, the schemes covered by the proposed new TAL obligation would lead to an improvement in the nutrient baseline, from which the amount of mitigation that developers need to provide for NN purposes is measured. That reduces the amount of mitigation developers need to buy.

Other respondents expressed concerns that the UK government's proposed new obligation to upgrade WWTWs to TAL is potentially not cost beneficial and sub-optimal compared with a catchment-based approach to reducing nutrients.[214] Ultimately, this is a matter for the UK government (and parliament) to decide rather than Ofwat, but we recognised this as a potential issue and engaged with UK government officials during the development of the amendment to the Levelling-up and Regeneration Bill. We support a catchment-based approach if it can be implemented.

On 18 November, the UK government introduced an amendment to the Levelling-up and Regeneration Bill that set out the proposed new TAL obligation on English companies.[215] The amendment specifies that WWTWs in England with a capacity of less than 2000 population equivalent (PE) would not be required to upgrade to TAL unless the Secretary of State specifically designates them. We consider that setting the threshold at 2000 PE helps to address stakeholder concerns related to the limited benefit of undertaking TAL upgrades at small WWTWs relative to costs. Because the Levelling-up and Regeneration Bill is still going through parliament, we may not know until Spring 2023 whether the proposed new TAL obligation has been enacted and, if so, in what form. We are not aware of any plans by Welsh Government for the proposed TAL obligation to apply to Welsh companies.

[212] Severn Trent Water, Thames Water, Wessex Water, Yorkshire Water, Environment Agency, South Somerset DC, Somerset West and Taunton Council, TDS Holdings.
[213] IWNL, Taylor Wimpey, Persimmon Homes, ESP, South Somerset DC, Somerset West and Taunton Council, WA Consultancy.
[214] Anglian Water, Northumbrian Water, Wessex Water, United Utilities, RSPB.
[215] levelling_up_rep_rm_1121.pdf (parliament.uk) p.73 to 84.

The decision to consider all WWTW upgrades required by the proposed new TAL obligation as needed for environmental improvement has allowed us to simplify our approach, compared with the draft methodology. There are two scenarios we now envisage:

- for all WWTW upgrades covered by the proposed new TAL obligation, costs would be recovered from customers generally. This approach would only apply in England; and
- we will allow English and Welsh companies flexibility to undertake commercial negotiations with developers on any potential nutrient mitigation schemes (eg possible upgrades to WWTWs not covered by the proposed new obligation, including WWTWs in Wales) on the basis that the costs would be fully recovered from developers **as a non-price control activity**. This would require a licence modification. We intend to implement a licence modification only in cases where a company requests it in order to facilitate developer contributions.

For the proposed new TAL obligation to apply in relation to specific WWTWs the Secretary of State would first need to designate sensitive catchment areas. Ideally this process will give English companies sufficient time to include appropriate schemes in their October 2023 business plan submissions. But companies will already have a reasonable idea of the WWTW upgrades that are likely to be required by 1 April 2030 if the proposed new TAL duty is enacted. We also note that the proposed new TAL obligation would allow at least seven years from the subsequent designation of new sensitive catchment areas for WWTWs discharging into these areas to be upgraded. This addresses some of the uncertainty associated with the potential for additional sensitive catchment areas to be designated.

In our PR24 draft methodology, we proposed that if there was any uncertainty on the full list of sites affected by NN, that companies should include all schemes associated with potentially affected sites in PR24 business plans. Our proposal was to implement a reconciliation adjustment at PR29 to strip out the funding of any NN mitigation schemes that were ultimately not taken forward. Following the subsequent government announcement and the introduction of the amendment to the Levelling-up and Regeneration Bill setting out the proposed new TAL duty, we currently expect schemes that will need to be delivered by 1 April 2030 to be confirmed in time for PR24. We therefore no longer consider a reconciliation mechanism to be necessary.

The rest of the proposed policy as set out in the draft methodology was focused on catering for developer contributions in the PR24 regulatory framework. Given the above decisions, our final methodology approach also does not require any of these policies.

Interaction with other nutrient mitigation schemes and measures

Investment by wastewater companies will only address part of the nutrient problem in protected sites in unfavourable condition, reducing but not removing the need for nutrient neutral development. Since all NN schemes covered by the proposed new TAL obligation

would be regarded as providing general environmental improvement, they benefit all developers (as well as the natural environment) and are not available to individual developers to use as nutrient mitigation. As a result of this decision, none of the wastewater company investments under the proposed new TAL obligation would generate credits for NN mitigation that developers could purchase.

Therefore, Natural England is working to develop a strategic nutrient mitigation scheme which will use funding from the UK government to invest in nature-based solutions (NBS), helping LPAs and developers address nutrient pollution at sites affected by nutrient neutrality.[216] The scheme will create new habitats which will be the basis for a supply of nutrient credits that developers can purchase, enabling them to demonstrate nutrient mitigation. The nutrient mitigation scheme will supplement schemes available in private nutrient markets.

Furthermore, Welsh Government[217] is supporting a range of measures to improve river water quality, including:

- enabling nature-based solutions;
- a nutrient calculator to aid planning decisions on nutrient neutrality; and
- exploring the possibility of nutrient trading.

We expect wastewater companies to set out how they propose to support these schemes and measures in PR24 business plans.[218]

[216] Nutrient mitigation scheme can help provide the nature and housing we need - GOV.UK (www.gov.uk), 22 July 2022.
[217] Welsh Government written statement, ' River Pollution Summit at the Royal Welsh Show (1 August 2022) | GOV.WALES'
[218] This is not part of the minimum business plan expectations.

6. Best value

Delivering wider value is a main theme in the UK government's SPS[219] and Welsh government's SPS.[220] One of the four strategic priorities in the UK government's SPS is for Ofwat to "challenge the water industry to plan, invest in, and operate its water and wastewater services to secure the needs of current and future customers, in a way which delivers value to customers, the environment and wider society over the long-term". Similarly, one of the strategic objectives in the Welsh government's SPS is for Ofwat to challenge companies "to deliver value for money for customers, communities and the environment" and "to deliver best value solutions through their regulatory framework".

In this section we set out how our cost assessment approach at PR24 will help meet the strategic objectives set out in the UK and Welsh governments' SPSs in relation to the delivery of best value.

6.1 Our final methodology policies

At PR24 we want to support companies delivering wider environmental and social benefits in the course of them carrying out their statutory functions. Companies should seek to deliver these wider benefits where this is best value for customers, the environment and society, while taking into account the impact on affordability of customers' bills.

Compared to PR19 we have placed a greater emphasis on best value in our assessment of enhancement expenditure at PR24. We have emphasised the need for schemes to be best value in our: guidance to companies on strategic planning frameworks;[221] feedback to companies of our assessment of draft strategic plans;[222] enhancement assessment criteria (see Section 2.4.2); and long-term delivery strategies guidance.[223]

To support companies delivering best value at PR24, we are introducing the following key changes to our PR19 cost assessment approach:

- We will take account of wider environmental and social benefits more robustly and widely in our assessment of enhancement expenditure. Benefits that influence most the choice of enhancement solution need to be measurable and robustly demonstrated and linked to performance commitments or price control deliverables where appropriate. Other benefits should not be significant drivers of costs.

[219] Defra, 'The government's strategic priorities for Ofwat', February 2022
[220] Welsh Government, 'Strategic priorities and objectives statement to Ofwat issues under section 2B of the Water Industry Act 1991', 2022
[221] Ofwat, 'Ofwat's expectations for strategic planning frameworks at PR24', November 2021
[222] Ofwat, 'Ofwat's industry overview of draft drainage and wastewater management plans 2022', October 2022
[223] Ofwat, 'PR24 and beyond: Final guidance on long-term delivery strategies', April 2022

- We will provide a more level playing field between traditional solutions and non-traditional solutions. We will do this by setting a ten-year ongoing operating expenditure allowance for non-traditional solutions which are wholly or primarily ongoing operating expenditure based (eg catchment management solutions). At the end of this ten-year period, we will consider whether an additional enhancement allowance is required for another regulatory period.
- We will take into account the level of partnership contributions in our benchmarking of enhancement expenditure to ensure that customers pay no more than they should. Companies will be able to share the risks associated with partnership funding with customers through cost sharing.

6.2 Changes from our draft methodology

The key changes to our draft methodology are as follows:

- **Treatment of enhancement operating expenditure.** We will set a ten-year operating expenditure allowance for non-traditional solutions which are wholly or primarily ongoing operating expenditure based. This is one of the options we put forward in our draft methodology. We consider that this option achieves similar results to the multi-period funding options proposed by some companies, but at a lower regulatory cost. To address concerns raised by some companies in relation to the surety of funding beyond the initial ten-year period, at the end of this period we will consider whether an additional enhancement allowance is required for another regulatory period. The ten-year allowance will be limited to non-traditional solutions which are predominately operating expenditure based, such as catchment management solutions.
- **Funding of non-traditional solutions allowed for at PR19.** Where companies consider that our base cost modelling is unlikely to provide sufficient funding for catchment- and nature-based solutions allowed for in previous price reviews, companies can submit a cost adjustment claim. The evidence supporting claim needs to be sufficient and convincing.
- **Partnership funding.** We are retaining our proposal to consider partnership contributions in our benchmarking of enhancement expenditure. To address concerns raised by some companies in relation to possible regional variations in the access to partnership funding, we will consider the evidence that companies submit in their business plan on the inequality of access to this funding. This evidence needs to be sufficient and convincing. Furthermore, to account for the uncertainty around partnership contributions, companies will be able to share the risk associated with the level of these contributions with customers through cost sharing. We will provide further guidance on how companies should reflect partnership contributions in business plan tables.

6.3 Stakeholder views

Stakeholders were broadly supportive of our proposal to incorporate best value considerations into our assessment of enhancement expenditure at PR24. Some stakeholders however raised concerns on some of the elements of our proposed approach.

- Anglian Water, United Utilities and Wessex Water thought that we did not go far enough. They called for our best value assessment to be extended to base expenditure activities rather than just limiting this to enhancements. United Utilities however did recognise that enhancement expenditure is the logical place to start.
- Regarding our proposed approach to valuing benefits, some companies[224] disagreed with the use of outcomes delivery incentive rates research to inform benefit valuations. They argued that this research is not valid evidence for assessing enhancement proposals as it is not scheme specific. They called for companies to be allowed to use their own benefit valuations instead. By contrast, Northumbrian Water and Wessex Water supported the use of a sector-wide approach to valuing benefits. Wildlife & Countryside Link and Wales Environment Link called for the adoption of a sector-wide natural capital approach.
- On the treatment of enhancement operating expenditure, the majority of stakeholders supported one or both options that we put forward in draft methodology. These options are 1) adding the net present value of whole life ongoing operating expenditure to the RCV; and 2) setting a ten-year ongoing operating cost allowance. The ten-year allowance option received most support. The RCV option was not supported by Affinity Water, South West Water and Yorkshire Water. Anglian Water, United Utilities and Wessex Water disagreed with both options and proposed an alternative approach which involves setting a provisional long-term allowance over multiple control periods that can be reassessed at each price review.
- Severn Trent Water, Wessex Water and Yorkshire Water pushed back on our proposal to consider partnership contributions in our benchmarking of enhancement expenditure. They thought that this could put too much risk on companies and could dissuade them from putting partnership schemes forward. Wessex Water also called for further details on how this approach will work in practice.

6.4 Our final decisions and reasoning

6.4.1 Accounting for wider economic benefits

At PR24 we want companies to deliver wider environmental and social benefits in the course of them carrying out their statutory functions. Companies should do this where this is best value for customers, the environment and society, taking into account the impact on the affordability of customers' bills. To support companies delivering best value, we will take into

[224] Anglian Water, Bristol Water, South West Water, Yorkshire Water.

account wider environmental and social benefits more robustly and extensively in our assessment of enhancement expenditure. This will allow us to set appropriate cost allowances for companies proposing to deliver best value improvements.

This subsection is organised as follows:

- Our definition of best value.
- Our expectations about how companies should evaluate the benefit impacts of enhancement expenditure proposals.
- Our expectations about how companies should assess best value as part of their options appraisal process.
- Additional conditions under which we may provide additional cost allowances on the basis of best value. These conditions relate to cost efficiency and customer support and protection.
- How we expect companies to protect customers to ensure that they receive the benefits that companies have been funded to deliver.

What we mean by best value

Best value schemes are those that generate the greatest long-term economic benefit for customers, the environment and society, taking into account the cost of the scheme.

The concept of best value is broad and considers factors such as short-term and long-term risks; the uncertainties around the cost and benefit of the scheme; the flexibility and adaptability of the scheme to meet future uncertainties; and the impact of the scheme on the **affordability** of customers' bills.[225] Companies should consider these factors when developing their enhancement proposals at PR24.

Assessing best value requires the consideration of all of the potential benefit and cost impacts of an enhancement scheme. There can be a wide variety of benefits from enhancement schemes beyond that of the primary scheme purpose. These can encompass environmental and biodiversity improvements and social benefits such as public health, well-being and recreation. To illustrate this, the creation of a sustainable drainage system may not only reduce storm overflows (the primary scheme purpose); it could also reduce flood risk for residents and deliver carbon savings, biodiversity gains and amenity and recreational benefits. These benefits need to be balanced against the costs of the scheme to assess the value that the scheme would bring to customers, the environment and society.

Not all enhancement schemes that generate additional benefits will necessarily be best value. Schemes where the additional costs outweigh the additional benefits are, by definition, not best value. Least cost schemes can be best value where alternatives offer

[225] Further considerations in relation to best value solutions are set out in section 9.2 of the joint Environment Agency, Natural Resources Wales and Ofwat, 'Water resources planning guideline', April 2022.

smaller net benefits (even if they are still value for money). Schemes that generate additional benefits may not necessarily cost more than traditional solutions and so can also be those that cost least.[226] Therefore, companies should consider a variety of options to identify the best solution for customers, the environment and society, taking into account the impact on the affordability of customers' bills.

Assessing and valuing benefits

We expect the benefits that most influence the choice of enhancement solution need to be measurable and robustly demonstrated.[227] Benefits that are not measurable nor robustly demonstrated should be reasonably modest and should not be significant drivers of costs.

Benefits that are reflected in **performance commitments** should be measurable and robustly demonstrated. Therefore, where companies propose to reflect the benefits of a scheme in common performance commitments, we will accept these benefits as robustly demonstrated. There are other benefits that could be measurable and robustly demonstrated that could be covered in bespoke performance commitments or **price control deliverables (PCDs)**. Examples of these include additional wastewater storage and volume of water to deliver.

Wider benefits which companies do not propose to reflect in performance commitments nor in PCDs need to be clearly evidenced. Examples of these benefits may include access, amenity and engagement outcomes.[228] These benefits are significantly harder to robustly demonstrate and keep track of. Therefore, consistent with water industry national environment programme (WINEP) methodology[229], we would not expect these benefits to be a material driver of overall costs and should be reasonably modest.

In response to our draft methodology, Northumbrian Water argued that our expectation that some wider benefits should not be significant drivers of costs would constrain the range of wider environmental and social benefits that are considered. We do not think this is necessarily the case. Our approach does not constrain the consideration of wider benefits. However, to protect customers, if benefits are a significant driver of costs they need to be robustly demonstrated.

In our draft methodology we proposed to adopt a common approach to valuing benefits to ensure companies use a robust and consistent approach. Where possible, we said that

[226] For example, United Utilities saved £7 million by using catchment management methods to reduce phosphorus levels in the river Petteril, compared to a traditional engineering-based solution. See Get nature positive, 'United Utilities: Petteril Project', 2015.
[227] In this context robust means that measurements are not unduly open to bias or manipulation, and that any such influences can be effectively mitigated where they exist. Demonstrability means investment impacts should be observable in a way that can be objectively recorded and reported on.
[228] These benefits relate to contributions of enhancement schemes to access to, amenity of and engagement with the natural environment to support customer and community wellbeing.
[229] Defra, 'Water industry national environment programme (WINEP) methodology', May 2022, Section 4.2.

companies should use the valuations identified by the **collaborative research** on outcome delivery incentives.

We also set out that where the collaborative outcome delivery incentive rates research cannot be used to derive a unit benefit value, companies should use the recommended values in the water industry national environment programme options development guidance.[230] We also said that we expected companies to apply the recommended values appropriately for the situation being assessed and to provide a robust justification for the choice of value.[231]

In response to our draft methodology, some companies[232] disagreed with the use of outcomes delivery incentive rates research to inform benefit valuations. They argued that this research is not valid evidence for assessing enhancement proposals as it is not scheme specific. They called for companies to be allowed to use their own benefit valuations instead. By contrast, Northumbrian Water and Wessex Water supported the use of a sector-wide approach to valuing benefits. Wildlife & Countryside Link and Wales Environment Link called for the adoption of a sector-wide natural capital approach.

We agree with the latter stakeholders on the need for a sector-wide approach to valuing benefits. We believe that it is important that companies use a robust and consistent approach to assessing and valuing benefits so that we can be confident that companies are taking the right solutions forward.

There are advantages from using the collaborative research informing outcome delivery incentives to inform benefit valuations.

- It will ensure that companies use a consistent and robust approach to valuing the benefit impacts of enhancement initiatives.
- It will also ensure that the unit benefit values used in the assessment of these initiatives are aligned with those used to set outcome delivery incentive rates. This will help align company decision making on the choice of enhancement solution with the protection that outcome delivery incentives provide to customers against the under- or non-delivery of funded outcomes.

[230] Defra, This guidance provides recommended values for a range of environmental and social outcomes. For some outcomes, the water industry national environment programme guidance may provide more than one recommended value. These are not confidence intervals but rather context-specific values. An explanation of the context for which the value is recommended is provided in the water industry national environment programme options and appraisal guidance.
[231] For example, the recreation value metric for green space cannot be used for any green space (including Sustainable Drainage Systems). It was generated specifically in the context of sites within urban and built-up areas. Further, that metric should only be applied in cases where there is public access for recreational value to be realised and that it is a site of reasonable size, as the metric is based on value generated 'per visit', so the site must be expected to attract and generate visitors. In line with this, you should justify why you have used certain value metrics and how they are appropriate for the situation being assessed.
[232] Anglian Water, Bristol Water, South West Water, Yorkshire Water.

In addition to the collaborative research mentioned above, the introduction of new performance commitments such as those on GHG emissions, biodiversity and river quality will help establish a sector-wide approach to quantifying environmental benefits at PR24. We expect companies to use the same methodology that they use to measure common performance commitment levels to quantify the benefits of their enhancement proposals.

We disagree with Anglian Water's response which suggests that our proposed approach does not allow companies to use alternative unit benefit values. As set out in our draft methodology, we continue to consider that companies can use alternative unit values where they consider that the standardised values are not suitable or applicable to the benefits that are expected from company actions.[233] However, companies will have to present compelling evidence to support the use of alternative values. Where alternative unit benefit values are used to inform scheme impacts, companies should also present the benefit impacts of the scheme based on the standardised unit values for comparison.

Sources of evidence used to support the alternative unit values must be considered robust, sufficiently detailed and be openly available for us to verify, if required. The collaborative research on initial outcome delivery incentive rates should already account for company-specific circumstances, including material differences in customer preferences. Therefore, we expect companies to use valuations produced by the collaborative outcome delivery incentive research, rather than duplicate this through competing research.

We agree with United Utilities that there is the risk of potential misalignment of the value assessment approach used in the WRMP, DWMP, WINEP and PR24, caused by the different regulatory timelines of these reviews. We expect companies to align their approach across these reviews as much as possible and to explain any misalignment in their business plan. To mitigate the risk of misalignment across reviews, we expect companies to test the sensitivity of their decision-making to key assumptions, taking into account how these assumptions might change throughout the planning process in the run-up to PR24 business plans.

Assessing best value

We will support cost allowances for enhancement schemes which deliver wider environmental and social benefits if the additional benefits outweigh the additional costs of the scheme, compared to a least cost solution. Therefore, to identify the overall best value solution, companies should compare the benefits and costs of additional benefit schemes with the benefits and costs of least cost schemes and other alternatives.

[233] Defra, 'Water industry national environment programme (WINEP) methodology', May 2022, pp.30-31.

In doing so, companies should take into account the risks and uncertainties[234] of the various enhancement options. Companies should also consider the impact of these options on the affordability of customers' bills.

To compare the benefits and costs between different scheme options companies should examine the **benefit to cost ratio** of each option. This ratio should be calculated by dividing the present value of the stream of scheme benefits by the present value of the stream of scheme costs over the appraisal period. We will not support additional cost allowances (over and above least costs) if the benefit to cost ratio of the additional benefit scheme is lower than the benefit to cost ratio of the least cost scheme.

To calculate the benefit to cost ratio, companies should consider the benefits and costs (including operating and capital expenditure) of the scheme over a time horizon of minimum 30 years.[235] A longer appraisal period may be suitable where an intervention is likely to have significant social costs or benefits beyond 30 years. Justification for this should be set out clearly, and the standard 30-year period presented alongside for comparison in the business plan tables. This approach should be replicated for the alternative options being assessed and presented in the business plan tables. To take account of uncertainties, companies should use their mean (rather than p50) forecast of the costs and benefits of each scheme option over the appraisal period. Costs and benefits should be adjusted to 2022-23 prices using the CPIH Index financial year average.

Companies should include the impact of financing costs in their benefit to cost ratio calculations. This means that capital expenditure should be converted to a stream of annual costs, where the annual cost is made up of depreciation/RCV run-off costs and allowed returns over the life of the assets. Depreciation (or run-off) costs should be calculated using straight-line depreciation over the appraisal period.[236]

To discount the benefits and costs over time, companies should use the social time preference rate as set out in the 'The Green Book'.[237]

SES Water raised a concern about the 30-year appraisal period being too long and that it could discourage companies from investing in schemes that bring more upfront benefits and address urgent needs. We consider that companies should identify and put forward the solutions that allow them to deliver their statutory requirements and that offer the largest net benefits to customers, the environment and society over the long-term. We consider that a sufficiently long appraisal period is needed for companies to identify these solutions. Our

[234] This might include risks and uncertainties associated with driver compliance, delivery date, outcome, cost, resources, technology, supply chain, and/or public perception.
[235] This is consistent with the methodology set out in Defra, 'Water industry national environment programme options development guidance', May 2022, Section 7.3.
[236] To calculate the allowed return, companies should use the allowed return on capital rate specified in Ofwat, 'PR24 Final Methodology – Appendix 11: Allowed return on capital', December 2022, Section 2.
[237] HM Treasury, 'The Green Book', 2022, Sections 2.23, and 5.32 to 5.39.

approach takes account of the value of delivering benefits quicker by applying the social time preference rate to both benefits and costs over the appraisal period. Therefore, we are retaining our proposal of a minimum 30-year appraisal period for the best value assessment.

Ensuring costs are robust and efficient

Companies should ensure that the costs of any additional benefit scheme are **robust and efficient**. To assess the robustness of scheme costs we will draw on our standard cost assessment toolkit, which includes benchmarking and deep diving.

Several companies requested further details on the modelling approach that we will adopt to assess enhancement expenditure at PR24. In Section 2.4.2 we set out our reasons for why we are not providing further details at this stage. However, we will aim to assess different intervention types separately. For example, we will aim to assess catchment and nature-based solutions separately from conventional solutions. This will enable us to better identify the cost drivers of these solution types and hence avoid disadvantaging them inadvertently relative to other solutions.

Customer support

We want companies to create further social and environmental value while delivering their core functions. Companies already deliver a significant amount of these benefits when delivering their statutory functions (such as environmental improvements to river water quality and public health benefits of high-quality drinking water). There is also real scope for companies to deliver even greater environmental and social benefits beyond their minimum statutory requirements. However, consistent with our public value principles, this should not come at a greater cost to customers without **customer support**.[238]

Therefore, where companies seek to deliver wider environmental and social benefits when delivering above their minimum statutory requirements at a greater cost to customers, they should demonstrate customer support. We provide further details on how companies should satisfy this condition in Section 2.4.2.

Protecting customers

Given that customers may pay more for schemes which deliver wider benefits, we want to ensure that customers receive the benefits that companies are funded to deliver through these schemes. To this effect, companies should identify in their business plans how customers will be protected against under or non-delivery of funded enhancements. We set out our expectations of how companies should do this in Section 5.4.4.

[238] Principle #4 states that "Delivery of social and environmental value outcomes should not come at greater cost to customers without customer support".

6.4.2 Facilitating the use of nature-based solutions

One of the ways by which companies can deliver wider environmental and social benefits is by making greater use of nature-based solutions. Nature-based solutions provide companies with the opportunity to carry out their statutory functions and deliver wider environmental and social benefits compared to more traditional solutions.

The UK and Welsh governments' SPSs expect Ofwat to encourage the use of nature-based solutions. The UK government's SPS expects Ofwat to "support an increase in the use of nature-based solutions where appropriate and in the interests of the environment and customers". It also expects Ofwat to "work with the sector, the Environment Agency, Natural England and others to rapidly identify and overcome any barriers to the uptake of these approaches by water companies".[239] The Welsh Government's SPS expects Ofwat to "challenge companies to shift to a catchment based, outcomes-led approach with nature-based partnership (including customers) solutions that address problems at source" and to "give precedence to these types of solutions, where appropriate".[240]

In this section we set out how our cost assessment approach will help meet the strategic objectives set out in the UK and Welsh governments' SPSs in relation to the use of nature-based solutions.

Box 6.1 Supporting a step-change increase in the use of nature-based solutions

We expect companies to scale up **their use of nature-based solutions at PR24**. Nature-based solutions can deliver important wider benefits (such as biodiversity gains, carbon savings and amenity benefits) but can be more reliant on operating expenditure, and/or take longer to deliver outcomes.

Our totex and outcomes regime – which we have adopted since PR14 – gives companies the flexibility to choose the most efficient solution to deliver the required outcomes, irrespective of whether the solution is capex or opex funded. This means that companies can choose to use nature-based solutions to deliver the required outcomes, particularly where these solutions are the most cost-effective means for delivering those outcomes.

However, we can do more to support the adoption of nature-based solutions at PR24.

Throughout the methodology we are promoting the delivery of best value (ie delivering the maximum long-term economic benefit for customers, the environment and society, compared to costs). To facilitate this, we will explicitly consider wider social and

[239] Defra, 'The government's strategic priorities for Ofwat', March 2022, Section 'Environmental ambition'
[240] Welsh Government, 'Strategic Priorities and Objectives Statement to Ofwat issues under section 2B of the Water Industry Act 1991', 2022, p. 7

environmental benefits in our assessment of enhancement expenditure (see Section 6.4.1). This should encourage the use of nature-based solutions where they offer better value; for example, where they provide greater net benefits than alternative solutions.

In addition, we are introducing **new performance commitments** in areas where nature-based solutions tend to perform better than traditional solutions, such as GHG emissions and biodiversity. This will create more space for companies to use nature-based solutions as companies will be able to secure outperformance payments where they go beyond their performance commitment levels to deliver more for the environment.

Our **quality and ambition assessment** will also encourage the use of nature-based solutions. Our assessment will make rewards available to those companies which show (among other factors) more ambition in relation to i) delivering stretching performance from base expenditure allowances and ii) using best value solutions to deliver requirements. The use of best value solutions will tend to benefit nature-based solutions as they can deliver greater benefits.[241]

We are also introducing changes to our PR19 methodology which will remove or mitigate potential biases that could work against the use of nature-based solutions. These changes include:

- Setting a **ten-year allowance** for non-traditional solutions which are wholly or primarily ongoing operating expenditure based. This will help ensure a more level playing field for funding of operational and capital solutions. We discuss our ten-year allowance in more detail in the next subsection.
- Changing the burden of proof for **cost adjustment claims** which relate to catchment and nature-based solutions. Where companies consider that our PR24 base cost models do not provide sufficient funding for the continuation of catchment and nature-based solutions they can submit a cost adjustment claim. The evidence supporting the claim needs to be sufficient and convincing.
- Providing funding for **multi-period schemes**, ie schemes which need more than one regulatory period to deliver the required improvement. A portion of the cost of the scheme will be funded at PR24 and the remainder of the cost will be funded in subsequent regulatory periods, unless a DPC funding arrangement is suitable (see Section 5.4.3).
- Where appropriate, separating out our **benchmarking of catchment and nature-based solutions** from our benchmarking of more traditional solutions. This will allow us to build benchmarking models which more accurately capture the cost drivers of non-traditional solutions, and therefore avoid inadvertently penalising those companies that make more use of these types of solution.

[241] Note that in Section 2, we have also set out our expectation that companies should consider a range of options, including nature-based solutions, in their options development process.

In addition to the measures set out above we are working with the Environment Agency to make the water industry national environmental programme (WINEP) more **outcomes focussed.** The WINEP is the single largest environmental investment programme in England, and is therefore a particular focus of ours in getting companies to invest in nature-based solutions and improve the environment.

The new WINEP methodology and guidance documents have a strong focus on natural capital values and ensuring companies secure the best value for the environment and customers. This means that a wide range of environmental indicators now form the core part of investment decision making, from the effects on GHG emissions and biodiversity to measurable impacts on water quality and amenities.

The new WINEP approach also includes an **Advanced WINEP** option. This option allows companies to go further in some catchments and achieve more for the environment. For example, this might be through the use of innovative nature-based solutions or allowing more time to set up partnerships to co-design, co-deliver and co-fund WINEP options and secure wider benefits for the environment and customers.

We recognise that some nature-based solutions still face high uncertainty with respect to the extent to which they can deliver the required outcomes. We expect companies to consider this uncertainty when appraising options and proposing investments which are best value for customers, communities and the environment. Companies should build any uncertainties into their business plan cost and benefit forecasts. We will consider these forecasts in the setting of efficient cost allowances.

Where the uncertainty over the deliverability of a nature-based solution is significant, companies can propose running a proportional and timely pilot scheme. Companies can also propose running a pilot scheme at scale but need to provide compelling evidence that the pilot is needed to fill gaps in the existing evidence base (both at an industry level and more broadly) and, therefore, provide useful lessons for future schemes.

We will continue to work with the relevant regulators to remove any outstanding barriers in the use of nature-based solutions where appropriate. For example, we will continue to work with the Environment Agency to embed new permitting methodologies to support nature-based solutions, such as catchment permitting and catchment nutrient balancing via the work on innovative permitting.

Providing greater surety of funding

Some nature-based solutions may be more reliant on ongoing operating expenditure (opex) funding than traditional schemes. Given the nature of our five-year price review cycle, there

is less certainty of funding for solutions which require more ongoing opex funding than solutions which costs are primarily upfronted such as capex-based solutions.

The less certainty of funding for solutions that are more reliant on on-going opex arises due to the different way in which opex and capex is reported, assessed and funded. Opex for enhancement projects is reported as enhancement for a single price control period. It is then reported as base in the next control period, but it is not reflected in the base cost econometric models for another five years since these models are backwards looking.[242] Therefore, any allowance for enhancement opex is only guaranteed for one price control period, until it is subsequently reflected in the base models in two control periods time.

In our draft methodology we set out two options to address the less certainty of funding for these types of solution:

- Capitalise the net present value of the whole-life opex and add it to companies' RCV.
- Set a **ten-year allowance** (to be recovered over two price control periods) for the efficient ongoing opex related to nature-based solutions which are wholly or primarily opex based. This will bridge the period before the costs are recognised in the base models, after which the costs would be allowed for in our modelled base allowance.

The majority of stakeholders supported at least one of the options that we put forward. Seven stakeholders[243] supported the ten-year allowance option. Hafren Dyfrdwy and Severn Trent Water said that the ten-year allowance option has merit in its simplicity but would only capture the minor maintenance needs in the first five years of operation and not the more significant maintenance required typically after 10 - 15 years. Northumbrian Water and Southern Water disagreed with the ten-year allowance option favouring the NPV of costs being added to the RCV.

United Utilities recognised that adding costs to the RCV only addressed funding over multiple periods for nature-based solutions but not other aspects. Yorkshire Water and Affinity Water were also not convinced that the addition to the RCV was the correct response. This is because of the amount of complexity that would need to be introduced as well as concerns about the effect on financial metrics due to costs still being categorised as opex in companies' accounts.

Anglian Water, United Utilities and Wessex Water proposed an alternative approach which involves setting a provisional long-term allowance over multiple control periods that can be

[242] We discuss our PR24 approach to setting efficient base cost allowances in Section 2.4.1 of this appendix.
[243] Dŵr Cymru, Affinity Water, Portsmouth Water, SES Water, South East Water, South Staffs Water and CCW.

reassessed at each price review. These companies commissioned a report by Reckon to outline this proposal.[244] This report sets out the following recommendations:

- Set a long-term allowance over multiple regulatory periods to address the insufficient certainty of funding for opex-based solutions.
- Add a risk premium on top of the enhancement opex allowance. Reckon however accepts that this premium is not essential for the multi-period funding arrangement to work effectively.
- Distinguish between enhancement investment opex (opex that is incurred only once but provides benefits over multiple years) and enhancement ongoing opex (ongoing running costs for capex and opex based enhancements). Reckon suggests that the enhancement investment opex should be added to the RCV.
- Add a risk premium on top of the enhancement opex allowance. Reckon however accepts that this premium is not essential for the multi-period funding arrangement to work effectively.
- Extend multi-period funding to all opex-based solutions, rather than limiting it to opex-heavy nature-based solutions. This is a position that was supported by other stakeholders.

Overall, we agree with the majority of stakeholders that some of the practical challenges posed by the RCV option (and that we set out in our draft methodology[245]) cannot be overcome and/or will add too much complexity to our regulatory framework. We also agree with Reckon that this option will lock costs (most of which will not be incurred in the control period) into the RCV, so may not be in the interest of customers. Northumbrian Water put forward potential solutions to address the issues identified for the RCV option. However, we still believe there will be reconciliation and double funding risks after the 2025-30 period. Therefore, we are not taking this option forward.

Below we discuss the alternative multi period funding approach and the further recommendations set out by Reckon in its report.

Setting a multiple period allowance

Reckon recommended we set a provisional long-term allowance over multiple periods for opex-based solutions to tackle the lack of surety of funding problem.[246]

[244] Reckon, 'The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements', September 2022.
[245] Ofwat, 'Appendix 9 – setting expenditure allowances', section 6.2.2, p. 137
[246] Reckon, 'The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements', September 2022, p. 69

Although we agree that a multiple period allowance would address this problem, we have concerns that it may add significant complexity to our cost assessment approach for this to be workable solution. These concerns include:

- **Potential double funding.** Multi-period funding would run in parallel with our modelled base cost allowances (for a period longer than ten years) and this will increase the risk of double funding.[247]
- **Risk of undermining our ability to use our base cost models in the future**. Our base cost models aim to compare costs across companies on a like-for-like basis. Moving costs out of the base cost models (and into the multi-period funding scheme) for longer, could make it harder for our models to consistently compare costs where companies choose a different mix of capex- and opex-based solutions.[248]

To mitigate these risks we would have to put a more onerous monitoring and reporting regime in place to keep track of multi-period funding over a number of price reviews. It would also add complexity to our cost assessment approach as adjustments are likely to be needed to ensure that our base cost models compare costs on a like for like basis. This was acknowledged by Reckon in its report.[249] A more complex regulatory framework would lead to higher costs for companies and thus to larger bills for customers. Therefore, there is a risk that this approach would bring undue complexity if opex-based solutions remain a small fraction of the overall industry costs.

We consider that the ten-year allowance option that we proposed in our draft methodology can provide similar surety of funding as the multi-period funding arrangement but at a lower regulatory cost. This is because the ten-year allowance does not overlap with the allowance we set through our base cost models, thus reducing the risks of double-counting.[250] We will also add enhancement opex to modelled base costs for a subset of enhancement lines for which we are more certain costs are ongoing.[251]

To address concerns raised by Reckon and other stakeholders that the ten-year allowance may not provide surety of funding beyond the initial ten-year period, we will consider whether an additional allowance is required for another regulatory period at PR34. We will also require companies to report their costs against the ten-year allowance separately so that

[247] This risk will be higher if some companies decide to use opex-based solutions for specific areas of expenditure while others not. This means that companies choosing to use opex-based solutions (and receive funding for these solutions through multi-period funding) would still receive an implicit opex allowance through our base cost models.
[248] Companies that make more use of opex-based solutions would look more efficient compared to companies using capex-based solutions.
[249] Reckon, The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements, September 2022, pp. 80-81
[250] It also mitigates the risk of undermining the cost comparability within our base cost models.
[251] See section 2.4.1 for more details.

we can monitor expenditure in this area and to enable us to have the necessary data to include or exclude this expenditure from the PR34 base cost models.

Adding a risk premium to long-term opex allowances

Wessex Water stated that the ten-year funding option does not recognise the disparity in incentives for an investor as it does not address the under-remuneration of finance costs associated with opex-based solutions. The Reckon report proposes a risk premium to compensate for the risk of undertaking investment in opex-based solutions.

Under our totex approach, companies should be indifferent between adopting a capex-based solution and an opex-based solution on a net present value basis. This is because, although companies earn a return when adopting capex-based solutions, most of the costs associated with these solutions are recovered after the costs are actually incurred. Whereas with opex-based solutions, companies recover costs in line with actual expenditure. Therefore, we disagree that a risk premium on opex allowances is needed to incentivise the use of opex-based solutions, once the current funding gap for opex-based solutions is closed.

Adding enhancement investment opex to RCV

Reckon describes enhancement investment opex as those covering costs that are incurred in one year but provide benefits over time. An example of these costs is set-up costs associated with sustainable drainage systems which companies sometimes treat as opex due to underlying assets sitting on land owned by third-parties (eg local councils). Reckon recommends treating these costs similarly to capex and adding them to the RCV.[252]

As mentioned above, under our totex regime, companies should be indifferent between taking forward a capex-based solution and an opex-based solution on a net present value basis. This is provided that there is no funding gap for either of these two solution types.

We do not consider that there is a funding gap for enhancement investment opex. Some companies may choose to capitalise these costs in which case they will be added to the company's RCV. If a company considers it to be opex, it will be funded in-period through the PAYG rate as the profile of this cost type tends to be front ended, similarly to capex. Capitalisation policies are a matter for each company however, and the costs will be remunerated accordingly.

[252] Reckon, 'The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements', September 2022, pp. 97-99

Scope of the intervention

Affinity Water and Yorkshire Water suggested that any intervention should apply to all opex-based solutions and not just to nature-based solutions. Reckon also suggests this.[253]

We understand that companies are most concerned about the funding gap for solutions that are primarily made up of ongoing opex.

We have considered this and accept that there are catchment management solutions for which our proposed approach in the draft methodology would not provide certainty of funding. This is because they do not fall under the category of nature-based (eg paying farmers to reduce chemical discharges onto rivers).

To remedy this, we will extend the scope of the ten-year allowance to non-traditional solutions which are wholly or primarily ongoing opex based. This should capture both nature-based solutions and catchment management solutions which are opex heavy.

Accounting for risk and uncertainty

Another potential barrier affecting the use of nature-based solutions is the level of uncertainty around the extent to which they will deliver the required outcomes, compared to more conventional solutions. There are risks and uncertainties that companies need to take account of when considering the use of nature-based solutions.

- **Maturity of technology** – there are nature-based solutions that companies have been using for a long time now and their impacts on cost and benefits should be well understood and predicted with reasonable accuracy. Other solutions may be emerging and so their impact on costs and benefits can be less certain.
- **Uncertainties around deliverability and timing of benefit impacts** – the effectiveness and timeliness of the solution at delivering certain outcomes may depend on different factors including the need to work with third-parties. Although companies will exert some control over some of these factors, there will be a degree of uncertainty around them and this needs to be considered in the investment decision.
- **Uncertainties in relation to costs** – there could also be uncertainty in relation to the costs of implementing the solution and this may vary depending on the extensiveness of investigations, planning and the control the company has over the key drivers of cost.

The degree of risk and uncertainty is likely to vary by nature-based solution type. For example, sustainable drainage systems are increasingly being recognised and understood by companies and regulators for their important role in wastewater and drainage management.

[253] Reckon, 'The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements', September 2022, p. 56

Therefore, we would expect this type of solutions to face lower risks and uncertainties than less well-established nature-based solutions.[254]

Companies should use nature-based solutions when they have a **reasonably high degree of certainty** that the solution will deliver the required outcomes. We expect this high degree of certainty due to the following expectations set out in the water industry national environment programme guidance:

- Companies should present feasible options that are "expected to meet statutory obligation(s) or meet non-statutory requirements", "technically feasible" and offer suitable "deliverability".[255]
- In identifying the feasible options list, companies should also "consider and validate baseline risk (current risk level given the existing set of controls) and residual risk (remaining risk after option is delivered) of each option, considering future likelihoods of failures. This analysis should include detailed estimates and supporting judgements for all relevant types of risk for the option. This analysis might include risks associated with driver compliance; delivery date; outcome; cost; resources; technology; supply chain; and/or public perception".[256]
- Where a water industry national environment programme option has a higher than usual associated delivery risk, we expect companies to provide external and independent assurance of the option's suitability and reliability.[257]

Where companies do not have a reasonably high degree of certainty that the solution will deliver the required outcomes, companies can propose running a proportional and timely pilot scheme. Companies can also propose running a pilot scheme at scale but they will have to provide compelling evidence that the scheme is needed to fill gaps in the existing evidence base and, therefore, provide useful lessons for future schemes.

Where companies do propose to run a pilot scheme they need to set out how they propose to monitor and report the progress and outcomes of the scheme, including how the data will be shared with other companies and stakeholders. This will help reduce the risks and uncertainties that companies will face in future reviews in relation to these solutions; and so support innovation in the sector while managing the risks for customers and the environment.

[254] In certain circumstances, nature-based solutions like treatment wetlands and restoration of peatland to improve water quality parameter trends at abstraction points (and their effectiveness at meeting statutory requirements) may be less well understood.
[255] Defra, 'Water industry national environment programme (WINEP) methodology', May 2022, Section 7.2.2.
[256] Defra, 'Water industry national environment programme (WINEP) methodology', May 2022, Section 7.3, pp.15-16.
[257] Defra, 'Water industry national environment programme (WINEP) methodology', Section 7.3.2, p. 17.

In response to our draft methodology, Natural England suggested the use of existing nature-based solution accreditation (eg certification systems recognised by IUCN[258]) to help companies identify and manage the risks involved in the implementation of nature-based solutions. We are supportive of companies, the Environment Agency and Natural Resources Wales adopting this kind of tool. Given that part of the uncertainty that exists over the deliverability of nature-based solutions is partly due to the lack of robust, accessible and usable data/evidence (particularly in relation to the impact of certain types of nature-based solutions at scale), we are also supportive of industry-wide efforts to build the evidence base on the impact that nature-based solutions may have on outcomes.

Other policy considerations

In response to our draft methodology, Wildlife & Countryside Link recommended that the WINEP optioneering should include specific ambitious targets for the increase use of catchment and nature-based solutions. Similarly, Wales Environment Link suggested that the optioneering and options appraisals should be carried out with extensive engagement from customers and wider stakeholders, particularly when considering options that sit outside of the traditional asset base, such as catchment and nature-based solutions.

In Section 2.4.2 we set out our expectation that companies should assess a wide range of options to meet a defined need. We said that a range of options across different option types, including nature-based solutions, operational actions, innovative and modular schemes should be fairly, consistently and transparently considered and appraised. We also set out our expectation that companies should demonstrate customer support when delivering wider value.

Our totex and outcomes regimes gives companies the flexibility to adopt the best and most efficient solution to deliver the required outcomes. We have not imposed targets on the specific use of nature-based solutions at PR24. However, we will assess whether companies have given a fair, consistent and transparent consideration to these solutions in their business plans. We will not support funding of enhancements for which companies have not given due consideration to the use of nature-based solutions.

We expect companies to identify and propose the best option for customers, communities and the environment. Where nature-based solutions are best option, we will set efficient cost allowances to fund these solutions such that companies bear the risk around them as we do when setting cost allowances for other solutions.

[258] International Union for Conservation of Nature or IUCN. There are several certification schemes recognised by IUCN, which have been developed in accordance with the IUCN Global Standard for NbS. ' helps users design, implement and verify nature-based solution actions by providing clear parameters for defining nature-based solutions and a common framework to help benchmark progress. It also helps reinforcing best practice and to align interventions with internationally accepted principles.

6.4.3 Encouraging companies to collaborate with others and maximise co-funding opportunities

The UK government's SPS and the Welsh government's SPS set out expectations for Ofwat to encourage a collaborative approach to delivering wider benefits. The UK government's SPS expects Ofwat to "encourage companies to operate in partnerships across catchments maximising co-funding and green finance opportunities, wherever appropriate, including through market mechanisms". The Welsh government's SPS expects Ofwat to "encourage companies to explore and maximise collaboration and co-funding opportunities with other sectors and organisations as well as green finance opportunities to deliver best value for customers".

In this section we set out how our cost assessment approach will help meet the strategic objectives set out by the UK and Welsh governments' SPS in relation to collaboration and co-funding.

Building on our public value principles

Our public value principles already provide some guidance about how companies should collaborate with others. They state that "companies should consider where and how they can collaborate with others to optimise solutions and maximise benefits, seeking to align stakeholder interests where possible, and leveraging a fair share of third-party contributions where needed".[259]

On the fair share of third-party contributions, our public value principles explain that "Funding should be allocated so that each partner pays its fair and efficient share of the costs. This should take into account the relative benefits of the solution to water companies and third parties, and the incremental costs compared to a solution the water company would implement to address only its requirements".[260]

In general, where there are material benefits to third parties, we expect companies to actively seek contributions from these parties. The size of these **contributions should be in proportion to the benefits** that these parties can expect to receive through the scheme. We set out examples of projects delivering wider outcomes for which companies have been able to leverage third-party contributions in Table 6.1.[261]

The explanatory text of our public value principles also clarifies that "customers cannot be expected to fund activities that are not related to a water company's statutory functions".[262]

[259] Ofwat, 'Ofwat's final public value principles', March 2022, p. 7.
[260] Ofwat, 'Ofwat's final public value principles', March 2022, p.7.
[261] More recent examples of third-party funding proposals were put forward by successful companies under the Green economic recovery. These include flood resilience and catchment management projects. We applied conditions to allowances to protect customers.
[262] Ofwat, 'Ofwat's final public value principles', March 2022, p.4.

That is, customers should not be expected to pay for wider benefits that are delivered outside the course of the company delivering its statutory functions. For example, we would not expect customers to pay for a project that involves the company installing solar panels to generate and sell green energy to third parties.[263]

Our public value principles also set out that we do not intend for "water companies to deliver greater social and environmental value where other organisations have greater capability and/or a duty to act".[264] That is, customers should not pay extra for the delivery of benefits which are the responsibility of others to deliver, or where others are better placed to act, unless necessary for the company to meet its statutory obligations. Therefore, where others have a responsibility to deliver the wider benefits of the scheme, companies should seek to secure appropriate contributions from these parties.

Table 6.1: Examples of collaborative working and third-party funding

Scheme name	Description	Partners	Funding
Killingworth and Longbenton, Northumbria[265]	Removal of surface water from sewer network. It will also reduce flood risk and deliver wider benefits such as biodiversity gains, improved water quality, amenity and recreation benefits and education benefits.	Northumbrian Water, North Tyneside Council and Environment Agency	Northumbrian Water (£3.1m), Environment Agency (£2.7m), Tyneside Council (£0.4m), local levy (£0.07m)
Herne Hill and Dulwich Flood Alleviation[266]	Reduce flow of surface water into sewer network. It will also deliver environmental improvement and additional amenity and recreational benefits.	Thames Water, Southwark Council and Environment Agency	Thames Water (over £2m), Environment Agency (£1.7m), Local Authority (£0.2m)

[263] In Green Recovery we did not provide cost allowances for solar panel investments. We reasoned that solar panel investments to develop renewable energy are not part of the appointed business and all trading should be on an arm's length basis. We further said that the appointed business should receive income for resources utilised by the project and a market derived price should be paid for the electricity generated. See p.9 of Green Recovery: Draft Decisions.
[264] Ofwat, 'Ofwat's final public value principles', March 2022, pp.7-8.
[265] Susdrain, 'Killingworth & Longbenton Surface Water Management Scheme, North Tyneside', 2020, p.10.
[266] UKWIR, 'How best to align the funding processes with the various bodies involved in resolving flooding', 2016, Appendix A, pp.67-70.

Scheme name	Description	Partners	Funding
Rye Brook Wrington[267]	Reduction in flood risk to properties in Wrington, North Somerset.	Wessex Water, Environment Agency, North Somerset Council	Wessex Water (£150k), Defra/ Environment Agency/ Department for Levelling Up, Housing and Communities (£308k), North Somerset Council (£100k), Developer Contribution (£32k), local levy (£80k)
South West Peatland Partnership[268]	Water quality improvement and storm overflow reduction on Bodmin Moor, Dartmoor and Exmoor. It will also help restore ecosystems, and deliver carbon savings, recreational, health and well-being benefits.	South West Water, Environment Agency, Dartmoor National Park Authority, Duchy of Cornwall, Westcountry Rivers Trust, Cornwall Council, Cornwall AONB Dartmoor Preservation Association, Ministry of Defence	Defra/Environment Agency (£2m), match funded by multiple parties including South West Water, Dartmoor National Park Authority, Duchy of Cornwall, Westcountry Rivers Trust, Cornwall Council and Cornwall AONB Dartmoor Preservation Association
Petteril Project[269]	Improving water quality in the river Petteril by working with farmers to reduce phosphorus pollution.	United Utilities, Environment Agency, Rivers Trust, farmers, Nestle	£120k match funding from partners and co-investment with Nestle (£350k per year)[270]
Ribble Life Together[271]	New woodlands and wetlands to help reduce pollution, increase biodiversity, provide natural flood risk management and reduce climate change impacts. New fish passes have also been installed on weirs that currently prevent the natural migration of fish.	United Utilities, National Lottery Heritage Fund, Environment Agency, Natural England, The Rivers Trust, Woodland Trust, Ribble Valley Borough Council, Lancashire County Council, businesses, local authorities	£1.6m from the Heritage Lottery Fund and £1.6m of match funding from partners and external sources.

Maximising co-funding opportunities

We expect companies to maximise co-funding opportunities where they seek to deliver wider economic benefits through their enhancement activities. Working with others and leveraging contributions from others should help companies maximise the delivery of wider benefits while minimising costs for customers.

[267] UKWIR, 'How best to align the funding processes with the various bodies involved in resolving flooding', 2016, Appendix A, pp.67-70.
[268] South West Water, 'South West Peatland Partnership', 2018.
[269] Get nature positive, 'United Utilities: Petteril Project', 2015.
10.
[271] Ribble Rivers Trust, Ribble Life Together.

The water industry national environment programme methodology (WINEP) already sets out a 20% co-funding aspirational target for non-statutory actions.[272] We expect companies to make their best endeavours to meet this aspirational target at PR24. For Wales, Natural Resources Wales expects companies to consider solutions that are collaboratively designed, funded, and delivered.[273]

As part of their business plan companies should set out the level of partnership contributions that they expect to receive in relation to their enhancement proposals. The expected level of partnership contributions should take account of the degree of uncertainty over the scale and timing of these contributions.

To assess the level of partnership contributions we are retaining our draft methodology proposal to consider the expected level of partnership contributions in our benchmarking of enhancement expenditure, where appropriate. Severn Trent Water, Wessex Water and Yorkshire Water commented on this proposal. We address these comments later in this section.

We consider that there are several advantages from considering partnership funding contributions in our benchmarking of enhancement expenditure.

- Companies that manage to secure more contributions will look more efficient in comparison with the selected cost benchmark. This means that if a company performs better than the selected cost benchmark, it will be able to keep a portion of the partnership funding to lower its cost base. This should encourage companies to maximise co-funding opportunities.
- We will be able to set efficient cost allowances based on companies' own forecasts. As mentioned above, these forecasts should capture the degree of uncertainty over the size and timing of partnership contributions. Therefore, our approach will ensure that the setting of efficient cost allowances is reflective of the amount of contributions that companies are expecting to realistically achieve over the regulatory period.
- It will also allow us to challenge companies on co-funding opportunities based on the evidence submitted by all companies. This will ensure that customers benefit from a minimum level of co-funding and do not pay more than they should.

Accounting for uncertainty and regional variations

In response to our draft methodology, Severn Trent Water, Wessex Water and Yorkshire Water raised concerns over the impact that a benchmarking approach could have on the incentives of companies to put forward partnership schemes. They argued that companies may not have equal access to partnership funding and so a benchmarking approach could penalise those companies which face less favourable willingness to contribute conditions in their regions

[272] Defra, 'Water industry national environment programme (WINEP) methodology', May 2022, Section 4.4.
[273] Natural Resources Wales, 'National Environment programme (NEP) expectations', pp. 7-8.

compared to others. They also argued that given that there is significant uncertainty over the level of partnership funding that a company can achieve, a benchmarking approach could place too much risk on companies.

On the issue of the equality of access to partnership funding, we accept that partnership funding opportunities could differ across companies due to the type of scheme that they are taking forward (eg storm tanks compared to sustainable drainage systems). This could be explained in part by variations in the type of problems that companies face within their region. We will take account of these variations in our benchmarking by comparing different types of scheme separately.

Where companies consider that they are likely to face fewer partnership funding opportunities for a certain scheme type, compared to other companies, they should present the evidence supporting their lower partnership funding forecast in their business plan submission. We will take account of this evidence in our benchmarking of enhancement expenditure, but this evidence needs to be sufficient and convincing.

On the issue of uncertainty, all companies will face uncertainty over contributions from potential partners. We expect companies to present their mean expected forecast of the amount of partnership funding that they expect to receive over the control period. This will allow benchmarking results to reflect the likelihood of partnership contributions. Any out or under performance of partnership contributions will be shared with customers through cost sharing. This means that we will treat partnership contributions as a negative cost when applying cost sharing at the end of the control period. We will update the regulatory accounting guidelines to reflect this treatment in due course.

We will also take into account the degree of uncertainty over partnership funding when selecting the appropriate cost benchmark to apply in the setting efficient cost allowances.

7. Board assurance

We expect a company's full Board to take collective responsibility for its business plan, and own and be accountable for that plan. This includes the expenditure and outcome proposals that are included within that plan. It is for the companies and their Boards to determine how best to provide this assurance, including the role of external assurance. As part of this we expect company boards to provide assurance that it has challenged and satisfied itself that:

- the performance commitment levels in the plan are stretching but achievable and reflect performance improvements expected from both base and enhancement expenditure;
- the expenditure forecasts included in the company's business plan are robust and efficient;
- the needs for enhancement investment are not influenced by non-compliance or non-delivery of programmes of work (both base and enhancement) that customers have already funded;
- the options proposed within the business plan are the best option for customers and a proper appraisal of options has taken place;
- PR24 plans and the expenditure proposals within them are deliverable and that the company has put in place measures to ensure that they can be delivered. This includes setting out the steps the Board has taken to satisfy itself that supply chain risk is manageable and delivery plans account for:

    - the ability of the company and its supply chain to expand its capacity and capability at the rate required to deliver the increased investment;
    - the impact of similar levels of growth across the sector and any overall sector and supply chain capacity constraints; and
    - key supply chain risks and capacity constraints, such as the availability of specialist resource or components, e.g. river quality monitors, smart meters or SuDS designers.

- the plan includes price control deliverables covering the benefits of material; enhancement expenditure (not covered by performance commitments);
- that the expenditure proposals are affordable by customers and do not raise bills higher than necessary; and
- the expenditure proposals reflect customer views, and where appropriate are supported by customers.

A1 Enhancement and cost adjustment claim assessment criteria

This annex sets out further detail of our enhancement expenditure and cost adjustment claim guidance. It should be read alongside Sections 2.4.2 and 2.4.3.

The remainder of this annex is organised as follows:

- Enhancement assessment criteria;
- Cost adjustment claim assessment criteria; and
- Additional cost adjustment claim guidance

A1.1 Enhancement assessment criteria

In Section 2.4.2 we explain that, for all enhancement expenditure requests at PR24, we will consider the need for enhancement investment, optioneering, cost efficiency and customer protection evidence presented by companies.

The enhancement assessment criteria are detailed below, which are divided into four criteria groupings:

- need for enhancement investment;
- best option for customers;
- cost efficiency; and
- customer protection.

The evidence supporting these criteria should be sufficient and convincing unless otherwise specified.

A1.1.1 Need for enhancement investment

a) Is there evidence that the proposed enhancement investment is required (ie there is a quantified problem requiring a step change in service levels)? This includes alignment agreed strategic planning framework or environmental programme where relevant.
b) Is the scale and timing of the investment fully justified, and for statutory deliverables is this validated by appropriate sources (for example in an agreed strategic planning framework)?
c) Does the proposed enhancement investment or any part of it overlap with activities to be delivered through base, and where applicable does the company identify the scale of any implicit allowance from base cost models?

d) Does the need and/or proposed enhancement investment overlap or duplicate with activities or service levels already funded at previous price reviews (either base or enhancement)?
e) Is the need clearly identified in the context of a robust long-term delivery strategy within a defined core adaptive pathway?
f) Where appropriate, is there evidence that customers support the need for investment (including both the scale and timing)?
g) Is the investment driven by factors outside of management control? Is it clear that steps been taken to control costs and have potential cost savings (eg spend to save) been accounted for?

A1.1.2 Best option for customers

a) Has the company considered an appropriate number of options over a range of intervention types (both traditional and non-traditional) to meet the identified need?
b) Has a robust cost–benefit appraisal been undertaken to select the proposed option? Is there evidence that the proposed solution represents best value for customers, communities and the environment over the long term? Is third-party technical assurance of the analysis provided?
c) In the best value analysis, has the company fully considered the carbon impact (operational and embedded), natural capital and other benefits that the options can deliver? Has it relied on robustly calculated and trackable benefits when proposing a best value option over a least cost one?
d) Has the impact (incremental improvement) of the proposed option on the identified need been quantified, including the impact on performance commitments where applicable?
e) Have the uncertainties relating to costs and benefit delivery been explored and mitigated? Have flexible, lower risk and modular solutions been assessed – including where forecast option utilisation will be low?
f) Has the scale of forecast third party funding to be secured (where appropriate) been shown to be reliable and appropriate to the activity and outcomes being proposed?
g) Has the company appropriately considered the scheme to be delivered as Direct Procurement for Customers (DPC) where applicable?
h) Where appropriate, have customer views informed the selection of the proposed solution, and have customers been provided sufficient information (including alternatives and its contribution to addressing the need) to have informed views?

A1.1.3 Cost efficiency

a) Is it clear how the company has arrived at its option costs? Is there supporting evidence on the calculations and key assumptions used and why these are appropriate?

b) Is there evidence that the cost estimates are efficient (for example using similar scheme outturn data, industry and/or external cost benchmarking)?
c) Does the company provide third party assurance for the robustness of the cost estimates?

Need for enhancement model adjustment (modelled adjustment only)

d) Is there compelling evidence that the additional costs identified are not included in our enhancement model approach?
e) Is there compelling evidence that the allowances would, in the round, be insufficient to account for evidenced special factors without an enhancement model adjustment?
f) Is there compelling econometric or engineering evidence that the factor(s) identified would be a material driver of costs?

A1.1.4 Customer protection

a) Are customers protected (via a price control deliverable or performance commitment) if the investment is cancelled, delayed or reduced in scope?
b) Does the protection cover all the benefits proposed to be delivered and funded (eg primary and wider benefits)?
c) Does the company provide an explanation for how third-party funding or delivery arrangements will work for relevant investments, including how customers are protected against third-party funding risks?

A1.2 Cost adjustment claim assessment criteria

Section 2.4.3 introduced the assessment criteria we intend to use to assess cost adjustment claims at PR24, which is divided into five groups:

- need for adjustment (necessary);
- cost efficiency (necessary);
- need for investment (where appropriate);
- best option for customers (where appropriate); and
- customer protection (where appropriate).

We outline the evidence required under each criterion below. We recognise that different criteria will be applicable for different types of claims. It will be for the company to provide the appropriate evidence to support each claim.

A1.2.1 Need for adjustment (necessary)

Unique circumstances

a) Is there compelling evidence that the company has unique circumstances that warrant a separate cost adjustment?
b) Is there compelling evidence that the company faces higher efficient costs in the round compared to its peers (considering, where relevant, circumstances that drive higher costs for other companies that the company does not face)?
c) Is there compelling evidence of alternative options being considered, where relevant?

Management control

d) Is the investment driven by factors outside of management control?
e) Have steps been taken to control costs and have potential cost savings (eg spend to save) been accounted for?

Materiality

f) Is there compelling evidence that the factor is a material driver of expenditure with a clear engineering / economic rationale?
g) Is there compelling quantitative evidence of how the factor impacts the company's expenditure?

Adjustment to allowances (including implicit allowance)

h) Is there compelling evidence that the cost claim is not included in our modelled baseline (or, if the models are not known, would be unlikely to be included)? Is there compelling evidence that the factor is not covered by one or more cost drivers included in the cost models?
i) Is the claim material after deduction of an implicit allowance? Has the company considered a range of estimates for the implicit allowance?
j) Has the company accounted for cost savings and/or benefits from offsetting circumstances, where relevant?
k) Is it clear the cost allowances would, in the round, be insufficient to accommodate the factor without a claim?
l) Has the company taken a long-term view of the allowance and balanced expenditure requirements between multiple regulatory periods? Has the company considered whether our long-term allowance provides sufficient funding?
m) If an alternative explanatory variable is used to calculate the cost adjustment, why is it superior to the explanatory variables in our cost models?

A1.2.2 Cost efficiency (necessary)

a) Is there compelling evidence that the cost estimates are efficient (for example similar scheme outturn data, industry and/or external cost benchmarking, testing a range of cost models)?
b) Does the company clearly explain how it arrived at the cost estimate? Can the analysis be replicated? Is there supporting evidence for any key statements or assumptions?
c) Does the company provide third party assurance for the robustness of the cost estimates?

A1.2.3 Need for investment (where appropriate)

a) Is there compelling evidence that investment is required?
b) Is the scale and timing of the investment fully justified?
c) Does the need and/or proposed investment overlap with activities already funded at previous price reviews?
d) Is there compelling evidence that customers support the need for investment (both scale and timing)?

A1.2.4 Best option for customers (where appropriate)

a) Did the company consider an appropriate range of options to meet the need?
b) Has a cost–benefit analysis been undertaken to select proposed option? There should be compelling evidence that the proposed solution represents best value for customers, communities and the environment in the long term? Is third-party technical assurance of the analysis provided?
c) Has the impact of the investment on performance commitments been quantified?
d) Have the uncertainties relating to costs and benefit delivery been explored and mitigated? Have flexible, lower risk and modular solutions been assessed – including where utilisation will be low?
e) Has the company secured appropriate third-party funding (proportionate to the third-party benefits) to deliver the project?
f) Has the company appropriately presented the scheme to be delivered as Direct Procurement for Customers (DPC) where applicable?
g) Where appropriate, have customer views informed the selection of the proposed solution, and have customers been provided sufficient information (including alternatives and its contribution to addressing the need) to have informed views?

A1.2.5 Customer protection (where appropriate)

a) Are customers protected (via a price control deliverable or performance commitment) if the investment is cancelled, delayed or reduced in scope?
b) Does the protection cover all the benefits proposed to be delivered and funded (eg primary and wider benefits)?
c) Does the company provide an explanation for how third-party funding or delivery arrangements will work for relevant investments, including the mechanism for securing sufficient third-party funding?

A1.3 Cost adjustment claim additional guidance

The sub-sections below provide additional guidance to support the submission of good quality cost adjustment claims. It should be read alongside Section 2.4.3.

It includes additional guidance on the:

- calculation of the implicit allowance; and
- calculation of a symmetrical cost adjustment

A1.3.1 Calculating the implicit allowance – illustrative examples

This section shows how the three approaches to estimating the implicit allowance set out in Section 2.4.3 could be applied in practice:

- removal of relevant expenditure from the cost models;
- removal of an explanatory variable from the models; and
- assessment of unit costs related to the claim.

The implicit allowance should be calculated after the application of the catch-up efficiency challenge (including setting out assumptions made) but before frontier shift.

The examples are purely illustrative and should be considered alongside the cost adjustment claim assessment criteria. Applying one of these approaches does not automatically mean a cost adjustment claim will be accepted. Companies should consider the most appropriate approach for estimating the implicit allowance for each cost adjustment claim, and the plausibility of the estimated implicit allowance. These approaches should not be considered exhaustive and other approaches may be appropriate.

Example 1: remove relevant expenditure from the models

In this example, the company claims that the modelled base allowance for category X of expenditure is not sufficient to fund its 2025-30 investment. The company could calculate the implicit allowance by estimating the econometric base cost models with and without category X expenditure (after applying the catch-up):

a) calculate the base allowance the company receives for the period 2025-30 when category X of costs is **included** in the dependent variable of the models;
b) calculate the base allowance the company receives for the period 2025-30 when category X of costs is **excluded** from the dependent variable in all relevant models where the expenditure was included in.

The **difference between a) and b)** is the estimate of the implicit allowance the company receives from the base models for category X expenditure.

Example 2: removal of relevant explanatory variables from the models

In this example, the company claims that the modelled base allowance for a specific regional factor is not sufficient to fund its 2025-30 investment. Our models include an explanatory variable X that acts as a proxy for the regional factor. In other words, the regional factor associated with the cost adjustment claim is correlated with one or more of the explanatory variables in the base cost models.

One approach to calculating the implicit allowance the company is receiving from our modelled base costs would be to:

a) calculate the base allowance the company receives for the period 2025-30 when explanatory variable X is **included** as a cost driver of the models;
b) calculate the base allowance the company receives for the period 2025-30 when explanatory variable X is **excluded** as a cost driver from all relevant models where the variable was included in.

The **difference between a) and b)** is the estimate of the implicit allowance the company receives from the base models related to the regional factor.

Example 3: unit cost assessment

In this example, the company claims that the modelled base allowance for category X of expenditure is not sufficient to fund its 2025-30 investment. Under this approach, the implicit allowance from our base cost models is calculated using industry average unit costs for category X of expenditure. This ensures alignment with the base cost models, which estimate an average line of best fit through the data.

The calculation steps would be as follows:

a) calculate the industry average / median unit cost for category X of expenditure – the scale factor used in the calculation could be the scale variable used in the relevant models (eg number of households, length of network) or another relevant driver;
b) apply the catch-up efficiency challenge to the unit cost;
c) multiply the industry average efficient unit cost by the cost driver used to estimate the industry average unit costs in step (a).

The **value calculated in step c)** is the estimate of the implicit allowance the company receives from the base models related to category X of expenditure.

A1.3.2 Calculating a symmetrical cost adjustment – illustrative example

Company A has put forward a symmetrical cost adjustment claim due to being an outlier on factor X compared to its peers. The cost adjustment claim is £20 million before deduction of the implicit allowance. These are the costs incurred by company A relating to factor X that does not affect other companies.

Company A calculates its implicit allowance to be £2 million. The claim is £18 million after deduction of the implicit allowance and is considered material against the relevant materiality threshold.

The claim is successful, and we make an upward adjustment of £18 million to the modelled cost baseline of company A.

The same costs were incurred historically by Company A and therefore included in our base cost models. Consequently, the whole of the £20 million claim would have been included in modelled allowances, and so other companies will need to have net downwards adjustments of £18 million to offset the upward adjustment made to Company A. This is illustrated in the table below.

Table A.1: symmetrical cost adjustment – illustrative example

Step	Calculation	Company A	Company B	Company C	Company D	Total
(1) Gross cost adjustment claim related to factor X (before deduction of implicit allowance)		£20m	£0m	£0m	£0m	£20m
(2) Scale variable		1,000	2,000	3,000	4,000	10,000
(3) Implicit allowance related to factor X	£20m * (2)/sum(2)	£2.0m	£4.0m	£6.0m	£8.0m	£20m
(4) Symmetrical cost adjustment	(1) – (3)	£18m	-£4m	-£6m	-£8m	£0m

In this illustrative example the company submitting the cost adjustment factor claim is the only company adversely affected by factor X. If multiple companies were adversely affected by factor X, we would expect the approach to be adapted accordingly (ie multiple companies receive a positive cost adjustment in step 4, but the downwards adjustments still offset the upwards adjustments). Our growth adjustment at PR19 is an example of symmetrical adjustment where multiple companies received a positive adjustment.

We note there could be instances where downwards adjustments do not exactly offset the upwards adjustment (eg our growth adjustment at PR19). We expect companies to exercise judgement in the calculation of the symmetrical adjustment, depending on the specific claim.

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We regulate the water sector in England and Wales.

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