

July 2022

Creating tomorrow, together:
consulting on our methodology for PR24

Appendix 9 – Setting expenditure allowances

About this document

This appendix sets out further detail of our draft methodology for Chapter 6 (setting expenditure allowances).

It considers the views expressed by respondents to our ['Creating tomorrow together'](#) document, published in May 2021 and the ['Assessing base costs at PR24'](#) consultation (herein referred to as 'base cost consultation'), published in December 2021.

This appendix covers our proposed 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.

This version of the document was published on 4 August to amend a date on page 81 (point 2).

Summary

Providing an efficient cost allowance

We propose to build on our PR19 base cost models. We propose to publish an updated base cost dataset in autumn 2022, ask companies to submit their own proposed cost models in early 2023 and publish our updated models for consultation in Spring 2023.

We propose to revise our criteria for cost adjustment claims to make it clear we expect companies to provide compelling evidence for claims, claims should be limited to base costs, should be symmetrical where they relate to costs incurred historically and should be submitted in summer 2023 to allow all companies to consider these in their business plans.

We propose to make greater use of benchmarking in our assessment of enhancement expenditure, including the additional data we are collecting on expenditure this period.

We propose to revise our criteria for assessing enhancement expenditure to focus on our scheme level expectations, include specific reference to long-term delivery strategies and to provide further details of our expectations around customer support and best value.

We propose to 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 propose to simplify our approach to cost sharing, reducing the degree of asymmetry in cost sharing rates, with companies with 'Outstanding' and 'Standard' business plans receiving 50:50 over and underspending sharing rates, 'Lacking Ambition' 55:45 and 'Inadequate' 60:40.

Funding for water companies to maintain good asset health and resilience

Our efficient base expenditure allowances provide a long-term efficient allowance for capital maintenance and other elements of on-going company expenditure. Companies have improved their performance on a range of asset health measures and outcomes over the historical period using existing allowances.

We propose to include more of a forward look in our cost models, by considering additional cost drivers, such as on sewage treatment complexity, considering using forecast data in base models (if appropriate) and considering cost adjustment claims where these are supported by compelling evidence on a step change in maintenance costs and good practice in asset management.

We propose to revise our definition of resilience enhancement expenditure to focus on increasing risks from hazards not covered elsewhere and provide further clarity on our expectations for resilience enhancement claims.

Delivering service improvements to customers and the environment from expenditure allowances

We propose that base expenditure funds companies to deliver a common level of performance across the industry on sewer flooding, pollution incidents, water supply interruptions, customer contacts, operational GHG emissions and storm overflows and to meet companies' legal obligations. Companies should propose adjustments if their performance is impacted by an exogenous factor not captured in our base cost models and/or differences in historical enhancement expenditure allowances.

We expect efficient companies to continue to improve performance from base expenditure allowances. We propose to use historical performance data, company forecasts (PR19 and PR24) and PR19 performance commitment levels (PCLs) (where available) to forecast the level of performance we expect companies to deliver through their base expenditure allowance.

We propose to draw a clearer link between cost allowances and performance levels, based on historical outturn data.

We propose to adjust PCLs to reflect the impact of enhancement expenditure. Companies should forecast the impact of proposed 2025–30 enhancements on PCLs in 2025–30 and 2030–35.

Facilitating efficient investment over 2025–30 and the long term

We expect long-term delivery strategies to form a key part of the evidence for enhancement expenditure for PR24. Companies should propose low and no regret investments, which are phased, flexible and minimise low utilisation enhancements.

We expect companies to reflect our comments on water resources management plans (WRMP), drainage and wastewater management plans (DWMP) and water industry national environment programme (WINEP) for England and national environment programme (NEP) for Wales in business plans. We propose to take this into account when considering business plan proposals.

We support a move towards a more outcomes-focused WINEP/NEP. This is consistent with the approach that we try to take for other enhancement expenditure. Under this approach we set the outcomes we expect companies to deliver and then the efficient totex allowances needed to support the delivery of these outcomes. We are working in collaboration with the

Environment Agency to move to a more outcomes-based approach to the WINEP and are supportive of a similar approach in Wales.

Companies should continue to move towards net zero and reduce greenhouse gas emissions through base expenditure and deliver enhancements in a manner to reduce emissions. We propose to allow specific enhancement expenditure to reduce greenhouse gas emissions and net zero challenge funding to allow efficient companies to go further than their peers through a bidding process.

On storm overflows, we expect all companies to be compliant with their environmental obligations (and undertake appropriate maintenance). Many companies have committed to meet an average of 20 spills per overflow by 2025. We expect all companies to meet this level in 2025 at a minimum (and beyond if this is required to meet legal obligations) and make further reductions across the 2025–30 period through base allowances. This will help to reduce the use of storm overflows and improve water quality. To facilitate rapid progress towards UK government targets, we are open to companies in England proposing additional enhancement expenditure which might go beyond what they might include in their water industry national environment programmes (WINEP) where appropriate. In Wales, we expect companies to propose storm overflow investments where there is evidence that they will improve river water quality, that is not already funded

We expect all companies to make progress towards the UK government target of 50% leakage reduction by 2050, either individually, or by securing agreement with other companies to deliver the 50% reduction jointly.

We propose to encourage long-term delivery by providing greater clarity on how we will handle multi-period investments, funding preparatory work for uncertainty and long-term options, continued funding for the development of strategic water resource solutions and a continuation of transition funding to allow companies to make an early start on their PR24 programme in 2024–25.

We propose that companies include price control deliverables (PCDs) for all enhancement schemes where the impacts are not fully covered by outcome delivery incentives in 2025–30.

We propose to allow funding through the price review if water companies are required to go beyond environmental requirements due to nutrient neutrality in England. We would expect developers to pay the full costs for any nutrient mitigation.

Delivering best value

We want to support companies delivering wider environmental and social benefits in the course of them carrying out their statutory functions, where this is best value for customers, the environment and society, taking into account the impact on affordability of customers'

bills. To this effect, we set out the changes we propose to make to our cost assessment approach at PR24.

We propose to take account of wider environmental and social benefits more robustly and widely in our assessment of enhancement expenditure proposals. Benefits that influence most the choice of enhancement solution need to be measurable and robustly demonstrated. Other benefits should not be significant drivers of costs.

We propose to provide greater surety of funding for nature-based solutions which are wholly or primarily based on ongoing operating expenditure. If issues can be overcome, we are keen to support the capitalisation of operating expenditure. Alternatively, we could set a 10-year operating expenditure allowance.

We propose to encourage companies to maximise co-funding opportunities when seeking to deliver wider benefits, where this is efficient to do so. Where there are material benefits to third parties, we expect companies to proactively seek contributions from these parties. These contributions should be in proportion to the benefits that third parties can expect to receive through the scheme (in line with our public value principles). To encourage companies to maximise co-funding opportunities, we propose to take account of third-party contributions in our benchmarking of enhancement expenditure.

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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 consultation 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 proposals 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 cost allowances

Building block	Description
Base expenditure	<ul style="list-style-type: none"> • Base costs cover routine, year-on-year ongoing costs. • Companies incur base costs in the normal running of their business to provide a base level of good service to customers and the environment and maintain good asset health. • Base costs cover wholesale and retail (residential and non-household) activities, and currently make up around 80% of all costs incurred by water companies.
Enhancement expenditure	<ul style="list-style-type: none"> • Enhancement expenditure reflects a permanent increase (ie step change) in 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.

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.

To determine efficient cost allowances, the most common tool we use is **benchmarking** analysis. 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 use a combination of historical and potentially business plan forecast information within this analysis.

Where possible, we will also use **external benchmarks** to assess water sector efficiency. In PR19, we used external benchmarks to assess retail bad debt and customer service costs. We intend to use a wider set of external cost benchmarks when setting the efficiency challenge at PR24.

As 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. Companies will need to provide

compelling supporting evidence for any cost adjustment. We will continue to have a high evidential bar.

We propose to complement benchmarking analysis with **bespoke** assessments of costs, such as engineering deep dives or shallow dives. These approaches are applied by exception when cost benchmarking analysis is not feasible. Typically, deep dive assessments will be applied for material cost items, and shallow dive assessments will be applied for low material costs.

We will use **business plan incentives** to encourage companies to submit stretching business plans, including on cost efficiency (see Chapter 11 of our consultation document). We intend to take account of the quality of cost adjustment claims as part of this.

During the regulatory period (2025–30), **cost sharing** incentivises companies to be efficient by allowing them to keep a share of under-spending. We can reflect these efficiencies in our efficient cost allowances at PR29. Cost sharing also allows companies to share risks with customers given that cost over- and under-spending will be shared between companies and customers. We are simplifying the cost sharing rates framework for PR24. Rates will vary based on business plan quality but will be more symmetrical than at PR19.

We set out more details on how we intend to provide companies with an efficient cost allowance below.

2.1 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 proposals for improving our approach to assessing base costs at PR24 in our '[Assessing base costs at PR24](#)' consultation (herein referred to as 'base cost consultation'). The paper covered six key areas:

1. Principles of PR24 base cost assessment
2. Approach to wholesale base cost modelling
3. Residential retail cost assessment
4. Cost adjustment claims
5. Capital maintenance and asset health
6. Cost-service relationship

Having considered stakeholder responses to the base cost consultation, we set out our proposed approach to assessing modelled and unmodelled base costs at PR24 below. We provide further detail of our proposed approach to cost adjustment claims, capital maintenance and asset health, and the cost-service relationship, in Section 2.3, Section 3 and Section 4, respectively.

2.1.1 PR24 base cost principles

Our base cost consultation

We proposed six core principles of PR24 base cost assessment, that aim to provide confidence to the sector that the base cost decisions we make at the price review are justified and well evidenced:

- Consistent with engineering, operational, and economic rationale;
- Sensibly simple and transparent;
- Focused on cost drivers that are outside of company control;
- Use econometric cost models that accurately predict and forecast efficient wholesale base costs;
- Set a stretching but achievable cost efficiency challenge; and
- A coherent cost assessment approach.

Stakeholder responses

There was general support for our proposed principles.

Dŵr Cymru, Severn Trent, South West Water, Southern Water, Thames Water, Wessex Water, Yorkshire Water, South East Water, and South Staffs Water all consider that endogenous variables should not be completely ruled out if they significantly impact costs, particularly variables that can only be influenced in the long term.

Dŵr Cymru, Severn Trent, Wessex Water, Yorkshire Water and South East Water asked for more detail on how we define a 'stretching but achievable' cost efficiency challenge.

Suggestions for additional principles included (i) data quality; (ii) materiality (ie only focusing on key cost drivers), (iii) model stability across price control periods, and (iv) driving appropriate long-term incentives.

Our assessment and draft methodology proposals

Our final PR24 base cost assessment principles are set out overleaf.

Figure 2.1: Principles of PR24 base cost assessment



We have added one additional principle relating to data quality in response to company feedback to our base cost consultation. We also amended Principle 7 from 'a coherent cost assessment approach' to 'a coherent cost assessment approach that drives the right incentives' in response to a company's suggestion. We consider all other principles proposed by companies are sufficiently captured in our proposed principles (eg materiality is captured in principle 3 'sensibly simple and transparent').

We remain of the view that it is important to focus on exogenous cost drivers. This helps to ensure the independence of our efficient base cost allowance, which incentivises companies to reveal true efficient costs when submitting their business plans. It also avoids the risk of perverse incentives. For example, the inclusion of an endogenous variable may incentivise a company to change its investment strategy if it could lead to a higher cost allowance at the next price review. But we recognise that some drivers are more endogenous than others and are open to considering drivers that are only endogenous in the long term as the risk of perverse incentives is lower.

We set out more details on our proposed approach to setting a stretching but achievable cost efficiency challenge in Section 2.4.

Our base cost principles should be considered alongside the five key principles that underpin our PR24 approach to expenditure assessment outlined in the introduction.

2.1.2 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 2016.¹ 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 (CMA's) PR19 redeterminations.² We therefore propose to 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.

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

Base cost modelling suite

Our base cost consultation

We proposed to use base cost models at different levels of cost aggregation to determine efficient cost allowances where feasible. We also set out the intention to reassess the feasibility of developing wastewater network plus base cost models.

Stakeholder responses

There was general support for using base cost models at different levels of cost aggregation and our proposed modelling suite. Companies also supported the development of wastewater network plus base cost models.

But Anglian Water, Thames Water, Affinity Water, South East Water, and United Utilities suggested we develop additional treated water distribution models.

And Anglian Water, Dŵr Cymru, Northumbrian Water, South West Water, Southern Water, and Wessex Water raised concerns about the removal of bioresources plus models (bioresources + sewage treatment) and setting a separate bioresources efficiency challenge. These companies either suggested we retain the bioresources plus models or attempt to develop integrated wholesale wastewater models to capture cost substitution effects between bioresources and sewage treatment.

¹ Ofwat, '[Cost assessment for PR19: a consultation on econometric cost modelling](#)', March 2018.

² 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.

Our assessment and draft methodology proposals

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.

The exception to this is our residential retail cost models, where we are proposing to simplify our approach by using the aggregated top-down model only. We believe this simplification is appropriate because the top-down models performed better than bottom-up models at PR19 and produced similar results. We will only consider using the bottom-up models where there is a demonstrable reason to do so. We will review how we model the impact of deprivation on companies' bad debt costs.

We are open to considering additional treated water distribution models if they increase the robustness of our base cost modelling suite. We will also attempt to develop robust wastewater network plus models. We invite companies to submit potential cost models to us as part of the base cost modelling consultation in spring 2023 (discussed below).

Following work to improve the allocation of costs between bioresources and wastewater network plus activities, we are consulting on a new approach to regulating bioresources at PR24 that would mean we set a separate efficiency challenge for these two controls. See Appendix 4 (bioresources control) for more details. We will also attempt to develop wholesale wastewater network plus models (sewage treatment + sewage collection).

Scope of modelled base costs

Our base cost consultation

The scope of modelled base costs relates to the costs included within our econometric base cost models (wholesale and retail). At PR19, this included operating expenditure (opex), capital maintenance expenditure, and enhancement that share similar characteristics with base costs (eg growth-related expenditure).

We proposed to start with the costs included in our PR19 base cost models, and consider adjustments based on the criteria in Section 3.1 of our base cost consultation.³ Bioresources are the exception, which we intend to assess separately at PR24.

³ Ofwat, '[Assessing base costs at PR24](#)', December 2021, Table 3.2: proposed criteria for adjusting scope of wholesale modelled base costs at PR24 (excluding bioresources), p.22.

We also outlined our current position on several other pre-modelling cost adjustments:

Treatment of enhancement opex

At PR19, the base cost models included base opex and enhancement opex. We subsequently made an ex-post enhancement opex implicit allowance adjustment to avoid double counting with enhancement cost assessment, which was conducted on a total expenditure basis. We outlined our intention to reassess our treatment of enhancement opex in the base cost models at PR24 given the separate reporting of enhancement opex from 2020–21 onwards.

Treatment of atypical expenditure

Atypical expenditure items are defined as unusual items outside of ordinary activities. Up to 2019–20, companies excluded atypical expenditure items from the related cost line in the annual performance report. This led to atypical expenditure being excluded from base cost econometric models at PR19.

But companies included atypical expenditure items in the related cost line in their 2020–21 annual performance report submissions due to a change in regulatory accounting guidelines. Atypical expenditure items will therefore be captured in modelled base costs unless an explicit adjustment is made to exclude them. We therefore said we would reassess how to treat atypical expenditure in the base cost models at PR24.

Treatment of grants and contributions

We proposed to develop base cost models before the deduction of grants and contributions to ensure the relationship between costs and cost drivers are not distorted by different levels of grants and contributions between companies. We applied the same approach at PR19.

Pre-modelling regional factor adjustments

We proposed not to consider applying pre-modelling adjustments to account for regional factors. Instead, companies should use the cost adjustment claim process for material exogenous factors not captured in the base cost models, as in PR19.

Stakeholder responses

Companies welcomed the criteria for deciding whether to adjust the scope of modelled base costs. But Dŵr Cymru and Yorkshire Water thought the criteria were too restrictive in places.

Most companies proposed that growth-related costs should be assessed separately from base costs at PR24 and were hesitant around including additional enhancement.

There was support for a review into how atypical costs are treated in the base cost models. Companies that commented on this issue generally supported the inclusion of atypical costs in the base cost models. There was also support for a review into how enhancement opex is treated in the base cost models.

There were no substantial comments received in relation to the treatment of grants and contributions and pre-modelling regional factor adjustments.

Our assessment and draft methodology proposals

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. We consider the bar for excluding costs from the base cost models should be set 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 assess bioresources costs separately from wastewater network plus costs at PR24. This will facilitate our proposed approach to regulating bioresources (see Appendix 4). We are also considering separate assessment of growth expenditure at PR24, which was supported by companies in response to our base cost consultation (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 base cost consultation.

We intend to exclude enhancement opex from modelled base costs from 2020–21 onwards.⁴ This is made possible because we have collected enhancement opex separately from other opex since April 2020. Subsequently we do not intend to make an ex-post enhancement opex implicit allowance adjustment at PR24.

We propose to include atypical costs in modelled base costs at PR24, as suggested by some companies in response to the base cost consultation. This approach is different to PR19, where atypical costs were excluded from the base cost models by default. Companies take different approaches to reporting atypical costs, and most are related to day-to-day operational activities (eg responding to severe weather events). So, including atypical costs will ensure a more consistent treatment of base costs between companies. But we propose to exclude certain atypical costs if it is in the customer interest to do so (eg fines) or if it is a truly one-off atypical cost driven by exogenous factors that is unlikely to be repeated.

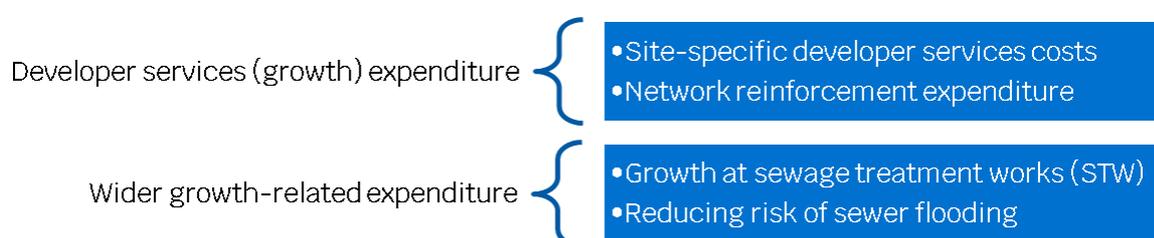
⁴ Enhancement opex will be included in the 2011–12 to 2019–20 period as this will represent the new baseline.

Assessment of growth expenditure

At PR19, we assessed costs driven by population growth (ie growth expenditure) with base costs because they share similar characteristics, notably companies 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.⁵

Figure 2.2 indicates the scope of growth-related expenditure at PR19.

Figure 2.2: Scope of growth-related expenditure



In response to our base cost consultation, companies suggested that growth expenditure should be assessed separately from base costs. We are open to considering this at PR24, but only if we can robustly separate and assess them. Otherwise, our PR19 approach to assessing growth expenditure remains a pragmatic solution to the assessment of growth 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 differentials⁶;
- a data request to collect historical developer services expenditure on the same basis as the improved annual performance reports' definitions.⁷ This should enable us to accurately remove growth expenditure from base costs; and

⁵ Competition and Markets Authority, '[Ofwat Price Determinations](#)', March 2021, pp. 298-299.

⁶ Ofwat, '[Gathering data about developer services: Data request 2020-21](#)', August 2021.

⁷ Ofwat, '[Growth expenditure data request – April 2022](#)', April 2022.

- a data request to collect historical network reinforcement cost driver information, to support our assessment of this expenditure at PR24.⁸

Much of the data collected reflected a direct ask from water companies and were discussed extensively with the sector at the cost assessment working group and subsequent follow-up feedback.

We also commissioned Arup to analyse whether growth-related expenditure could be robustly assessed separately from base costs in January 2022 based on existing historical data.⁹ 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. We will revisit Arup's recommendations after we receive the additional information through the data requests described above.

Sample period selection

Our base cost consultation

We proposed to use the full historical data series available to develop the base cost models at PR24 (back to 2011-12), and said we were cautiously open to possibility of also including business plan forecasts.

Stakeholder responses

Companies generally supported the use of the full historical time series to maximise model robustness and precision. But Anglian Water, Wessex Water, Affinity Water and Bristol Water suggested we place more weight on more recent data.

There was limited support for the inclusion of business plan forecast data in the base cost models because of concerns that it will introduce endogeneity and decrease model robustness. But South West Water, Thames Water, United Utilities, Yorkshire Water, Affinity Water and Bristol Water recognised it could offer a useful cross-check.

⁸ Ofwat, '[Network reinforcement data request – Data sheet](#)', May 2022.

⁹ Ofwat, PR24 Cost Assessment Working Group, '[Growth expenditure at PR24 and data collection](#)', April 2022.

Our assessment and draft methodology proposals

We intend to use the full historical data series to develop the base cost models (back to 2011-12) to maximise the precision of model estimates. This approach was supported by most companies in response to our base cost consultation.

We also intend to cautiously consider using business plan forecast data in our base cost models providing business plan forecasts are sensible and not significantly impacted by different risk appetites between companies. There was not much support from companies on this suggestion. But we consider it may help to identify forward cost trends and future efficiency gains.

Model estimation method

Our base cost consultation

We proposed to use random effects to estimate the base cost models at PR24. Random effects estimation is used to estimate the relationship between costs and cost drivers, which we subsequently use to produce our independent forecast of efficient base costs. 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 it was also used by the CMA in the PR19 redeterminations.

We also stated our intention not to use fixed effects estimation or stochastic frontier analysis (SFA). Fixed effects estimation is data intensive, which can lead to imprecise model parameter estimates given the relatively small data set. It can also be challenging to distinguish between inefficiency and company heterogeneity. And SFA estimates are very sensitive to the assumptions made on the distribution of the model error term, which unnecessarily creates additional uncertainty in relation to the appropriate way of modelling inefficiency.

Stakeholder responses

There was wide company support for continued use of random effects to estimate our econometric base cost models. But several companies suggested we decide on the most appropriate estimation method through empirical testing.

Our assessment and draft methodology proposals

We maintain the view that random effects estimation should be used to estimate the base cost econometric models for the reasons set out above, which was widely supported by companies. 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.

Additional base cost data collection

In April 2022, we published a base modelling data request that includes additional data lines suggested by water companies in response to the base cost consultation. The data request followed company requests to consider additional cost drivers in our PR24 base cost assessment.

We considered a total of 30 data lines proposed by companies including:

- water cost drivers;
- wastewater cost drivers; and
- data to support PR24 cost adjustment claims.

The data lines that made it into the final data request are set out in April 2022 information requests¹⁰ and were decided by considering company feedback through:

- stakeholder engagement undertaken at the 16 March (base data) cost assessment working group; and
- written responses by companies setting out their feedback on collection for each of the 30 data lines.

Base cost modelling consultation in spring 2023

We aim to publish a base cost modelling consultation in spring 2023, which will provide an early view of our 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 (discussed below).

To facilitate this, we aim to publish an updated base cost modelling dataset in autumn 2022. This will include historical data up to 2021–22, including the additional cost driver data requested in April 2022 information requests.¹¹ This will allow companies to develop their own base cost models at the same time as us. We will publish a supporting document at the same

¹⁰ Ofwat, [Information notice: IN 22/02 Cost assessment data requests](#), April 2022.

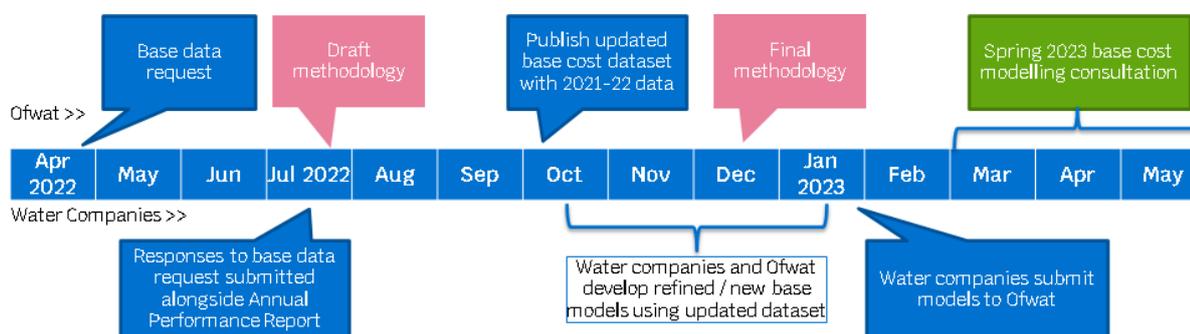
¹¹ Ibid.

time that includes essential assumptions (eg treatment of company mergers and model estimation method(s)) that will ensure everyone develops models on a comparable basis.

We will ask companies to 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 for stakeholders to comment on.

The figure below presents our base cost modelling timeline up until spring 2023.

Figure 2.3: PR24 base cost modelling timeline until spring 2023



2.1.3 Unmodelled base costs

At PR19 we excluded 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.

We intend to assess these as unmodelled base costs at PR24. We provide more details on our proposed approach 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.¹² 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.

As in previous price reviews, we propose to 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.

At PR19, we included an uncertainty mechanism for business rates. The difference between companies' actual business rates costs and the allowances we made in our final determinations are subject to enhanced cost sharing rates of 25:25.¹³ These allow a company to recover 75% of any costs in excess of its PR19 cost allowance or allow customers to recover 75% of the amount by which costs are lower than the PR19 cost allowance.

¹² Ofwat, [Information Notice 13/17](#), October 2013.

¹³ 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.

HM Treasury published its final report on its business rates review in October 2021.¹⁴ This said that revaluations will take place every three years, with the next one in 2023.

We recognise that companies have limited control over the level of business rates they pay and that there is a similar level of uncertainty as at PR19. Therefore, at PR24 we propose to continue to apply enhanced cost sharing rates of 25:25. Companies should continue to engage with the Valuation Office Agency and influence their business rates where possible.

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

At PR19, we were aware that the Environment Agency was intending to consult on a change in how it calculates its abstraction licence charges. We therefore considered there was increased uncertainty around how much water companies will be charged in the period 2020-25. Due to the limited control companies have over the level of these charges, we allowed further protection for companies and customers through a reconciliation mechanism, with enhanced cost sharing arrangements of 25:25.

Natural Resources Wales have undertaken a Strategic Review of Charges which will be proposing changes to the application charges for a number of permits relating to water companies. This should be complete and implemented by April 2023 in time to inform business plans.

We will consider any new charging structures when we set out allowances at PR24. We are not aware of any further changes to abstraction licence charges in the period 2025-30. Therefore, we propose not to include enhanced cost sharing arrangements for abstraction charges at PR24.

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.

¹⁴ HM Treasury, ['Business rates Review: Final report'](#), October 2021.

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. We are therefore considering if it is now appropriate to include these costs in our base cost models.

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.

We are considering the best way to treat third-party costs and revenues in the total revenue control at PR24 to ensure that companies can recover efficient costs if outturn third party services are different from forecast. We are also considering the interaction of third-party revenue with the revenue forecasting incentive. We welcome stakeholder views on this. We discuss the revenue forecasting incentive in Chapter 4 of our consultation document.

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. We propose to maintain the same regulatory approach at PR24.

2.2 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.

We made several proposals for improving enhancement assessment in our discussion document 'PR24 and beyond: Creating tomorrow, together', published in May 2021¹⁵ (our 'May 2021 discussion document'). We have considered the stakeholder responses we received to our proposals and set out our assessment and draft methodology proposals to improve enhancement cost benchmarking and better enhancement submissions below.

2.2.1 Enhancement benchmarking models

Our May 2021 discussion document

We proposed to continue using cost benchmarking to deliver value for customers. We stated that we would look to extend our approach to enhancement cost benchmarking. This may include the use of outturn costs and cost drivers, and information from industry databases, relevant external benchmarks, and expert cost consultants.

We said we would continue to use benchmarking with other approaches, such as bottom-up assessments, where appropriate (eg where company costs are less comparable).

Stakeholder responses

South Staffs Water and SES Water welcomed our proposals to build on the PR19 approach of using both benchmarking and bespoke assessments and stated that these should be retained for enhancement assessment at PR24.

¹⁵ Ofwat, '[PR24 and beyond: Creating tomorrow, together](#)', May 2021.

Anglian Water, Dŵr Cymru, Northumbrian Water, Severn Trent Water, South East Water, South West Water and Thames Water all agreed that external benchmarks could have a part to play in PR24. However, companies suggested that these should be treated with caution to ensure that the data is relevant to the water sector and that the cost-service link is taken account of where appropriate.

Our assessment and draft methodology proposals

In our May 2021 discussion document, we said that we will be looking to extend our approach to enhancement cost benchmarking. This included considering the use of outturn costs and cost drivers, reflecting the recommendations from the CMA and the PR19 lessons learnt¹⁶, as well as information from industry databases and expert cost consultants.

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 propose to 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.

¹⁶ Ofwat, '[PR24 and beyond: Our reflections on lessons learnt from PR19](#)', December 2020, pp.70-71.

2.2.2 Enhancement data collection

Our May 2021 discussion document

We proposed to make greater use of historical data to benchmark enhancement costs at PR24. To enable this, we said we would consult on the collection of additional data on historical costs both at an activity and scheme level within annual performance reports.

This additional data would include phosphorus removal, leakage and metering. We would consider where it may be possible to extend this to other areas, such as wastewater storage schemes both at sewage treatment works and in the sewerage network.

We also proposed to update definitions for some enhancement areas, such as resilience, to help improve companies' submissions.

We supplemented the May 2021 discussion document with regular cost assessment working groups with companies where we proposed updated historic enhancement data requests which would be collected in parallel with the 2021–22 APR.

Stakeholder responses

Severn Trent Water, South West Water and United Utilities supported the collection of additional historical enhancement data for key activities and the refinement of enhancement definitions. However, Wessex Water disagreed that additional benchmarking and associated data collection would be useful and said we should rely more on bespoke assessments and engineering deep dives.

Anglian Water, Severn Trent Water, and Yorkshire Water requested an early sight of enhancement cost assessment approaches to help focus the evidence requirements.

Our assessment and draft methodology proposals

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.¹⁷

Several enhancement areas have been disaggregated to more granular activity levels to assist benchmarking. This recognises some new drivers for PR24 and allowing comparable benchmarking of interventions such as green solutions. Many of the changes reflect those agreed through the cost assessment working group discussions on what historical data to

¹⁷ Ofwat, '[Cost assessment working group meeting notes](#)', March 2022.

collect in parallel with the annual performance reports. For example, getting costs and effective storage benefits presented against both grey (eg storm tanks) and green (eg sustainable urban drainage) for interventions in wastewater networks. During the cost assessment working group discussions, most companies agreed with these changes.

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 by companies 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 for the draft determination and provide feedback for updated submissions, but we will assess what is presented. We will endeavour to understand a company's request and assess appropriately, but there is limited time to do this during the plan assessment.

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 propose not to have early enhancement submissions or upfront assessment approach certainty as requested by some companies. We already have early development and regulatory feedback on the strategic planning frameworks (WRMPs and DWMPs¹⁸) 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, which is like the approach being proposed for PR24.

¹⁸ Water resources management plans (WRMPs) and drainage and wastewater management plans (DWMPs).

2.2.3 Enhancement assessment criteria

Our May 2021 discussion document

We proposed to review enhancement assessment criteria to help improve companies' business plan submissions.

Stakeholder responses

Anglian Water, Severn Trent Water, and Yorkshire Water requested more guidance on the evidence required when preparing enhancement business cases. This included more clarity on the distinction between base and enhancement.

Our assessment and draft methodology proposals

At PR24 we propose that, for all enhancement expenditure requests, we will consider the need, optioneering, cost efficiency and customer protection evidence presented by companies. We will assess all enhancement spend using assessment criteria building on those used to assess enhancement requests in the draft and final determinations at PR19.

We have not made significant changes to the assessment criteria used at PR19. However, we have considered company feedback and have made some updates for PR24 to help simplify and provide further clarity on our expectations for the evidence companies should provide. This additional steer for companies addresses stakeholder responses requesting additional guidance when submitting requests for enhancement funding.

Companies should provide evidence aligned with these criteria as part of their enhancement cost business cases. Comprehensive business cases for enhancement investment should be provided regardless of how cost efficiency may be assessed. 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.

To simplify our expectations for the assessment, we propose four criteria groupings for PR24. The management control criterion has become a sub-criterion within the need for enhancement investment criteria grouping. The need for adjustment criteria is part of the cost efficiency criterion to be used when appropriate. The four groupings are:

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

Compared to the criteria used at PR19, we have 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.

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.

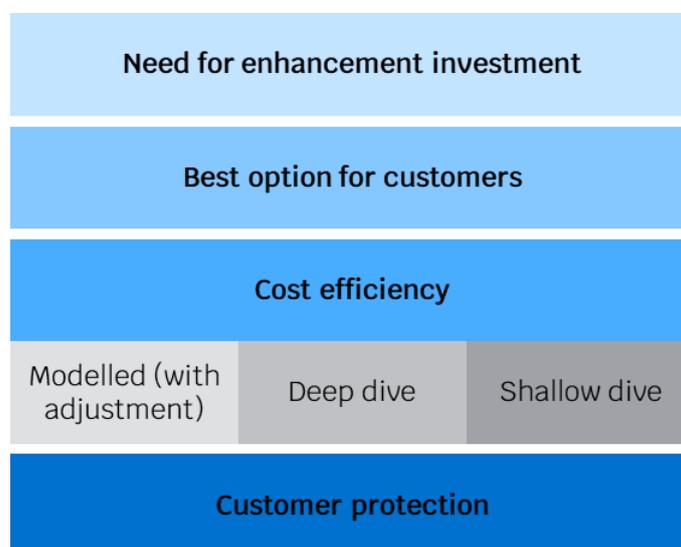
Board assurance should be provided to support the scale and timing of the overall enhancement programme. We provide more detail on board assurance expectations in Section 7, but in summary there is an expectation that the enhancement proposals within a company business plan are based on robust and efficient 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.

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.¹⁹

¹⁹ HM Treasury, ['Guide to developing the project business case'](#), 2018.

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



Need for enhancement investment

It is important that the need for enhancement investment is 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 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. 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 outcomes.

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.

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, and modular schemes should be fairly and transparently considered.

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 include an expectation that evidence is provided to show that third-party funding has been secured, where appropriate.

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 the solutions considered (including the least cost solution where different), and the contribution to addressing the need by the delivery of the solution. Company evidence on customers 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.²⁰ The research underpinning this evidence should follow our standards for high quality research.²¹

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, although 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 urban 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.

²⁰ 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.

²¹ Ofwat, '[PR24 and beyond: Customer engagement policy – a position paper](#)', February 2022.

Cost efficiency

Enhancement expenditure requests should be efficient with sufficient and convincing evidence to demonstrate efficiency. At PR24, we propose to use the same methods to assess enhancement costs as we did at PR19. This includes 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 benchmark model cost adjustments based on compelling evidence presented in business cases and 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 propose undertaking a deep dive of the efficiency of costs where the spend is material but will 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, volume of storage).

Where enhancement investment does not have a direct relationship to a performance commitment and therefore outcome delivery incentives may not fully protect customers from non-delivery, a price control deliverable may be appropriate for returning funding in the event of non-delivery, and a performance commitment to incentivise outperformance.

2.3 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.

We set out our thinking on how we envisaged the cost adjustment claim process would work at PR24 in our base cost consultation. We outline how the cost adjustment claim process will work at PR24 in detail below, taking into account responses to the base cost consultation where appropriate.

2.3.1 Scope of the cost adjustment claim process

Our base cost consultation

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 cost consultation, 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.

Stakeholder responses

Companies generally agreed with the proposal to separate the cost adjustment claim process between base and enhancement. Provided there is a clean line drawn between base and enhancement, and there is still an opportunity to apply for an adjustment to a modelled enhancement allowance.

Our assessment and draft methodology proposals

We propose to focus the submission of cost adjustment claims to base (wholesale and residential retail²²) and bioresources costs, which was supported by companies.

²² 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.

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. Companies should fully evidence any requests for enhancement expenditure with business cases as part of the relevant enhancement expenditure line.

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 the 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 2.2.

2.3.2 Standard of evidence expected

Our base cost consultation

We said we would retain a high evidential bar for accepting cost adjustment claims to ensure customers are protected. But we would aim to improve the cost adjustment claim guidance and availability of cross-sector data at PR24 to facilitate the development of well-evidenced symmetrical cost adjustment claims.

We said we expect to see evidence of a material change in the company's circumstances, or in the evidence available since PR19, for cost claims that were either rejected or not submitted at PR19. Unless it is driven by a change in cost models.

Stakeholder responses

Consumer Council for Water (CCW) supported a high evidential bar for accepting cost claims, with the use of assessment criteria.²³

Companies supported the cost adjustment claim process. But some thought the evidential bar was set too high. Companies thought it should be allowed to submit cost claims that were not submitted in PR19 if new evidence has come to light.

²³ CCW, 'CCW's response to Consultation: Assessing base costs at PR24', February 2022, p.4.

Our assessment and draft methodology proposals

We welcome stakeholder support for a high evidential bar for accepting cost claims. 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:

- **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,**²⁴ 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 are collecting additional cross-sector data** from companies to support the submission of well-evidenced cost adjustment claims.²⁵ The data request was discussed with the sector at the cost assessment working groups and informed by companies' feedback.

In response to companies' feedback, 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.

2.3.3 Assessment criteria

Our base cost consultation

We asked companies how the cost adjustment claim guidance could be enhanced to improve the quality of evidence presented under each assessment criterion.

²⁴ Ofwat, '[Final determination models](#)', December 2021.

²⁵ Ofwat, '[IN 22/02 Cost assessment data requests](#)', April 2022, pp.2-3.

Stakeholder responses

The guidance is generally well understood. But companies said they would welcome further clarity on how the implicit allowance should be calculated and evidence required for symmetrical cost adjustment claims.

Some companies also proposed to reduce the assessment criteria, and only retain need for adjustment, management control and cost efficiency assessment criteria. This would remove need for investment, best option for customers, customer protection, affordability, and board assurance from the assessment criteria used at PR19.

Our assessment and draft methodology proposals

We do not think material changes to cost adjustment claim guidance is needed at PR24 based on stakeholder responses. But we have tried to improve the guidance where possible by taking on board lessons learnt from PR19. We hope this will improve the quality of cost adjustment claims we receive at PR24. We provide further clarity on implicit allowances and symmetrical adjustments below.

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 considered stakeholder feedback to our base cost consultation and tailored the cost adjustment claim criteria to the costs included in the process (ie base (wholesale and residential retail) and bioresources costs).

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. Hence, why we include as a standalone criterion.²⁶ 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

²⁶ Need for adjustment is absorbed within the cost efficiency criterion for enhancement assessments.

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. Some companies suggested the removal of these criteria in response to the base cost consultation. We also capture 'management control' in 'need for adjustment' rather than as a standalone criterion.

We outline the evidence required under each assessment criterion in the annex to this document (enhancement and cost adjustment claim assessment criteria). 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, our approach will be consistent with our proposals to funding bioresources activities set out in Appendix 4. Where appropriate, 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.

Further clarity on implicit allowances and symmetrical cost adjustments is provided below.

2.3.4 Calculation of the implicit allowance

Our base cost consultation

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. We therefore said that the calculation of the implicit allowance is a necessary (but not sufficient) condition to pass the need for adjustment assessment criterion to avoid double counting of allowances.

We also said we would provide further guidance on the estimation of implicit allowances in the PR24 final methodology.

Stakeholder responses

Companies understood the importance of the implicit allowance. But asked for additional guidance on how it should be calculated.

Our assessment and draft methodology proposals

We maintain the view that calculating the implicit allowance is a necessary (but not sufficient) condition to pass the need for adjustment criterion. 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:

- 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.).

2.3.5 Materiality thresholds

Our base cost consultation

We said we would retain the use of materiality thresholds at PR24 because they help to (i) mitigate the risks posed by asymmetry of information; and (ii) proportionately focus our assessment on the most significant cost adjustments.

Stakeholder responses

We did not receive any substantial comments on the use of materiality thresholds.

Our assessment and draft methodology proposals

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 draft business plan tables.

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

2.3.6 Symmetrical cost adjustment claims

Our base cost consultation

We set out our intention to make the cost adjustment claim process more symmetrical at PR24, to protect customers from the risk of a one-sided process.

Stakeholder responses

In response to the consultation, most companies agreed with the use of symmetrical claims, although some companies noted that not all claims will be symmetrical (eg if costs related to

the claim were not incurred historically). Consumer Council for Water (CCW) was also supportive of introducing symmetrical cost claims, to protect customers from the risk of a one-sided process.

Some companies said that symmetrical adjustments should pass a materiality test. Some companies asked for further guidance and requested the opportunity to comment on proposed symmetrical adjustments submitted by other companies.

Our assessment and draft methodology proposals

We welcome stakeholder support to make the cost adjustment claim process more symmetrical. 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 we agree with companies who said that 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 we also think it is sufficiently material to be applied as a symmetrical adjustment (if costs have been incurred historically).

For avoidance of doubt, 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.

We propose an early cost claim submission and publication in summer 2023 in response to company feedback to our base cost consultation. This will provide companies with an opportunity to comment on other companies proposed symmetrical adjustments 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. But we do not intend to provide feedback to companies on their cost adjustment 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.

We expect a company to indicate in its early 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.

In response to company feedback, we provide an example of how a symmetrical adjustment could be calculated in the annex to this document.

2.3.7 Interaction with business plan incentives

Our base cost consultation

We said we will consider whether to consider the quality of cost adjustment claims as part of our assessment of PR24 business plans.

Stakeholder responses

CCW supported this proposal.²⁷ But companies did not provide substantial feedback.

Our assessment and draft methodology proposals

Chapter 11 of the consultation document sets out our proposed approach to using business plan incentives. We intend to take account of the quality of cost adjustment claims within the ambition assessment (the second part of our proposed framework for applying business plan incentives at PR24).

2.4 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-

²⁷ CCW, 'CCW's response to Consultation: Assessing base costs at PR24', February 2022, p.4.

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.²⁸ This compares to relatively strong productivity growth for comparator sectors.²⁹

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**). Our proposed approach to setting the catch-up and ongoing efficiency challenges at PR24 are set out below.

2.4.1 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 our base cost consultation, we set out our intention to set a stretching but achievable catch-up efficiency challenge at PR24. Dŵr Cymru, Severn Trent, Wessex Water, Yorkshire Water and South East 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, level of stretch in business plans).

Catch-up efficiency benchmark

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

But 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

²⁸ 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.

²⁹ 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.

efficient company. This was slightly more stretching than the upper quartile efficiency benchmark used at PR14. We note the Competition and Markets Authority (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).³⁰ They considered this balanced their objective of setting a challenging benchmark while acknowledging the limitations of the econometric modelling.³¹

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-GD1.³² The CMA concluded that this decision was not wrong in the RIIO-GD2 energy licence modification appeals.³³

We will exercise our regulatory judgement 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
- external cost benchmarking analysis (discussed below).

Time period used to estimate the catch-up efficiency challenge

We propose 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). This would enable us to introduce more of a 'forward look' into our base cost assessment approach. This was supported by some companies in response to our base cost consultation. Ofgem set the catch-up efficiency challenge based solely on forward looking evidence at RIIO-GD2.³⁴

³⁰ 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.

³¹ Ibid.

³² Ofgem, '[RIIO-2 Final Determinations – GD Sector Annex \(REVISED\)](#)', February 2021, Paragraph 1.11.

³³ Competition and Markets Authority, '[Energy Licence Modification Appeals 2021](#)', March 2021, Paragraph 12.178.

³⁴ 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 (ie external benchmarks), where appropriate. This will ensure that our efficient cost allowances do not perpetuate inefficiencies within the sector.

In PR19, we used external benchmarks for retail bad debt and customer services costs. We will explore external retail cost benchmarks at PR24 as retail activities are generally comparable with those of other sectors and new appointments and variations (NAVs).

We recognise it may be more challenging to develop reliable external benchmarks for wholesale activities given the differences in activities between sectors. But there may be specific activities that are suitable (eg smart meter installations, excavations, obtaining new power supplies, telemetry links, etc.). We are interested in views in what external benchmarks may be appropriate for wholesale activities.

Other issues relating to the catch-up efficiency challenge

We intend to set separate catch-up efficiency challenges for wastewater network plus and bioresources price controls at PR24. This differs from our PR19 approach where we applied the same wholesale wastewater catch-up efficiency challenge to wastewater network plus and bioresources. We consider this is feasible at PR24 given the reduction of cost allocation issues between wastewater network plus and bioresources since PR19. 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).

2.4.2 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 4 of the consultation document.

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).

2.4.3 Reducing perverse incentives when setting efficient expenditure 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.

2.5 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.³⁵

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:

- **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 some high-level principles for PR24 cost sharing and invited stakeholder views in relation to PR24 cost sharing policy in our May 2021 consultation document. Water company

³⁵ 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.

respondents supported our intention to retain cost sharing. We summarise stakeholder views in response to our consultation where relevant throughout the rest of this section.

We set out our approach to cost sharing in PR24 below, splitting into six key design elements:

1. PR24 cost sharing rates as a business plan incentive;
2. strength of PR24 cost sharing rates;
3. application of bespoke cost sharing rates to unmodelled costs;
4. coverage of PR24 cost sharing;
5. asset health monitoring and lower PR24 cost sharing rates; and
6. interaction with price control deliverables (PCDs).

2.5.1 PR24 cost sharing rates as a business plan incentive

Stakeholder views

South West Water, United Utilities and South Staffs Water supported the continued use of cost sharing to incentivise efficient business plans in PR24. United Utilities argued that the ability to attain favourable rates was a strong incentive to submit an ambitious and innovative PR19 business plan.

Northumbrian Water argued that using cost sharing rates as a business plan incentive has a chilling effect on companies that consider proposing riskier investments which might be rejected on scope grounds. They suggested that schemes disallowed on a scope basis should be removed for the purpose of calculating cost sharing rates. Anglian Water argued that cost sharing rates should be fixed to avoid penalising companies that do not agree with our view on scope of activities.

Our assessment and draft methodology proposals

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

We also propose to implement a simpler approach to cost sharing in PR24. Our objective is to retain the core elements of cost sharing (to reward efficiency and share risk) without creating undue regulatory complexity. We consider that this can help limit the risk of perverse incentives and/or unintended consequences.

We considered the following options in relation to this element:

- **Option 1: Retain the PR19 approach to using cost sharing as a business plan incentive.** Under this approach, we will continue to determine the rates based on two assessments. The first assessment would provide a sliding scale for cost sharing rates based on relative efficiency compared to our view of efficient costs for 'Lacking ambition' plans. The second assessment would consider business plan quality 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').
- **Option 2: Only use business plan rating to determine cost sharing rates (preferred option).** This option retains the core principle that higher quality business plans should be rewarded with more favourable rates. But it streamlines the process.

We consider that the PR19 sliding scale approach was a relatively complex. Therefore, to streamline the approach, we are proposing a 'one-shot' approach in PR24 where cost sharing rates depend on business plan quality.

As considered in the CMA's PR19 redeterminations, the sliding scale approach could also lead to unintended consequences around the incentives for companies to bid low in their business plan proposals irrespective of their view of efficient costs. Moving to a more streamlined setting of rates based on an 'in the round' assessment of business plan quality (including deliverability and scope) will help avoid these incentives.

We also propose to 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. This is consistent with the PR19 lessons learnt feedback that there were strong incentives on 'significant scrutiny' companies to improve their PR19 plans post submission, including the prospect of more favourable cost sharing rates.³⁶ We provide more details of our approach to business plan incentives in Chapter 11 of our consultation document.

2.5.2 Strength of PR24 cost sharing rates

Our May 2021 discussion document

We said that low cost sharing rates (ie the company keeps a low proportion of underspend or the company bears a low proportion of overspend) may limit incentives for companies to

³⁶ Ofwat, '[PR24 and beyond: Our reflections on lessons learnt from PR19](#)', December 2020.

spend efficiently. This could dull innovation, since companies would only retain a small fraction of the efficiency gains from implementing new approaches.

On the other hand, we recognised that high cost sharing rates (ie the company keeps a high proportion of underspend or the company bears a high proportion of overspend) may result in increased risk to companies, not all of which may be in their control. This could impact on efficient financing costs, which are ultimately borne by consumers.

Stakeholder views

Most respondents supported the setting of symmetric cost sharing incentives close to or at 50:50. Severn Trent Water, Hafren Dyfrdwy, South West Water, United Utilities and South East Water supported symmetric 50:50 cost sharing rates. South East Water argued that any departures from 50:50 are only appropriate for more uncertain schemes such as large water resource schemes or nature-based solutions. It also said that companies may be discouraged from overspending due to high cost sharing rates on overspend even if it is the appropriate action to take. SES Water supported cost sharing rates in the 50–55% range.

United Utilities suggested that we could apply cost sharing rates of 60:40 where the assessment of PR24 business plans identifies plans of particularly low quality. South Staffs Water suggested stronger incentives for frontier and upper quartile companies, eg retaining 60% of underspend.

Thames Water argued that the strength of cost sharing could depend on who benefits most from the expenditure, the level of risk each party is exposed to, and whether rates incentivise efficiency without compromising the ability to focus on whole life cost.

Northumbrian Water said there is a statistically significant negative relationship between cost sharing rates and outturn cost efficiency in water and energy price controls. Based on this, it argued that reductions to cost sharing rates on underspend from PR14 to PR19 may have eroded the incentives for cost efficiency. The company supported strong incentives to drive outperformance to avoid the risk of benefit to customers being reduced.

Our assessment and draft methodology proposals

We considered the following options in relation to this element:

- **Option 1: Retain the PR19 strength and asymmetry of incentives across all business plan ratings.** Under this approach, we would set rates at 50:50 for the high-quality business plans in the top two categories based on our quality assessment ('Outstanding' and 'Standard'). We will implement asymmetry of the overspend and underspend cost sharing rates for lower quality business plans to a level broadly

consistent with the PR19 rates – 60:40 for 'Lacking Ambition' (close to the average output of the PR19 sliding scale) and 75:25 for 'Inadequate'.

- **Option 2: Reduce the strength and asymmetry of incentives for lower quality plans (preferred option).** This option retains the 50:50 for the top two categories based on our quality assessment. However, it reduces the strength and asymmetry of rates for the bottom two categories to 55:45 for the 'Lacking Ambition' and 60:40 for 'Inadequate', respectively.

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). Therefore, we propose to reduce the scale of asymmetry in cost sharing rates. We continue to consider that some degree of asymmetry for poorer quality business plans is important to discourage companies from underspending unnecessarily.

We therefore propose to have rates closer to 50:50, with lower, more symmetric cost sharing rates for poorer quality business plans (Option 2). 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. We consider that our proposal to reduce 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

2.5.3 Application of bespoke cost sharing rates to unmodelled costs

Stakeholder views

Anglian Water, Northumbrian Water, United Utilities and Yorkshire Water supported maintaining lower cost sharing rates for cost items where companies have limited management control consistent with PR19. Anglian Water supported using the rates set during the CMA PR19 redetermination.³⁷

Our assessment and draft methodology proposals

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

As explained in the Section 2.1.3, 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.

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

2.5.4 Coverage of PR24 cost sharing

Stakeholder views

Appendix 4 of the consultation document sets out stakeholder views in relation to bioresources cost sharing. These were aimed at the interaction of cost sharing with the wider PR24 approach to bioresources rather than cost sharing per se.

Our assessment and draft methodology proposals

We propose not to apply any cost sharing to the bioresources control. This is consistent with the approach to the bioresources price control in PR19. In addition, we propose not to apply

³⁷ The CMA reduced cost sharing rates on business rates to 10:10 in the PR19 redeterminations. Competition and Markets Authority, '[Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations. Final report](#)', 17 March 2021.

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. Our PR24 approach to bioresources is set out in detail in Appendix 4.

Section 5.5 details the cost sharing treatment of nutrient neutrality mitigation totex. In summary, we propose to exclude costs associated with nutrient neutrality mitigation from cost sharing.

2.5.5 Asset health monitoring and lower PR24 cost sharing rates

Our May 2021 discussion document

We said that high cost sharing rates may impact on incentives to maintain asset health with companies cutting back on asset health to benefit from savings secured under the high cost sharing rate. Therefore, we said that it may be appropriate to set lower cost sharing rates and take account of our ability to monitor companies' asset health status, to provide additional protection for customers.

Stakeholder views

There was little support for using lower cost sharing rates to incentivise asset health.

Anglian Water and South East Water said that the sector is still working on a framework to measure asset health and this is unlikely to be sufficiently reliable to inform the setting of cost sharing rates. South West Water, Wessex Water, Dŵr Cymru, Northumbrian Water and Yorkshire Water said that provided long-term performance incentives on asset health are set correctly, these provide sufficient incentives around asset health.

Southern Water, Thames Water and Affinity Water supported the principle of setting cost sharing rates for asset health related expenditure which do not encourage companies to underspend and do not penalise necessary investment. United Utilities said that considering different cost sharing for asset health expenditure risks blurring the lines between cost and outcomes incentives.

Anglian Water supported a lower rate on enhancement expenditure. The company submitted a paper to the Future Ideas Lab titled 'How should Ofwat's approach to price control regulation focus on the long-term?'.³⁸ The paper supports cost sharing factors that are close to 100% ie that 100% of additional costs are passed on to customers and 100% of any cost

³⁸ Skylight Consulting Ltd (sponsored by Anglian Water), '[How should Ofwat's approach to price control regulation focus on the long-term?](#)', January 2022.

savings are passed on to customers (0:0). It argues that economic regulation is too focused on cost efficiency and doesn't support investment with a focus on the long-term enough.

Our assessment and draft methodology proposals

We propose not to 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.

We propose not to apply different cost sharing rates to base and enhancement expenditure.

Enhancement costs can be less certain than base costs. But we do not consider cost sharing should be used to address this potential difference for two reasons.

First, 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.

Second, 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 therefore propose to apply the same cost sharing rates for base and enhancement costs.

2.5.6 Managing the interaction with price control deliverables (PCDs)

We propose to use price control deliverables (PCDs) to protect customers against potential non- or partial delivery of PR24 enhancement schemes. Where companies have not delivered the outcomes and outputs consistent with their funding in PR24, PCDs will act to claw back the expenditure allowance related to that outcome. PCDs are considered in more detail in Section 5.4.

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 propose to 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).

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.³⁹ Resilience is also a priority of both the UK government's SPS and Welsh Government's strategic objectives and priorities for Ofwat.^{40,41}

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.

Much of the expenditure to maintain resilience is through base expenditure allowances, which includes operating and capital maintenance expenditure. In PR19 we set our base

³⁹ 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](#).

⁴⁰ 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.

⁴¹ 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."

allowance using historical costs and used forecast cost drivers to account for future changes in the asset base. Historical allowances have been sufficient for companies to maintain and improve outcomes and asset health metrics over previous periods. We set out our proposals to reflect more of a forward-looking approach into our assessment of base expenditure below.

Both water resources management plans and drainage and wastewater management plans have resilience at their core and allow companies to identify enhancement investment required to maintain resilience over the long term. In PR19 we also allowed enhancement expenditure to improve resilience. This was focused on low probability and high consequence events that were beyond management control. We set out our proposals below on resilience enhancement expenditure for PR24.

3.1 Reflecting forward looking pressures in our base allowances

Our base cost consultation

Our base cost consultation set out (i) the available evidence on why forward-looking base costs might be different to those incurred in the past; and (ii) some potential approaches to reflect a more forward-looking approach in setting base allowances.

In general companies found it difficult to articulate why future base costs may be different to those incurred in the past. Examples provided were:

- **shorter asset lives** – although we noted that companies have always dealt with differing asset lives and asset lives can be driven by technology change under management control;
- **the move to net zero and climate change impacts** – although companies did not provide evidence to demonstrate that a step change in capital maintenance expenditure was required. We also noted that companies have delivered reductions in emissions with base expenditure; and
- **increased complexity of sewerage treatment** – due to increased requirements of the Water Industry National Environment Programme / National Environment Programme.

We noted that historical base allowances had been sufficient to improve performance across a range of asset health measures and outcomes. The three common asset health performance commitments at PR19 (mains repairs / bursts, unplanned outage and sewer collapses) all suggest that performance is on an improving trend.

We proposed three potential modelling approaches that would allow a forward-looking element to be incorporated into our approach to assessing wholesale base costs:

- **inclusion of forecast expenditure data in the base cost models;**
- **considering forecast data in setting the catch-up efficiency challenge;** and
- **inclusion of additional / alternative exogenous variables in the base cost models** to reflect additional base expenditure requirements (eg sewage treatment complexity).

We rejected the use of capital maintenance activity variables in the base cost models due to concerns of endogeneity (as activity levels are under management control) and perverse incentives (as companies would simply have an incentive to do more maintenance rather than the right maintenance). We also rejected separate capital maintenance modelling as this would be against our totex regulatory framework and could introduce capex bias.

Stakeholder responses

There was general support for incorporating a forward look into our approach to assessing base costs.

Companies did not provide quantitative evidence to support claims that future costs would be higher than historical expenditure. But they raised concerns that the outcomes regime and cost sharing rates incentivise companies to underspend and seek short term solutions, which would not be sustainable in the long term.

There was no agreement nor any detailed proposals on how to incorporate forward pressures in base expenditure allowances.

- Most companies supported the existing modelling approach of base expenditure allowances based on historical expenditure and the use of cost adjustment claims where there were additional requirements in the future.
- Several companies continued to suggest including capital maintenance activity variables (eg mains renewed) in base cost models.
- There was limited support for including business plan forecasts in base cost models (Thames Water, South East Water). There was slightly more support for setting a forward-looking catch-up efficiency challenge (Hafren Dyfrdwy, Severn Trent Water, Thames Water, Affinity Water).
- There was widespread agreement that separate capital maintenance modelling should not be progressed.

Our assessment and draft methodology proposals

There does not appear to be evidence that our totex and outcomes regime has overly focused companies on the short term.

Our efficient base expenditure allowances provide a long-term efficient allowance for capital maintenance and other elements of on-going company expenditure. We do not tell

companies how to use their allowances. It is important that companies retain responsibility for maintaining good asset health. Companies should bear the risks of their capital maintenance decisions over future price controls, incentivising companies to make the right long-term decisions.

Companies have improved their performance on a range of asset health measures and outcomes over the historical period using existing allowances. But our measures are not exhaustive. We are therefore developing an integrated monitoring framework to provide a more complete view of asset health and operational resilience. In our [Operational resilience discussion paper](#) we set out proposals to explore and test wider measures associated with the health and performance of water and wastewater assets.⁴² This should better help us to understand operational resilience and asset health risks going forward, although it will not be ready for PR24.

Cost sharing rates do not appear to have encouraged companies to underspend on capital maintenance. In the last completed price control period (2015-20) companies overspent their wholesale water total expenditure allowances, and capital maintenance expenditure increased. We are proposing more symmetrical cost sharing rates for PR24, as discussed in Section A1.2.5 which should mitigate any concerns.

We propose to capture more of a forward look into our base cost allowance in two 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.

Reflecting feedback from companies, we are also collecting additional data on sewage treatment complexity. This should help us to understand the impact of higher complexity on base cost expenditure requirements in the future (eg due to phosphorous removal and ultraviolet treatment).⁴³

⁴³ Data on phosphorous 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.

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

As set out in Section 2.4, 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.

Forecast data can provide useful information about relative costs of companies and will reflect company views on future pressures. But we recognise that forecast cost data can be subject to more biases than historical cost information. For example, the degree to which companies challenge themselves on future efficiency, and so needs to be used with caution.

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.

3.2 Investment to improve resilience

Our May 2021 discussion document

In our May 2021 discussion document⁴⁴ we set out that at PR19 companies did not provide a clear line of sight between their organisational objectives, resilience planning framework, planned level of service, and required cost. We sought views on whether investments for operational resilience were adequately captured in current planning frameworks. We also asked how we could improve our assessment of plans in this area.

Stakeholder responses

In responding to our consultation many companies including Anglian Water, Severn Trent Water and United Utilities considered that asset health is not well covered. Wessex Water highlighted the need to cover a broad range of risks including those related to achieving net zero and cyber security. Northumbrian Water, Welsh Water and South East Water considered

⁴⁴Ofwat, '[PR24 and Beyond: Creating tomorrow, together](#)', May 2021, p. 106.

there are risks related to single points of failure, critical assets and the interconnectedness of water distribution networks that are not well covered in water resources management plans. Both Yorkshire Water and Affinity Water considered that the Drinking Water Safety Planning process could be better integrated into the price review process.

Companies, including Anglian Water, Yorkshire Water and Southern Water, considered that more could be done in setting common scenarios for long-term planning around, for example, climate change. Yorkshire Water said that the definition of resilience, and the split between base and enhancement should be clarified. SES Water said that investment categories for resilience enhancement could be further defined.

Our assessment and draft methodology proposals

We will continue to define operational resilience in the same way that we did at PR19. This is an all-encompassing definition, and we provide funding through both our base and enhancement allowances. We will retain the resilience investment category under enhancement, but we will refine our definition of this category. We will also provide further guidance to companies on our expectation on developing plans in this area.

Our base expenditure allows companies to deliver resilient services day-to-day. As set out previously, our base allowance has been sufficient for companies to improve asset health metrics historically⁴⁵. We are considering how we may evolve our monitoring approach to provide a richer picture of in our recently published operational resilience discussion paper.⁴⁶ We expect companies to continue to make improvements in resilience through good practice asset management and in asset and operational interventions. Companies have made these improvements within base cost allowances in the past and 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 also make a significant contribution to enabling companies managing hazards, for example, related to droughts and sewer flooding respectively.

Expenditure on the delivery of the Security and Emergency Measures Direction outcomes⁴⁷ and Network and Information Systems Regulations⁴⁸ will also contribute to improved

⁴⁵ 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 its future needs.

⁴⁶ Ofwat, '[Operational resilience discussion paper](#)', April 2022.

⁴⁷ UK government, '[Water Industry Act 1991: Section 208](#)', February 2022.

⁴⁸ Department for Digital, Culture, Media & Sport, '[Security of Network & Information Systems Regulations \(NIS Regulations\)](#)', April 2018.

resilience to security threats and operational incidents. 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.⁴⁹ 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. 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 water resources management plans, drainage and wastewater management plans and the Security and Emergency Measures Direction do not cover managing increases in all hazards companies are exposed to. Companies can request investment under the resilience enhancement line to manage increasing risks from hazards that are beyond their control and not covered by other enhancement areas. We propose to amend the definition of resilience to clarify the scope of investments in this category. Example hazards include source water pollution, fluvial 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.

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.⁵⁰ 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

⁴⁹ Defra, ['The government's strategic priorities for Ofwat'](#), March 2022..

⁵⁰ Companies should also have addressed any actions identified in their PR19 resilience action plans.

power supply resilience should be developed with the involvement of the electricity network provider.

- 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.
- 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. 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.⁵¹ Companies should be clear on how any resilience enhancement investments interacts with other aspects of its long-term plan, and evidence that it has fully explored any synergies. We understand that there are challenges to quantify the risk of rare events or events that have never happened. In such circumstances companies should undertake robust sensitivity testing of any assumptions, and that any uncertainty is reflected in adaptive plans.

Investments may include interventions that either reduce the likelihood of a hazard or reduce its consequence. Investments to reduce the consequence of failures can be more efficient as they can reduce the risk related to multiple hazards. For example, removing single points of failure from water supply networks can reduce the impact of the loss of water treatment works due to a variety of hazards. Companies should fully explore such options. Where the mitigation also addresses hazards within their control, and impact performance commitments, costs should be proportionally allocated between base and enhancement.

The example of removing a single point of failure from a water supply network may enhance the resilience of the system and enable communities to be supplied by more than a single source of water. This redundancy potentially provides resilience to hazards such as fluvial flooding of a water source and maintenance failures of multiple parts of the infrastructure system. In such a case, we expect a proportional allocation to be made to base costs to reflect the resilience to maintenance failures, and any impact of water interruptions to supply should be quantified and an adjustment made to the company's performance commitment.

⁵¹ Ofwat, '[PR24 and beyond: Final guidance on long-term delivery strategies](#)', April 2022.

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. We may require assurances that systems 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 the long-term requirements of customers, communities and the environment. The future service companies pledge to deliver for customers and the environment are quantified through performance commitment levels (PCLs).⁵² Companies should ensure that their business plans will deliver future service levels that are consistent with the achievement of their statutory requirements and the targets set by government. **We expect companies to identify stretching but achievable PCLs in their business plans.**

We also expect companies to challenge themselves on what they can deliver for customers and the environment through their base expenditure allowances to ensure outcomes can be affordably delivered. Our final guidance on long-term delivery strategies highlights the importance of companies incorporating forecasts of improvements from base expenditure into their strategies.⁵³

Our work to date has led to the development of four key principles for determining the performance levels an efficient company can deliver through our efficient expenditure allowances, which we describe in Chapter 6 of the consultation document.

1. We will consider if companies should be expected to deliver a common or company-specific level of performance for each performance commitment.
2. We expect efficient companies will continue to improve performance over the long term from base expenditure.
3. We will consider the overall stretch across cost and service and account for the performance of efficient companies when setting PCLs.
4. We will adjust PCLs to account for enhancement expenditure where necessary.

We discussed our proposed approach for determining PR24 PCLs in our base cost consultation.⁵⁴ After considering stakeholder feedback, we outline our updated proposed approach in Figure 4.1 below.

We expect companies to take account of our approach when developing their own long-term forecasts of the performance improvements they can deliver. These forecasts should inform

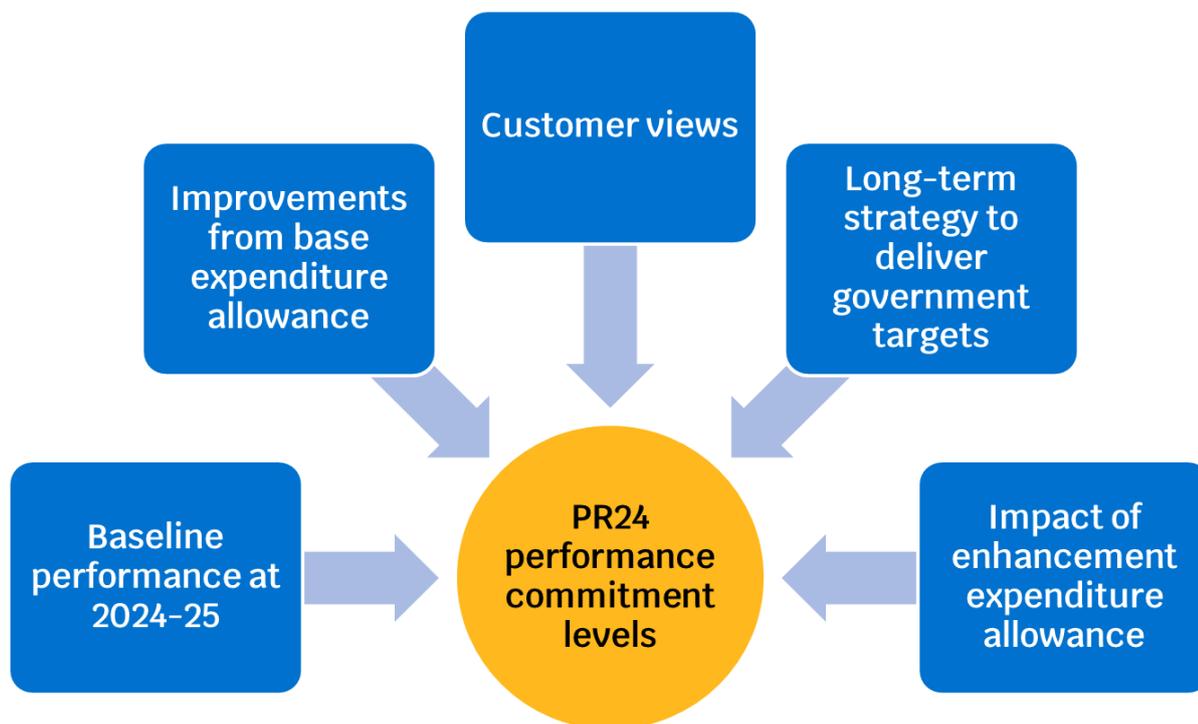
⁵² For further discussion of performance commitments and outcome delivery incentives, see Chapter 5 of the consultation document and Appendices 6,7 and 8.

⁵³ Ofwat, '[PR24 and beyond: Final guidance on long-term delivery strategies](#)', April 2022, pp. 31-32.

⁵⁴ Ofwat, '[Assessing base costs at PR24](#)', December 2019.

companies' PR24 business plans and long-term delivery strategies.⁵⁵ Companies should ensure their forecasts are consistent with the delivery of government and statutory requirements and take account of customer views.

Figure 4.1: Proposed approach to setting PCLs at PR24



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

Our base cost consultation

We proposed a starting assumption that base expenditure funds companies to deliver a common level of performance across the industry for all performance commitments.

Stakeholder responses

Companies generally challenged our position. They argued that regional and company-specific factors, including historical enhancement spend, will influence the level of

⁵⁵ Our draft PR24 submissions table guidance – Section 1 (outcomes) and Section 9 (long-term strategies), detail the forecasts we expect companies to submit.

performance achievable through base allowances. CCW supported our overall approach, although questioned the number of performance commitments for which it may be possible to set a common performance level.

Our assessment and draft methodology proposals

Having considered stakeholder responses to our base cost consultation, we set out the circumstances where we expect companies to deliver a common level of performance. We also present the evidence companies should present in their PR24 business plan if they consider they are impacted by company specific factors that justify a different PCL.

Setting common PCLs aids comparison across companies, helping to set efficient and stretching performance levels, and makes expectations clear across the sector.

We consider a reasonable starting assumption is to expect a common level of performance from base expenditure, given our base cost models include explanatory variables that cover a range of 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 for these factors in our performance expectations as well as our efficient cost allowance would double count their impacts.

But we acknowledge that our base cost models may not reflect all drivers of differential performance. We will therefore consider setting company-specific PCLs where performance is materially affected by an exogenous factor not captured in our base cost models and/or there are differences in historical enhancement expenditure allowances.

We expect companies to provide compelling evidence to support any claims to adjust the performance level expected to be delivered by its base expenditure from a common to a company-specific basis. We have engaged with companies through the cost assessment working group to collect further data that could be used to understand company-specific factors.⁵⁶ This data can potentially be used:

- as an explanatory variable in the base cost models to account for exogenous factors in our efficient base expenditure allowances;
- to inform symmetrical cost adjustment claims (see Section 2.3); or
- to determine efficient company-specific performance levels that can be delivered through base expenditure (see below).

This results in two types of adjustment:

⁵⁶ Ofwat, '[IN 22/02 Cost assessment data requests](#)', April 2022.

- an adjustment to company base expenditure allowances to enable them to deliver the expected common level of performance; or
- an adjustment to the level of performance a company is expected to deliver through its base cost allowance.

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, and customer views.

Table 4.1 identifies the proposed PR24 performance commitments for which:

- we consider a common level of performance should be delivered from base expenditure;
- we expect full compliance from total expenditure allowances (base plus enhancement);
- we expect to set company-specific PCLs following consideration of base and enhancement expenditure allowances; and
- we do not consider we need to set PCLs because outperformance and underperformance payments are based on each company's annual performance relative to other companies.

We outline the rationale behind our proposals below the table. We will review our position on all performance commitments as further data becomes available and as the definitions of the new performance commitments are finalised. For final methodology, we will review our position for Welsh companies to reflect the new Welsh Government Strategic Policy Statement (SPS), which was being finalised as we were finalising this draft methodology.

Within the common level category, we include performance commitments where we may consider setting a common 2029-30 position but potentially allow company-specific profiles for 2026-29. For performance commitments where we propose company-specific levels, we will also consider if a long-term trend towards a common level of performance is a reasonable expectation.

Table 4.1 Basis for setting performance levels that companies can deliver for common performance commitments

Basis	Performance commitment description
Common performance level expected from base expenditure allowances	<ul style="list-style-type: none"> • Water supply interruptions • Internal sewer flooding • Pollution incidents • Serious pollution incidents • External sewer flooding • Customer contacts about water quality • Operational GHG emissions (water and wastewater) • Storm overflows • Unplanned outage*
Full compliance	<ul style="list-style-type: none"> • Compliance risk index (CRI) • Discharge compliance
Company specific performance levels expected from total expenditure allowances	<ul style="list-style-type: none"> • Leakage, PCC (per capita consumption), Business demand (All three could be combined into a single water demand PC) • Biodiversity • Bathing water quality • River water quality • Mains repairs* • Sewer collapses*
Performance commitments for which we do not need to set PCLs	<ul style="list-style-type: none"> • C-MeX • D-MeX • BR-MeX • Business customer experience in Wales

*See discussion on asset health performance commitments as a sub-set of all performance commitments below.

4.1.1 Common performance levels expected from base expenditure allowances

We have expected companies to achieve a common performance level for **water supply interruptions**, **internal sewer flooding**, and **pollution incidents** since 2015. At PR19, these were funded through base expenditure allowances.⁵⁷ We expect to continue to fund through base allowances in PR24 and therefore continue to expect a common level of performance. We have previously observed that companies are able to deliver significant improvements in performance funded by base expenditure.⁵⁸ At PR19 we set a company-specific PCL for Hafren Dyfrdwy for pollution incidents, due to the small size of its sewerage

⁵⁷ Sewer flooding enhancement expenditure was included with base expenditure allowances. Ofwat, ['PR19 final determinations: Securing cost efficiency technical appendix'](#), December 2019, p. 15.

⁵⁸ Ofwat, ['Reference of the PR19 final determinations: Introduction and overall stretch on costs and outcomes – response to cross-cutting issues in companies' statements of case'](#), May 2020, pp.60–61.

system that is used to normalise the common measure.⁵⁹ We will consider if this approach remains necessary for this performance commitment and should apply to other wastewater related performance commitments for Hafren Dyfrdwy at PR24.

For **serious pollution incidents**, we expect companies to deliver zero serious pollution incidents from base expenditure in the 2025–30 period.⁶⁰ Some companies have demonstrated they can meet a level of zero for the most serious pollution incidents (category 1) from base expenditure. We expect all companies to do the same and take action to meet a level of zero for all serious incidents (category 1 and 2 combined).⁶¹

The sector failed to meet the Environment Agency's target to reduce serious pollution events by 50% in the 2012–20 period and for the number of events to trend to zero.⁶² The PR19 Water Industry Strategic Environmental Requirements (WISER) set an expectation for serious pollution incidents to trend towards zero by 2025 and the PR24 WISER contains the expectation for companies to achieve a zero level of serious pollution incidents.⁶³ Reviewing performance for English and Welsh companies in 2020, we observe an upper quartile performance level of 2.5 serious pollution events. We also observe that the frontier performing company achieved zero events in 2020 for the second year in succession. We therefore consider that a zero level is achievable by 2025–26 and companies should focus on this to ensure they can meet government expectations.⁶⁴

We propose that the level of zero serious pollution incidents would apply to Welsh and English companies. The Welsh Government's strategic priorities for Ofwat include the environment and Hafren Dyfrdwy currently achieves the zero level of serious pollution incidents.⁶⁵

⁵⁹ Ofwat, '[PR19 final determinations: Delivering outcomes for customers policy appendix](#)', December 2019, p.24.

⁶⁰ Serious pollution incidents are incidents the Environment Agency categorises as 1 or 2. In Appendix 6, we propose that this performance commitment would apply to incidents in water and wastewater services and seek views on whether the performance commitment should apply to water only companies. Upper quartile performance with respect to the most serious pollution incidents (category 1) has been zero for the past three years of reporting (for water and sewerage companies including category 1 incidents from both water and wastewater services). The upper quartile level of 2.5 quoted for water and sewerage companies in 2020 includes category 1 and 2 incidents from the both the water and wastewater services.

⁶¹ We note that companies receive enhancement expenditure to address changing exogenous factors such as discharge consent levels, and expect to continue with this approach for PR24.

⁶² Environment Agency, '[Water and sewerage companies in England: environmental performance report for 2020](#)', January 2022.

⁶³ Environment Agency, Natural England, '[Water industry strategic environmental requirements \(WISER\)](#)', October 2017, p.56 and '[Water industry strategic environmental requirements \(WISER\)](#)'. May 2022.

⁶⁴ The UK government's Strategic Policy Statement expects Ofwat to challenge water companies to demonstrate how they will achieve zero serious pollution incidents by 2030. Defra, '[The government's strategic priorities for Ofwat](#)', March 2022.

⁶⁵ Dŵr Cymru had zero category 1 pollution incidents and a three category 2 incidents across its water and wastewater services in 2020. Hafren Dyfrdwy has had no serious pollution incidents in the 2015–20 period.

For **external sewer flooding** and **customer contacts about water quality**, we propose a common level of performance to be delivered through base expenditure at PR24. This is a change from the PR19 approach, where these were set on a company-specific basis.

For **external sewer flooding**, we do not consider there is a valid rationale to take a different approach to that used for internal sewer flooding. Both measures share the same drivers and therefore we should not expect different levels of performance from base expenditure between companies for external and internal sewer flooding.

For **customer contacts about water quality**, we do not consider it is appropriate that customers in different regions should experience varying levels of service with respect to the taste, odour and appearance of the water they receive. We propose a common performance commitment definition at PR24 which will replace the existing bespoke company PR19 performance commitments. At PR19, we considered it would be unrealistic to expect all companies to move to the forecast upper quartile in five years. But we set a clear expectation that poorer performing companies needed to close the gap with the better performing companies. Therefore, we consider it appropriate to expect a common level of performance to be delivered through base expenditure.⁶⁶

For **operational GHG emissions**, we are proposing separate common levels of performance in water and wastewater to be achieved from base expenditure. As described in appendix 6 on performance commitments, this level would be expressed in terms of GHG emission levels normalised by an appropriate metric such as distribution input or volume wastewater treated. We consider that all companies have opportunities to deliver GHG emission reductions through their base activities. Expecting a normalised common level of performance ensures that customers of companies that have been less proactive in GHG abatement will not be required to fund reductions to levels that other companies have already delivered.⁶⁷ We discuss mechanisms for allowing enhancement expenditure to further reduce emission levels in Section 5.2.

For **storm overflows**, we propose that base expenditure delivers a common level of performance. The basis for expecting companies to achieve an average of 20 spills per overflow by 2024-25 is detailed in Section 5.2. We expect to set a common level of performance from base expenditure that includes improvements beyond this point at PR24, unless companies can provide compelling evidence that they should start from a different

⁶⁶ We note that companies receive enhancement expenditure to address changing exogenous factors such as deteriorating raw water quality and expect to continue with this approach for PR24.

⁶⁷ Frontier Economics, '[Incentivising net zero](#)', March 2022. See Figure 13 for comparison of normalised 2020-21 water and wastewater emissions.

position. Such a level would reflect the feedback from companies that a significant proportion of storm overflow issues are related to maintenance or data issues.⁶⁸

4.1.2 Full compliance performance commitments

For the **compliance risk index (CRI)** and **discharge compliance** performance commitments, we expect companies to achieve full compliance. This will deliver the statutory obligations regulated by the Drinking Water Inspectorate (DWI), Environment Agency and Natural Resources Wales.⁶⁹

In response to our consultation on performance commitments, Portsmouth Water proposed adoption of a comparative approach for CRI similar to that used for C-Mex, that would reward upper quartile companies.⁷⁰ However, we consider that the expectation of 100% compliance, which is consistent with our PR19 approach, remains appropriate for performance commitments that are delivering statutory obligations. We therefore propose to set PCLs at a CRI risk score of 0.00 and a discharge compliance percentage of 100.00%. We discuss the use of deadbands in relation to these performance commitments in [Appendix 8 – Outcome delivery incentives](#).

4.1.3 Company specific level performance commitments

Leakage, per capita consumption (PCC), business demand and **water demand** will all be impacted by historical and future levels of statutory enhancement expenditure and therefore we propose to set company-specific PCLs. We expand on our expectations regarding long-term reductions in leakage, per capita consumption, business demand and water demand in Section 5.2. Box 1 below discusses our approach for determining efficient PCC for each company.

For **biodiversity**, we propose to set company specific PCLs. We propose this based on each company's ability to influence biodiversity being linked to company-specific factors such as the amount of land they own and manage. There is also limited data available to understand the drivers of biodiversity performance and the opportunities for each company to make improvements. Our proposed approach aligns with responses from stakeholders who

⁶⁸ Root cause data has only been provided for high spilling overflows (greater than 60 spills per year) by all companies, apart from Yorkshire Water, which provided no root cause information. Where data on the root cause of storm overflows has been provided just under a third, 29%, were attributed to asset health or data issues. Defra, ['Event Duration Monitoring – Storm Overflows – Annual Returns – 2021'](#), May 2022.

⁶⁹ We note that companies receive enhancement expenditure to address changing exogenous factors such as deteriorating raw water quality. We expect to continue with this approach for PR24.

⁷⁰ Ofwat, ['PR24 and beyond: Performance commitments for future price reviews'](#), November 2021.

highlighted the difficulty in setting a common performance level for this performance commitment.⁷¹

For **bathing waters**, we propose to set company-specific PCLs. Companies have had varying amounts of historical enhancement expenditure to improve bathing water quality. In setting company-specific performance levels, we will account for investments that have been previously funded to avoid customers paying twice for performance improvements. Our proposed approach aligns with responses from stakeholders who highlighted the difficulty in setting a common performance level for this performance commitment.⁷²

For **river water quality**, we propose to set company specific PCLs. This proposal reflects that individual discharge requirements will depend upon the receiving water course, which will inform the discharge consent set. As a result, companies have received varying amounts of historical enhancement expenditure to improve river water quality. In setting company specific performance levels, we will account for investments that have been previously funded to avoid customers paying twice for performance improvements.

Box 1: Determining efficient per capita consumption for each company

We have undertaken an initial econometric modelling exercise to assist us in identifying the 'efficient' PCC performance level for each company. The models aim to quantify the impact of exogenous factors and differences in enhancement funding on PCC.

We have focused on the period prior to the impacts of the Covid-19 pandemic and plan to revise our analysis when the 2021-22 performance data becomes available.

Our analysis has identified several factors that drive differences in household customer water demand (ie PCC) between companies and over time: population characteristics (income and age); water efficiency (metering penetration) and weather (potential evapotranspiration and rainfall).⁷³ For example, high rainfall means households do not need to water their gardens, subsequently reducing water demand.

Overall, our initial results are promising. We intend to engage with the sector further after we have updated our analysis with 2021-22 data.

⁷¹ South Staffs Water, Severn Trent Water and South East Water highlighted the difficulty in setting common performance levels in this area in their responses to our November consultation on PR24 performance commitments. Ofwat, '[PR24 and beyond: Performance commitments for future price reviews](#)', November 2021.

⁷² United Utilities and Thames Water stated that it was important for each company to have their own target, which reflected their starting position in their responses to our November consultation on PR24 performance commitments. Ofwat, '[PR24 and beyond: Performance commitments for future price reviews](#)', November 2021.

⁷³ These factors might be exogenous for per capita consumption as per capita consumption relates directly to customer activity. These factors should not necessarily be considered as exogenous for other performance commitments or aspects of the price review.

4.1.4 Performance commitments for which we do not need to set PCLs

The **customer measure of experience (C-MeX)** was introduced at PR19 and aims to incentivise water companies to provide an excellent customer experience for residential customers. We intend to retain C-MeX at PR24, as detailed in Appendix 6 on performance commitments.

We have explored the link between residential retail expenditure and C-MeX. Evidence does not support the hypothesis that good customer service is associated with higher retail costs.

It is unnecessary to set PCLs for C-MeX given outperformance and underperformance payments are based on each company's annual performance relative to other companies (rather than against an ex-ante PCL). The same applies for the **developer services measure of experience (D-MeX)** and proposed **business retail measure of experience (BR-MeX)** [for English companies].

We have included **business customer experience in Wales** within this category at present. But we recognise there may be a requirement to set a common expectation of performance for this performance commitment. We will review our approach to this performance commitment as we work with the Wales PR24 Forum to consider if the PR19 performance commitment, which has a similar definition for Dŵr Cymru and Hafren Dyfrdwy, should be developed further.

4.1.5 Asset health performance commitments

For the asset health performance commitments, we want to consider further outturn performance data to determine if it is appropriate to set the performance level delivered through the base expenditure on a common or company-specific basis. Asset health performance commitments include:

- mains repairs;
- sewer collapses; and
- unplanned outage.

We want to make sure that companies are incentivised to deliver their long-term plans efficiently while also ensuring the appropriate long-term stewardship of their assets. If we choose to set company-specific performance levels at PR24, we will consider whether a trend towards a common level of performance at a future price review, eg PR29, is appropriate for each asset health performance commitment. Based on existing performance data, we consider it may be appropriate to set a common level of performance for the unplanned outage performance commitment. All but one company have a common PCL for 2024-25 and all companies met their 2020-21 PCLs.

4.2 Baseline performance levels for 2024-25

Our base cost consultation

We proposed to set the baseline performance level for an efficient company in 2024-25 ('Year 0') using historical performance information and the PR19 PCL for 2024-25 (if one exists).

Stakeholder responses

Companies generally challenged our position. Anglian Water, South West Water, Southern Water, Thames Water, Yorkshire Water, Bristol Water and South Staffs Water questioned the assumption that PR19 PCLs will be delivered and its use as the baseline for setting expectations of performance improvements deliverable through base expenditure at PR24.

Our assessment and draft methodology proposals

We maintain the view that efficient companies will deliver their PR19 PCLs on average. Adopting a different approach would reduce companies' incentives to outperform and risk customers paying twice for performance improvements.

We note that 60% of common PCLs were achieved in 2020-21.⁷⁴ This suggests that PR19 PCLs were not overly stretching. We also expect opportunities for outperformance to grow throughout the 2022-25 investment period as companies deliver further performance improvements. We have observed companies responding to our stretching but achievable PCLs in their rates of performance improvements we have observed in 2020-21.

Our approach to setting PCLs must not distort companies' incentives to deliver performance improvements. But we also need to make sure that benefits of improved performance are provided to customers in a timely way. We will therefore consider outturn performance when setting the 2024-25, 'year 0' position. We would consider deviating from the PR19 PCL when setting the 'year 0' position if there was sufficient and convincing evidence of material over or underperformance. We may also consider applying a glidepath to determine annual PCL values. This will make sure that PCLs are set appropriately in the context of outturn and forecast performance.

Considering the example of an underperformance scenario. To support a 'year 0' adjustment away from the 2024-25 PCL, we would need to see root cause evidence of the

⁷⁴ Based on analysis of the performance commitment included in 'overall categorisation of service delivery' in the 2020-21 service deliver report. Note customer satisfaction, priority services and household water use (PCC) excluded from analysis. Ofwat, ['Service delivery report 2020-21'](#), November 2021

underperformance being driven by external factors that could not have been foreseen at PR19.

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 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.

4.3 Determining performance improvements from base expenditure

Our base cost consultation

We set the assumption that efficient companies will continue to improve performance over the long term from base expenditure. We proposed to use historical performance data, company forecasts (PR19 and PR24) and PR19 PCLs (where available) to forecast the level of performance we expect companies to deliver through their base expenditure allowance.

We also confirmed that consideration of long-term delivery strategies, customer views and overall expenditure allowances also feed into setting PCLs.

Stakeholder responses

Companies challenged our proposal and raised the following concerns:

- Anglian Water, Dŵr Cymru, Northumbrian Water, Southern Water, Thames Water, Wessex Water, Yorkshire Water, Affinity Water and Bristol Water challenged a linear extrapolation of performance based on historical trends for individual performance commitments as not appropriate. They argued there are diminishing returns and increased marginal costs as performance improves,⁷⁵ and

⁷⁵ The figures included as examples of forecasting improvement from base expenditure in Chapter 6 of the base cost consultation showed linear trends. Ofwat, ['Assessing base costs at PR24'](#), December 2019, pp. 64-78.

- Dŵr Cymru, Northumbrian Water, Severn Trent Water, South West Water, Southern Water, Wessex Water and Yorkshire Water identified the potential for double counting of efficiency and productivity gains.

Our assessment and draft methodology proposals

We expect efficient companies to effectively manage their asset base and improve performance through improving focus on and management of key performance areas. This provides a route to maximise the improvements that can be delivered through base expenditure. This will play an important part in delivering customer and environmental outcomes at a cost that is affordable for both current and future customers.

For each performance commitment, we intend to forecast the performance levels efficient companies can deliver from base expenditure based on historical performance trends. This forecast may take the form of a linear trend, diminishing trend or an alternative relationship if appropriate. We will also consider supporting evidence that provides context for these trends. The impacts of enhancement expenditure will also be considered to determine a final PCL, as discussed in Section 4.4 below.

We consider there remains scope for further performance improvement in the water sector. We do not consider our approach leads to double counting of cost efficiency and performance improvement gains.

The capacity for companies to deliver improvements from base expenditure was considered in detail during the CMA's PR19 redeterminations. The CMA broadly supported our approach, recognising the ability of companies to improve service at little or no cost through better management and improved processes. This was supported by analysis conducted by us and the CMA which demonstrated that high performing companies on cost efficiency were often high performers on service.⁷⁶

Historical base expenditure also includes one-off investments to improve service alongside reoccurring costs. Therefore, as our base modelling approach reflects historical expenditure then any historical one-off investments will result in expenditure being available to companies to deliver further performance improvements going forwards.

In theory productivity analysis partly reflects changes in the quality of outputs. This is done using quality-adjusted price deflators, which take into account quality when calculating

⁷⁶ 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. 629–630.

Ofwat, ['Reference of the PR19 final determinations: Introduction and overall stretch on costs and outcomes – response to cross-cutting issues in companies' statements of case'](#), May 2020.

Ofwat, ['Overall level of stretch across costs, outcomes and allowed return on capital appendix'](#), December 2019.

whether the price of goods have increased over time. However, in practice productivity analysis, as illustrated by the Frontier Economics study of water sector productivity, does not properly adjust for changes in quality.⁷⁷ The performance level expected from base expenditure represents efficient performance, and therefore does not represent a double counting of productivity gains.

4.4 Setting PCLs at PR24 and beyond

Our base cost consultation

Companies should consider the level of performance that is funded by base expenditure allowances in the context of long-term challenges and outcomes, as discussed in Section 4.3. We said that companies should present evidence to support PCLs beyond that funded by base expenditure allowances as part of a best value long-term delivery strategy supported by customers. We asked companies for proposals on how to make adjustments where a PCL differs from the level of performance expected to be delivered from base expenditure allowances.

We stated the importance of setting stretching but achievable cost allowances and PCLs. We discussed the option of using a composite service variable to assess the overall cost and service stretch at PR24.

Stakeholder responses

Most companies proposed that an enhancement expenditure allowance should be provided where a PCL differs from the level of performance expected to be delivered from base expenditure. United Utilities and Wessex Water also highlighted the potential risk of double funding if a company received ODI outperformance payments for performance improvements that were funded through enhancement.

Yorkshire Water and South Staffs Water stated the importance of early visibility of the base cost econometric models and common performance levels. Stating that this would help companies to understand what cost adjustment claims they should put forward and support a streamlined process.

Most respondents stated that performance expectations need to be strongly associated with the cost efficiency benchmark to ensure overall stretch is achievable. Some companies considered that composite service variable analysis could play a role in assessing overall

⁷⁷ Frontier Economics, '[Productivity improvement in the water and sewerage industry in England since privatisation](#)', September 2017.

stretch. But it was recognised as being time consuming, complex and posing significant challenges, such as determining appropriate weighting of service variables.

Our assessment and draft methodology proposals

Companies should evidence where they need to deliver beyond performance levels funded by base expenditure allowances. For example, this could be driven by their long-term delivery strategies and informed by customer views. Companies should ensure that their business plans will deliver the long-term performance targets set by regulators and governments. We discuss in Section 2.2 the standard of evidence required for enhancement business cases. Conversely, companies should evidence cases where customers support the delivery of a less stretching performance level than that funded through base expenditure allowances.

We propose that where this can be quantified, such adjustments should primarily be made through cost allowances rather than ODIs where there is a quantifiable investment proposal supported by customers. We will protect customers by benchmarking costs to ensure allowances are efficient and adjusting the PCL to reflect cost allowances. Subsequently, ODI outperformance and underperformance payments will be used primarily to incentivise companies to focus on performance during the period, taking account of the value to customers of each aspect of service. We discuss our PR24 draft methodology view on ODIs in Appendix 8.

We intend to address the risk of double funding through enhancement cost allowances and ODI outperformance payments by accounting for the performance benefits from enhancement expenditure when setting PCLs. Companies should demonstrate they have taken account of the impacts of enhancement expenditure when forecasting the performance improvements they will deliver.⁷⁸ We discuss this further below.

We appreciate that some companies favour an early view of forecast base expenditure allowances and performance levels expected to be delivered from base expenditure. But at present we only have a single year of outturn performance available for the 2020-25 period. We are also still developing the definitions for some of the new performance commitments proposed at PR24. We will consider what further information could be provided in our final methodology when we have two years of outturn data available for the 2020-25 period.

However, 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

⁷⁸ Our expectations in relation to the evidence companies should provide in enhancement business cases are included in Section 2.2.3.

to change until this point of the process where we will have four years of outturn data for existing performance commitments.

We also need to consider that providing an early view of performance levels may influence company business plan submissions. This may reduce the value of company forecasts as a measure of what individual companies consider can be delivered through base expenditure.

4.4.1 Our proposed approach to setting PCLs at PR24

The starting point for setting PCLs will be the level of performance we consider an efficient company can deliver through its base expenditure. We will then adjust cost allowances and PCLs where this is appropriate, where it is in the best interests of customers, communities and the environment and supported by compelling evidence.

We will adjust PCLs to take account of enhancement expenditure allowances based upon business plan evidence. Companies should consider the impacts of enhancement expenditure on each performance commitment. For example, investment in smarter water networks and remote control capability can enable companies to both prevent and respond quicker to mains bursts. The ability to better control networks, prevent bursts and mitigate the consequences of bursts that occur can bring benefits to multiple performance commitments. For example, reducing leakage and mains bursts, avoiding water supply interruptions with durations greater than 3 hours, and reducing risk to water quality which will avoid compliance risk index failures and minimise customer contacts about water quality.

Companies should consider the impacts of investment on performance both in the 2025–30 period and across the long term. For example, investment providing more granular network information may provide immediate benefits in terms of prioritisation of work and enable a faster rate of performance improvements over the long term by supporting innovative approaches to network management. We expect companies to identify and quantify these additional benefits, to enable us to account for them in the setting of PCLs.

Companies should provide this information in addition to their view of performance delivered by base expenditure allowances in their business plan tables⁷⁹.

There are two important elements of this information:

⁷⁹ Our draft PR24 submissions table guidance – sections 1 (outcomes) and 9 long-term strategies, detail the forecasts we expect companies to submit.

1. performance improvements delivered as part of a company's best value long-term delivery strategy This includes the impact of all base and enhancement expenditure over the long-term period;⁸⁰ and
2. performance improvements delivered over the 2025–35 period, from the schemes companies commence in the 2025–30 period. These improvements should clearly identify the influence of best value enhancement expenditure made in 2025–30 on the 2025–35 performance levels.

For the avoidance of doubt the difference between elements 1) and 2) is:

- in element 1), the impact of all enhancement expenditure for 2025–30 and beyond is represented in the performance trend; and
- in element 2), only the influence of enhancement expenditure for schemes commencing in 2025–30 is shown in the 2025–35 period.

Element 2 is necessary for us to be able to calibrate expected levels of performance from base at future price reviews eg PR29 (see Box 2 below for more details). The performance improvements identified will form part of the justification for the schemes commencing. We further discuss best value assessments in Section 6.

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.⁸¹

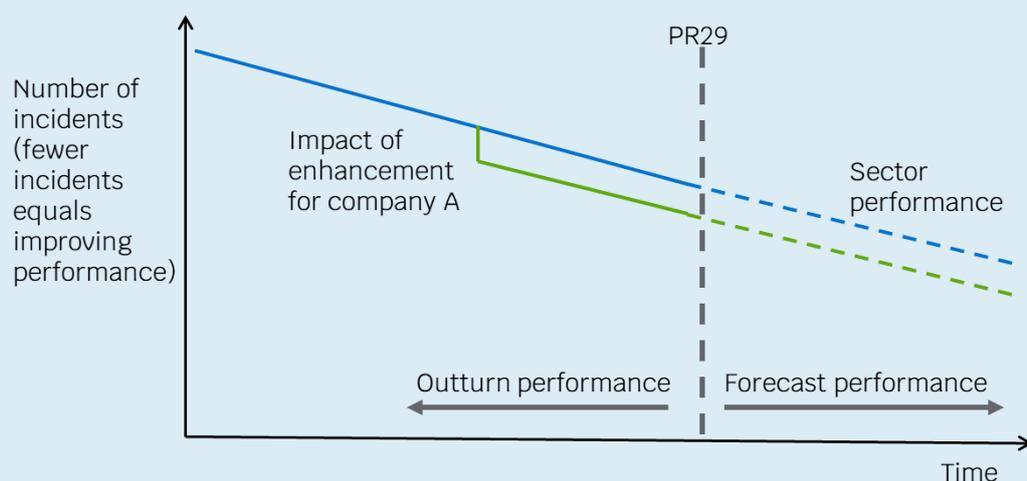
⁸⁰ For further information, see Ofwat, '[PR24 and beyond: Final guidance on long-term delivery strategies](#)', April 2022 and PR24 submission tables guidance – section 9 (long-term strategies).

⁸¹ For further discussion of bespoke performance commitments, see Appendix 6.

Box 2: Impact of enhancement expenditure on future PCLs

Company A quantifies the impact of its proposed enhancement expenditure for schemes commencing in the 2025-30 period on performance in the 2025-35 period.

Figure 4.2 Impact of enhancement on future PCLs – illustrative example



In Figure 4.2, sector performance is shown by the blue line. The enhancement moves Company A to the green line. The continuous lines represent outturn performance data and the dashed lines represent forecast data.

When assessing future sector performance deliverable from base expenditure, Company A performance is adjusted to remove the impact of the enhancement. This gives the forecast performance of the blue dashed line for the sector. This is then adjusted for Company A to take account of enhancement to give the forecast performance in the green dotted line.

4.4.2 Assessing the overall level of stretch at PR24

We will achieve a clearer link between cost allowances and PCLs at PR24 by using historical outturn data as the basis of setting efficient base expenditure allowances and PCLs. Historical outturn performance data provides a strong basis for demonstrating what performance levels can be achieved through base expenditure.

Companies are expected to forecast performance improvements from base expenditure into their PR24 business plans and long-term delivery strategies. We will compare our performance forecasts based on historical trends against company forecasts to understand the level of stretch proposed by each company. We will consider if companies' supporting

evidence to explain their forecasts is compelling and justifies an adjustment to our independent forecasts.

It is important to maintain the incentive for companies to outperform. As such we do 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 intend to review the level of performance expected to be delivered by base expenditure by companies across common performance commitments in-the-round. This will identify if the levels set are suitably stretching when considered in the context of efficient base cost allowances, historical performance, and enhancement expenditure.

We consider composite service variable analysis may be helpful in assessing the overall level of cost and service stretch at PR24. But we do not see it as a priority because of concerns that it: (i) would be overly complex, eg developing appropriate weightings to combine service variables; and (ii) may not produce meaningful results. Companies shared these concerns in response to the base cost consultation. But we would not include the composite service variable in our base cost models because it is an endogenous service variable, ie performance is under management control. Including such a variable in our base cost models risks introducing perverse incentives and would be contrary to our cost assessment principles.

4.4.3 Incentivising performance improvements over the long term

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 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.

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

- outturn performance;
- PR24 PCLs;
- company forecasts; and
- impacts of enhancement expenditure.

But we intend to follow an analogous approach to that described in Sections 4.2, 4.3 and 4.4 above to determine the PCLs for 2030-35. 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 (5.1);
- delivering long-term targets quickly and efficiently (5.2);
- facilitating efficient long-term investment (5.3);
- ensuring delivery for customers and environment over the long term (5.4); and
- funding of nutrient neutrality in England (5.5).

5.1 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. We have considered the stakeholder feedback we received on our proposals in our May 2021 discussion document. We set out our assessment and draft methodology proposals to improve planning investment needs and outcomes over the long term below.

Our May 2021 discussion document

We proposed to further support companies to identify and deliver investment for the long term. We said that we want to better understand how companies' business plans bring together the outputs of all the strategic planning frameworks into a coherent long-term delivery strategy.

We said we were considering how we can best input into the WINEP, NEP, WRMP and DWMP processes ahead of business plan submission. Our PR19 lessons learnt identified that this is important, for example in terms of making sure there is an appropriate and continuous level of assessment and feedback at each stage of the WRMP process.

Stakeholder responses

Severn Trent Water, South East Water and South Staffs Water expressed support for further early engagement and guidance from Ofwat on the regional water resource plans and WRMPs to help identify early issues and better inform the links to PR24. United Utilities identified that

this may be more important for the DWMPs, given it is a new framework and therefore is likely to result in a range of approaches from companies.

Anglian Water, Severn Trent Water and South East Water wanted more integration between the long-term focus of the WRMPs and DWMPs with the business plan by having the long-term schemes agreed in the WRMP and DWMP and the focus in the price review being on the cost-efficient way of delivering these schemes.

Our assessment and draft methodology proposals

The remainder of this section outlines our proposals to improve companies' long-term planning and identification of investment needs. This incorporates the feedback from the consultation where appropriate. Our view is that the long-term delivery strategies, informed by the key strategic planning frameworks, provide important context for the next five years of investment.

5.1.1 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. 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.⁸² These 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.

We expect long-term delivery strategies to 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.

⁸² We discuss the use of outcomes delivery incentives (ODIs) in Chapter 6 of the consultation document and Appendix 8.

⁸² See Chapter 12 of the consultation document.

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.⁸³ 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.

Long-term delivery strategies linked to scenario testing and adaptive planning will enable companies to evidence their decision-making in the short term and highlight and plan for the consequences over the long term. 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 relate to the uncertainty being mitigated. Trigger points should be focused beyond 2030, where the need for investment is most uncertain.

5.1.2 Strategic planning frameworks and statutory environmental programmes

Long-term investment plans will be informed by several current strategic planning frameworks. However, these frameworks do not cover all areas of company planning and investment and it is our expectation that long-term delivery strategies cover all areas of company activity. These current frameworks include water resources management plans (WRMPs), regional water resource plans and drainage and wastewater management plans (DWMPs). These frameworks are complemented by the water industry national environment programme (WINEP) in England and the national environment programme (NEP) in Wales. These frameworks set a long-term direction of travel for key areas of company activities and usually involve collaboration with other regulators and stakeholders. The outputs from strategic planning frameworks will need to inform, and align with, each company's long-term delivery strategy.

Meeting expectations and addressing feedback

We have been clear on our expectations on the key strategic planning frameworks and environmental programmes through a range of guidance documents. This includes the water

⁸³ Ofwat, '[PR24 and beyond: Final guidance on long-term delivery strategies](#)', April 2022.

resources planning guidance,⁸⁴ WINEP options development guidance, and the DWMP guiding principles,⁸⁵ 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.⁸⁶ These expectations were developed based on previous experience of WRMP 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; and
- demonstration that stakeholder and customer views have been taken into account, and that partnership opportunities have been identified to enable co-funding and co-delivery.

Building on the approach taken for WRMP19,⁸⁷ we have also engaged on an intensive early engagement and feedback process to support companies and to challenge them to generate the best long-term plans in advance of business plan submission 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.⁸⁸ We have followed up with further sessions held with each company during April–June 2022.
- **Regional water resource plans:** We provided feedback on regional group method statements in January 2021 and responded to the initial draft regional plan consultation in February/March 2022.⁸⁹ We have regularly engaged with regional groups through the regional co-ordination group and to follow up on written feedback.
- **DWMPs:** We held structured pre-draft engagement meetings with all water and wastewater companies during February and March 2022, and provided written

⁸⁴ Environment Agency, Natural Resources Wales, Ofwat, '[Water resources planning guideline](#)', updated April 2022.

⁸⁵ Defra, Welsh Government, Environment Agency, Natural Resources Wales and Ofwat, '[Guiding principles for drainage and wastewater management plans](#)', February 2022.

⁸⁶ Ofwat, '[Ofwat's expectations for strategic planning frameworks at PR24](#)', November 2021.

⁸⁷ Ofwat, '[Ofwat's engagement on WRMP19](#)', 2018.

⁸⁸ Ofwat, '[Ofwat WRMP24 pre-consultation meeting company template briefing pack](#)', November 2021.

⁸⁹ Ofwat, '[Ofwat's engagement on WRMP24](#)', 2022.

feedback based on the discussions. We summarised our key feedback in a letter that was provided to all DWMP steering group stakeholders in April 2022. Working collaboratively with the companies, we developed standardised data tables to enable consistent reporting of DWMP metrics to aid the July–August 2022 consultation and help the flow of performance and cost data into business plans. The tables for the draft DWMPs were finalised in May 2022.

- **WINEP/NEP:** We will hold early engagement meetings with companies and the environmental regulators starting in August–September 2022 as companies undertake options identification, appraisal, and selection in advance of the final WINEP/NEP submission for PR24 in March 2023. We will provide feedback to support companies' approaches where necessary.

We expect companies to have a strong focus on all the strategic planning frameworks to ensure they are robust, deliverable, and flexible in meeting customer expectations and environmental outcomes. 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, other 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. 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, which addresses some of the stakeholder feedback received in this area. Due to these frameworks being finalised in advance of business plan submission, companies need to ensure that the final plans adequately address the feedback provided.

We propose to 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. Both these factors will influence the assessment of company business plan incentives.⁹⁰

Consistency of strategic planning frameworks and business plans

We expect consistency between final WRMPs, WINEP/NEP submissions, and where relevant, DWMPs, 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

⁹⁰ See Appendix 12.

be delivered, and associated investments and requested enhancement costs. The strategic planning framework development process, and regulatory engagement with it, will be significantly undermined by companies making substantive changes after final plans are agreed.

Any areas of variance need to be fully explained, supported by compelling evidence, including 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 propose to consider the consistency between the final strategic planning frameworks and environmental programmes with the PR24 submissions when assessing company proposals and will feed into company business plan incentives.⁹¹

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

We support a move towards a more outcomes-focused WINEP/NEP. This is consistent with the approach that we try to take for other enhancement expenditure. Under this approach, we set the outcomes we expect companies to deliver and then the efficient totex allowances needed to support the 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.

In line with Action 1 from the WINEP Roadmap, we are working with the Environment Agency to develop and trial more outcomes-based approaches to the WINEP in PR24.⁹² The core aim of this work is to test and establish the management and governance frameworks necessary to operationalise an outcomes-based approach more widely in PR29 and beyond.

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

⁹¹ See Appendix 12.

⁹² This work is in addition to the recent introduction of a tiered approach to the WINEP. See Defra, '[Water industry national environment programme \(WINEP\) roadmap](#)', May 2022.

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 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 WRMPs. In exceptional circumstances, we may require additional justification of the need, for example if material concerns that we have raised during the WRMP process have not been addressed, or proposed schemes overlap with previously-funded investments which have not been delivered. Customers do not expect companies to be funded twice for the same service improvement. This applies to all areas of service improvement including WRMP and WINEP/NEP. It is for companies to provide sufficient and convincing evidence that the benefits of previously-funded schemes or programmes have been appropriately accounted for, so that they do not form part of the future need assessment. 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.

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 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 and are expected 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, and this needs to be appropriately accounted for 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 options suitability over smaller, modular or operational type interventions.⁹³

We will continue to consider how we will check that the planned level of asset resilience is being adhered to. We set out in our recent operational resilience discussion paper how we

⁹³ See Chapter 3 of consultation document.

are proposing to evolve our monitoring approach to provide a richer picture of operational resilience for customers and stakeholders.⁹⁴ We propose to develop an integrated monitoring framework that is informed by the outcomes regime and complemented by wider monitoring activities.

5.2 Delivering long-term targets quickly and efficiently

Several targets or ambitions have been set by government or regulators in recent years which aim to drive the industry forward in terms of customer service and environmental protection. These include targets under the Environment Act 2021 that the UK government has recently consulted on and will finalise in due course.⁹⁵ Long-term targets are important for giving companies time to identify, plan and deliver efficient best value solutions. We have considered the stakeholder feedback we received to our proposals and set out our assessment and draft methodology proposals to improve delivery of long-term targets below.

Our May 2021 discussion document

We said that customers are increasingly concerned about damage to the environment from taking water from rivers and chalk streams, discharging waste through storm overflows, and carbon emissions.

We proposed that companies' long-term outcomes need to take account of government priorities and ambitions. We said that companies should be clear on what long-term outcomes they are aiming to deliver for customers, bringing together all the strategic planning frameworks, evidence of customer views and affordability constraints.

We proposed that companies consider how best to address the net zero transition, including: reducing GHG emissions from base and existing enhancement programmes; using the outcomes framework to compensate companies for going beyond reductions funded by base and standard enhancement; and using additional cost allowances specifically to reduce emissions based on benchmarked unit abatement costs.

Stakeholder responses

Yorkshire Water responded that we should recognise that what is cost effective in one five-year price review cycle might not be the most cost-beneficial over the longer term. It stated that this is vital for shifting the sector towards longer-term planning and delivery of greater

⁹⁴ Ofwat, '[Operational resilience discussion paper](#)', April 2022.

⁹⁵ Defra, '[Consultation on environmental targets](#)', 2022.

value for customers. Wessex Water suggested that we should not be confined in cost assessment to only looking at the direct financial cost over the next five years.

South Staffs Water suggested needing to know what we are working towards, in terms of long-term service, and then to start to set meaningful shorter-term steps towards those long-term goals. To do this, more work needs to be done on what long-term aspirations should be and consider if they are genuinely beneficial.

Affinity Water, SES Water and Southern Water highlighted the importance of planning over the long term, with meeting net zero by 2050 being the main objective. South East Water expressed the view that the focus should be on 2030 rather than 2050.

Dŵr Cymru and Severn Trent Water linked the need to meet net zero to identification of investments that provide multiple benefits and are not necessarily just least cost to achieving one driver.

Affinity Water, South West Water and Thames Water suggested that GHG emissions was suitable to be considered as a common performance commitment. Severn Trent Water requested that net zero was subject to a targeted challenge at PR24.

Our assessment and draft methodology proposals

We want to better enable companies to plan for and deliver long-term targets and this section provides details on our expectations and proposals to facilitate companies in doing this. The remainder of this section outlines our proposals to improve companies planning for and delivering on long-term targets.

It is for companies to propose efficient glidepaths to achieving the range of long-term targets. This should be supported by the long-term delivery strategy. 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 listed below⁹⁶ also have significant overlap with common performance commitments and interact with potential changes to how we normally fund enhancement improvements:

⁹⁶ Note this is not a complete list of long or short term regulatory and government targets.

- GHG (greenhouse gas) emissions:
 - net zero GHG emissions by 2050;⁹⁷
- combined sewer overflows:
 - in England, storm overflows should not cause local adverse ecological harm by 2050; and
 - in England, no storm overflow should spill more than an average of 10 spills per overflow by 2050;⁹⁸
- water demand:
 - leakage reduction of 50% by 2050 from 2017–18 levels;⁹⁹
 - household per capita consumption of 110l/h/d by 2050;¹⁰⁰
 - reduce the use of public water supplied in England per head of population by 20% by 2037;¹⁰¹ and
- water body nutrient loading:
 - in England, to reduce phosphorus loadings from treated wastewater by 80% by 2037 against a 2020 baseline.¹⁰²

5.2.1 Net zero GHG (greenhouse gas) emissions

Water companies have a key role to play in the overall context of the UK and Welsh Governments' target of net zero emissions by 2050. To achieve net zero in a phased manner

⁹⁷ In 2019, the UK government amended the Climate Change Act 2008 to commit the UK to achieving net zero by 2050. See UK government, [Climate Change Act 2008](#), updated 2019.

In February 2021, Welsh Government committed to net zero by 2050, but set out ambitions to get there sooner. See Welsh Government, ['Wales commits to net zero by 2050, but sets out ambitions to get there sooner'](#), February 2021.

⁹⁸ The UK government's SPS expects Ofwat to challenge water companies to demonstrate how they will significantly reduce the frequency and volume of sewage discharges from storm overflows, so they operate infrequently, and only in cases of unusually heavy rainfall. For target, see Defra, ['Consultation on the Government's Storm Overflows Discharge Reduction Plan'](#), March 2022.

We note that there is no defined target in Wales, with a focus on water quality, evidence and an outcomes-based approach.

⁹⁹ The UK government's SPS expects Ofwat to challenge water companies to halve leakage across the industry by 2050 and to monitor progress towards this target. Companies in England committed to deliver a 50% reduction in leakage by 2050 from 2017–18 levels in a letter from Water UK to the Secretary of State. See Water UK, ['Letter to the Secretary of State – leakage'](#), October 2018.

The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022 requests that companies demonstrate their contribution to the 50% reduction as part of the water industry target by 2050. See Welsh Government, [The Welsh Government Guiding Principles for Developing Water Resources Management Plans \(WRMPs\) 2022](#), 2022.

¹⁰⁰ Environment Agency, ['Meeting our future water needs: a national framework for water resources'](#), March 2020.

The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMPs) 2022 requires companies to set out challenging targets and a strategy for reducing per capita consumption for both domestic and business users, both for the 5 year period of the WRMP and for the next 20 years. See Welsh Government, [The Welsh Government Guiding Principles for Developing Water Resources Management Plans \(WRMPs\) 2022](#), 2022.

¹⁰¹ Defra, ['Consultation on environmental targets'](#), 2022.

¹⁰² Ibid.

by 2050, the UK government has agreed to a series of interim targets, notably an overall 78%¹⁰³ cut in UK emissions by 2035, with the Welsh Government committing to a cut of 89% by 2040.¹⁰⁴

The UK government's strategic policy statement expects water companies to have regard for the policies and proposals set out in the UK Net Zero Strategy,¹⁰⁵ and to contribute to net zero by 2050.¹⁰⁶ 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.¹⁰⁷ 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.¹⁰⁸ In it we clarified 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 before the use of offsets.

There is uncertainty in how these targets will be met 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 ones, on a consistent basis. However, there are opportunities and technologies that are already available for companies to adopt during PR24 to have significant impacts on their GHG emissions and transition to net zero. We note that most of the scope in the short term is for the abatement of process emissions of nitrous oxide and methane, but opportunities are available for other areas of the value chain. However, we do not want the focus on current available technologies and our expectation for action at PR24 to shift the focus from the long-term challenge. We therefore encourage companies to continue to review emerging technologies and engage with innovation in this area.

The focus and drive to net zero is not new for PR24. Climate change impacts and the contribution of GHG emissions are well understood, and some companies have already proactively made reductions in GHG emissions. We expect all companies to deliver further improvements through base expenditure during 2025–30. We also expect companies to deliver 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 also anticipate specific net zero enhancement

¹⁰³ 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.

¹⁰⁴ Welsh Government, ['The Climate Change \(Interim Emissions Targets\) \(Amendment\) Regulations'](#), 2021.

¹⁰⁵ UK government, ['Net Zero Strategy: Build Back Greener'](#), October 2021.

¹⁰⁶ Defra, ['The government's strategic priorities for Ofwat'](#), March 2022.

¹⁰⁷ Welsh Government, [Net Zero Wales Carbon Budget 2 \(2021–25\)](#), 2021

¹⁰⁸ Ofwat, ['Net zero principles position paper'](#), January 2022.

investments to be identified and proposed. This would be where these are needed to meet an efficient long-term glidepath to net zero on top of the benefits delivered through base and standard enhancement activities.

Building on what we said in the May 2021 discussion document and the responses received, 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.¹⁰⁹ Frontier Economics identified three main options to incentivise and fund net zero improvements, ranging from using the PR19 regulatory tools to a full bidding competition for all net zero related improvements. The three main options and our considerations of them are summarised below:

Adapted PR19 toolkit: This approach builds on the approach taken at PR19 for delivery of other outcomes and applies them to net zero. This would require companies to identify net zero enhancement investments to make improvements beyond the levels expected through base expenditure. These requests would be assessed using the same enhancement assessment criteria as other enhancement areas. The GHG emission benefits would then be accounted for in performance commitment levels (PCLs). This is the simplest proposal from a regulatory perspective, as it applies the current tools as applied at PR19 to a new investment area. However, this approach requires confidence in being able to robustly benchmark efficient costs as part of our wider cost assessment process and that efficient unit costs are similar across companies. The uncertainty in the costs and benefits of net zero investments and the potential large differences in the maturity of company thinking in this area means this may not be the case.

Full net zero bidding competition: This approach would introduce a bidding competition for all enhancement investment having an impact on GHG emissions. Companies would be funded based on the efficient unit rate for carbon abatement based on the bids received from all companies. Those companies with the most efficient bids would receive more funding than those that are more expensive. The reductions funded through the bidding competition would be factored into performance commitment levels. As this would be a significant change in how we fund an area of enhancement, this approach would be complex to manage. A complicating factor is that most GHG emission reductions may be delivered through interventions where net zero is not the primary driver. Tracking the funding of net zero investments would then be difficult due to the multi-driver nature of many investments. The full bidding option also comes with issues of fairness of funding between companies and regions. If several companies win most of the bids, then some customers are paying more for the industry's net zero transition this period, and without any funding some companies may lose touch with front runners, even with base improvement expectations. However, this approach would enable the greatest degree of cost and benefit data transparency for

¹⁰⁹ Frontier Economics, '[Incentivising net zero – a report for Ofwat](#)', 2022.

addressing net zero, thus driving efficiencies and cross-sector learning and enabling only the most efficient schemes to be funded.

PR19 toolkit plus net zero challenge bidding (our PR24 proposal): The hybrid of the two above options would maintain the assessment and funding of enhancement costs at a company level, including the scope for companies to request specific net zero enhancement expenditure. This would be complemented by a net zero challenge bidding competition for companies to request further net zero specific funding, as opposed to all enhancement investment that has an impact on emissions. Under this proposal, only a sub-set of the most efficient bids are likely to be successful, as the majority of the efficient reductions will be delivered through base and other enhancement activities. All funded reductions would then be accounted for in PCLs. This has the benefit of being much simpler than the full bidding model, with it representing an addition to the framework rather a complete replacement. It also removes any complexity about tracking enhancement drivers as the bidding competition will be only for investments to address net zero challenges (not where net zero is a wider benefit of investment). The smaller bidding competition reduces the funding fairness issues, as does the time factor, whereby those companies not undertaking as much net zero investment at PR24, will ultimately have to do the investment and be funded at future periods to meet the long-term targets. It still allows transparency of costs to improve efficiency, but to a smaller scale than full bidding.

We consider the proposal to add a **focused net zero challenge bidding competition** to the PR19 toolkit as representing a good balance between driving the changes needed to address net zero but without adding extra complexity or risking delivery of the rest of companies' investment programmes. While treating net zero in a similar way to other outcomes and enhancement investments would work, it would not help stimulate all companies to drive down emissions as quickly and efficiently as possible. A small bidding market encourages innovation both in the short and longer term. 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. And then the learnings from these investments would be shared over the period, allowing all companies to implement these lower cost solutions in future periods.

We propose that the funding of operational GHG emission reduction will be via the following components:

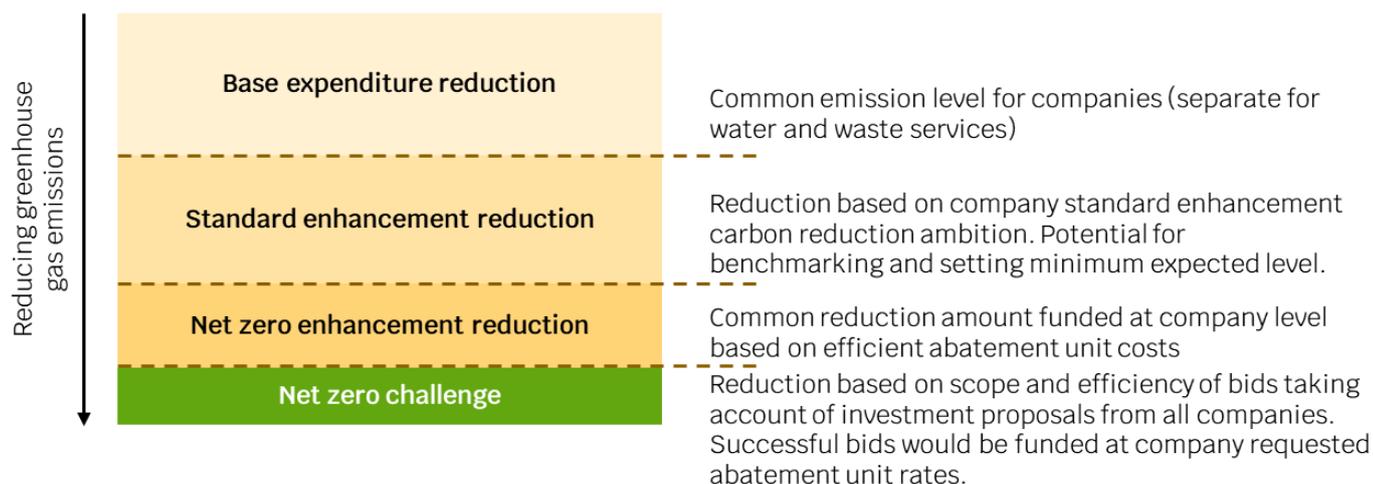
- we will set a common performance level for operational GHG emissions to be delivered through base expenditure. This will be different for wholesale water and wastewater services;¹¹⁰

¹¹⁰ Discussed in Section 4.1

- where emission reductions are delivered as part of other enhancement activities, these will be funded where there is sufficient and convincing evidence to support that they represent best value over the long term. We expect companies to fully explore the amount of reductions that can be efficiently delivered through standard enhancement activities and will look at company ambition in this area. This is likely to result in different emission reductions between companies based on their proposed and funded enhancement programmes. We propose that there is the option to benchmark stretch of net zero reductions delivered through standard enhancement and to set a minimum level that we expect companies to deliver from this funding;
- companies will also present net zero transition specific investment where the sole driver is operational GHG emission reduction. Companies will present all the schemes or programmes of work that they have considered, including their costs and benefits. From this they should include as an enhancement request the schemes that they believe form part of their long-term strategy for meeting net zero. Using the data provided by companies, we will fund all companies to deliver a standard reduction (eg additional X%) on top of the base and other enhancement reductions (reductions will possibly be up to the standard reduction depending on the scale of ambition in plans as we will not push companies to go beyond what is in their plan). This would be funded at the efficient unit cost of carbon reduction; and
- we will then consider company proposals for the net zero challenge on a competitive basis, based on the unit rate of emission abatement delivered for that investment. Those companies with the most efficient bids will receive additional funding to deliver their schemes.

All the funded net zero benefits will be accounted for in company performance commitment levels (eg base, standard enhancement, net zero enhancement and successful challenge bids where applicable).

Figure 5.1 Proposed PR24 approach to delivery and funding of net zero investments



We propose to apply the net zero challenge for investment to reduce operational emissions only, as monitored by the common operational GHG emission performance commitment. We expect companies to focus on operational and embedded emissions in parallel and do not want to skew the focus of the industry on operational GHG emissions in the short term. However, we recognise that there is uncertainty over the consistent measurement and reporting of embedded emissions that is unlikely to be resolved by PR24. Opening a bidding competition which includes bids for embedded reductions may risk distortions created by measurement incontinences. We expect the delivery of all funded embedded emission reductions to be appropriately tracked, most likely through a price control deliverable (PCD).

5.2.2 Storm overflows

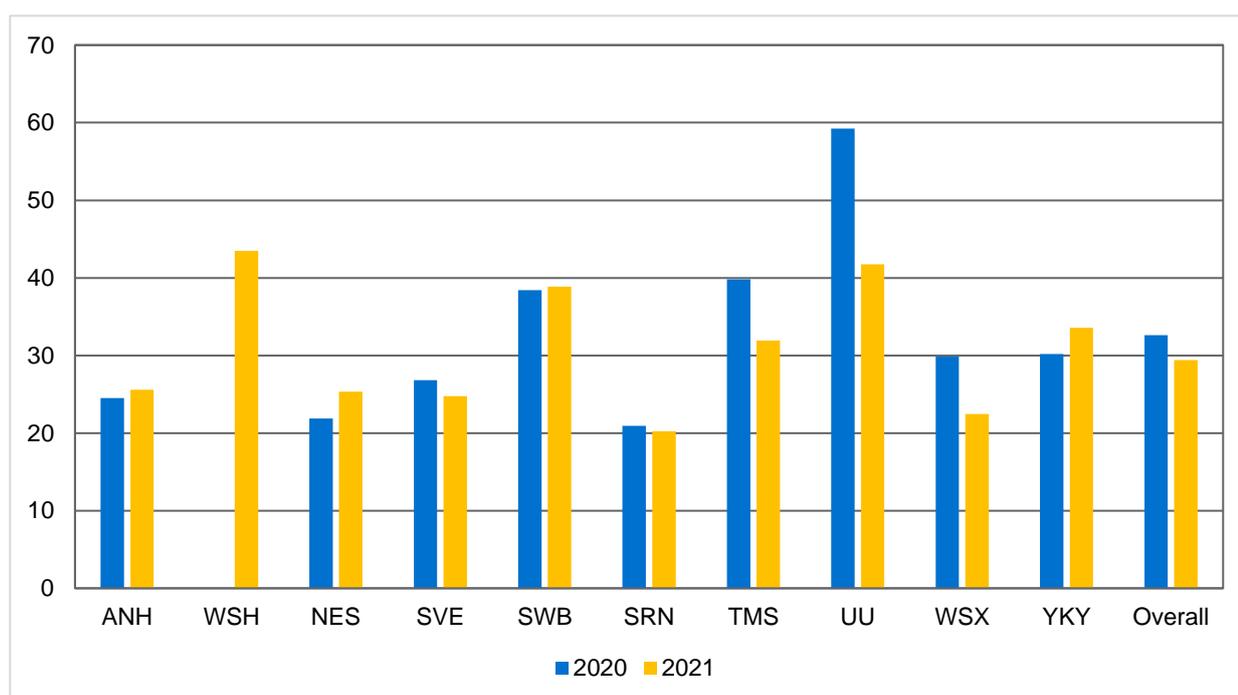
Action is needed in PR24 to address storm overflow spills and make rapid progress towards UK government long-term targets and improve river water quality in Wales. The UK government's SPS expects us to challenge water companies to demonstrate how they will significantly reduce the frequency and volume of sewage discharges from storm overflows.¹¹¹ The Welsh Government's approach to storm overflows is integrated with its approach for improving outcomes and standards on river water quality. Meeting these requirements needs a determined effort from companies to improve operational and maintenance regimes as well as identify and prioritise efficient investments. We expect companies to reduce spills from storm overflows from base and enhancement expenditure, both during 2020–25 and over 2025–30. We are currently conducting enforcement investigations into how all water and

¹¹¹ Defra, ['The government's strategic priorities for Ofwat'](#), March 2022.

wastewater companies in England and Wales are managing their sewage treatment works and we reserve the ability to revisit our PR24 methodology in light of relevant findings.

We expect all companies to be compliant with their environmental obligations (including, for example, environmental permits set by the Environment Agency and their general duty under section 94 WIA91 and related Urban Waste Water Treatment Regulations). Customers should not pay for companies to recover compliance. We are, therefore, concerned that the roll out of monitors on storm overflows has revealed that storm overflows operate at higher-than-expected frequencies. Companies reported in 2021 that storm overflows spilled an average of 29 times, and 16% of overflows spills over 60 times per year.¹¹² Companies report that a significant proportion of storm overflow spills are due to issues related to poor management of the network such as maintenance, data issues or inadequate hydraulic capacity.^{113,114} The current level of spills cannot continue. Companies are required to have systems in place to ensure catchments are effectually drained and sewage is effectually dealt with.

Figure 5.2 Average spills per storm overflow by water company (2020 and 2021)¹¹⁵



¹¹² Defra, ['Event duration monitoring annual returns'](#), 2021.

¹¹³ Root cause data has only been provided for high spilling overflows (greater than 60 spills per year) by all companies, apart from Yorkshire Water, who provided no root cause information. Where data on the root cause of storm overflows has been provided, just under a third, 29%, were attributed to asset health or data issues. Defra, ['Event duration monitoring annual Returns'](#), May 2022.

¹¹⁴ Inadequate hydraulic capacity may arise due to unmanaged population growth, maintenance of assets being inadequate to ensure initially installed capacity, high levels of sewer infiltration due to insufficient maintenance and factors that can be considered less in the company's control.

¹¹⁵ Defra, ['Event duration monitoring annual returns'](#), May 2022. Dŵr Cymru, [2021 EDM Data](#), 2022

We wrote to companies to ask them to set out a plan for reducing the harm to rivers from their activities including those caused by storm overflows.¹¹⁶ Several companies provided commitments to reduce the use of storm overflows. For example, Anglian Water, Northumbrian Water, Severn Trent Water and South West Water have committed to reaching an average of 20 spills per overflow by 2025. We expect all companies to reduce their use of storm overflows to meet this target and go further where their legal obligations require. We propose to set spills from storm overflows as a common performance commitment.

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 external factors beyond a company's control. Consequently, if companies consider that an alternative target is appropriate for their circumstances, they should provide compelling evidence.

Consistent with our approach to the delivery of service improvements through base expenditure, we expect companies to make further reductions to the target during 2025–30. By delivering this companies will start to make good progress towards the UK government proposed target of less than 10 spills on average per overflow by 2050 and help to improve water quality in Wales. However, meeting the UK government target may require companies to think innovatively about the planning, design, operation and maintenance of their sewerage systems, and may need additional expenditure to deliver any enhancements.

In the past, companies have requested funding for investigations into storm overflow spills in one price review to identify what work, if any, needs to be undertaken. The funding of any remedial works is then requested in the subsequent price review. Nevertheless, companies must continually satisfy themselves that they are complying with their legal obligations, and we want to see rapid action to reduce the number of storm overflow spills in PR24. Given the proposed UK government targets, we propose that companies in England go beyond what they might include in PR24 WINEP programmes on storm overflows. We expect them to focus on addressing environmental harm from high priority overflows.¹¹⁷ This should be done drawing on opportunities to coordinate this with other analysis they will be doing for DWMPs.

This may require companies to undertake additional activities, beyond those explicitly funded as part of PR19, and those that are implicitly funded as a part of meeting their overall legal obligations. It would allow them to put forward additional proposals for expenditure in PR24 and meet stakeholder expectations quicker. Requests for such additional investment to reduce spills at storm overflows should be fully integrated with other investments proposed within DWMPs and supporting evidence should be consistent with our requirements for enhancement expenditure. In Wales, we expect companies to propose storm overflow

¹¹⁶ Ofwat, ['Letter from David Black to CEOs on Environment Act duties'](#), March 2022.

¹¹⁷ High priority overflows, as defined in Defra, [Consultation on the Government's Storm Overflow Discharge Reduction Plan](#), March 2022.

investments where there is evidence that they will improve river water quality, that is not already funded. These proposals should draw on the work undertaken as part of the DWMP process and the work of the Wales better water quality taskforce. Investment plans should consider nature- and catchment-based solutions, where they can be demonstrated to be an effective solution.

5.2.3 Long-term water demand targets

There are three long-term targets relating to water demand that are applicable to PR24. These include targets on reducing overall water demand, leakage and per capita consumption.

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.¹¹⁸ 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.¹¹⁹ As such, we have a minimum expectation for all companies to plan to meet the 50% reduction by 2050 on an individual basis. However, given the relative range in starting performance between companies, it may not always be efficient for each company to achieve the same level of percentage reduction in the context of the rest of its business plan and long-term delivery strategy.

In exceptional circumstances, companies can propose leakage targets less than the 50% reduction. Companies adopting this approach should 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 less than 50% reduction 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 50% reduction target for the sector will be met. Where possible these agreements should ensure that all customers benefit from the arrangement. Ultimately it will be the company proposing less than the 50% reduction that will be held responsible should the overall target not be met either through its company ambition or the agreement not holding.

¹¹⁸ Defra, '[The government's strategic priorities for Ofwat](#)', March 2022.

¹¹⁹ Welsh Government, '[The Welsh Government Guiding Principles for Developing Water Resources Management Plans \(WRMPs\) 2022](#)', December 2021.

We note that, since the 50% reduction commitment, English water companies have made an additional public interest commitment to 'triple the rate of sector-wide leakage reduction' by 2030.¹²⁰ It is for companies to factor these short- and long-term commitments into proposing an efficient glidepath for meeting leakage reductions taking other factors such as demand saving measures, alternative supply side options, and likely technological advances into account.

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. Companies should provide sufficient and convincing evidence to justify any enhancement requests for leakage reduction. This should include consideration of:

- the company's performance levels relative to others;¹²¹
- 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.

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 2050.¹²² The Welsh government 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 110l/h/d level by 2050. 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.

Companies should present in their business plan and long-term delivery strategy a proposed investment strategy that meets this long-term target. Where companies are reliant on government policy, to deliver the 110 l/h/d PCC levels, they should clearly identify the policies their assumptions rely on, and their assumed dates of implementation. The impact of enhancement programmes (such as metering) should be made clear as part of the investment business case and factored into forecast performance levels. The smart metering element of the common reference scenarios for technology, to be used by companies in their

¹²⁰ Water UK, '[Public Interest Commitment Update](#)', October 2019.

¹²¹ Outturn data for the 2020–21 indicates a wide range of leakage performance levels across the sector. Ofwat, '[Service and delivery report 2020–21–data](#)', November 2021, sheet 'OUTPUT.PCs', rows 38–75.

¹²² Defra, '[The government's strategic priorities for Ofwat](#)', March 2022.

testing of long-term delivery strategies, should help inform the efficient glidepath at meeting this long-term target and identify the investments required to achieve this.¹²³

Overall water demand

We also expect English companies to demonstrate how they will deliver the proposed water demand targets set as part of the Environment Act 2021. The company activities to reduce the use of public water supplied in England (as measured by distribution input) per head of population by 20% by 2037, will interact with their ambitions on leakage and PCC.

We expect companies to set out a best value approach to delivering these long-term water demand reduction targets within their WRMPs. We note that for some companies it may be appropriate to go beyond these targets as part of a best value long-term plan. The WRMPs should demonstrate that companies have considered a wide range of demand reduction options, 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.

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.¹²⁴

5.2.4 Phosphorous discharges

Nutrient pollution is detrimental to the environment because it can lead to eutrophication in our rivers, lakes and estuaries by speeding up the growth of certain plants. This disrupts natural processes, impacts wildlife and affects the oxygen carrying capacity of the water that can lead to sites falling into 'unfavourable condition'. Nutrient pollution (particularly phosphorous and nitrogen) originates from several different sources, particularly agricultural pollution and effluent discharged from wastewater treatment works.

¹²³ Ofwat, '[PR24 and beyond: Final guidance on long-term delivery strategies](#)', April 2022, pp. 37-41.

¹²⁴ 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.

The UK government's SPS expects us to challenge water companies to improve their day-to-day environmental performance to enhance the quality of the water environment.¹²⁵ Defra has proposed to reduce phosphorous discharged into water bodies from treated wastewater by 80% by 2037 from a 2020 baseline.¹²⁶ This builds on the 50% reduction in phosphorous by 2027, which has been funded through the 2019 price review and the 2020-25 WINEP programme. The Welsh Government has not published targets but have taken a collaborative approach to making improvements by setting up the Better River Quality Taskforce. This taskforce is due to publish its objectives and measurable outcomes at the time we are finalising the PR24 draft methodology and so we will update in the final methodology.

We expect companies to include proposals to reduce phosphorous pollution and make progress towards UK government and Welsh Government targets in their WINEP/NEP programmes.

We are keen to encourage water companies to meet these phosphorous targets as quickly and as efficiently as possible. 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. We propose this will measure the reduction in phosphorous from water company activities. We intend that this will cover both the reduction in the amount of phosphorous discharged at wastewater treatment works and phosphorous stopped from entering rivers from wider partnership working including by using nature-based solutions and catchment management.¹²⁷ Using a performance commitment will incentivise companies to operate their plants as efficiently as possible to achieve the highest possible phosphorous 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. And the performance commitment should incentivise companies to go further if possible.

Phosphorous 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 effect in terms of nutrient impact on protected sites. Nutrient mitigation measures would be needed to offset this impact. Our approach to nutrient neutrality is set out in Section 5.5.

¹²⁵ Defra, '[The government's strategic priorities for Ofwat](#)', March 2022.

¹²⁶ Defra, '[Consultation on environmental targets](#)', May 2022, p. 17.

¹²⁷ For further details, see Appendix 6 – Performance commitments.

5.2.5 Innovation Fund

At PR19 we announced a new £200 million Innovation Fund for the period 2020–2025. Following consultation with the sector, we decided to award approximately £40 million a year through challenge competitions to ensure that we supported high quality bids. During the initial pilot period we have been encouraged by the level of interest, collaboration and the quality and range of entries we have seen and have awarded more than £63 million to 41 innovative projects in two funding rounds.

While it is early days for the funded projects, as many projects will not conclude until the next price control period, we have seen significant increase in levels of collaboration between regulated companies. This is stimulating greater levels of innovation across the innovation themes and is helping to reduce the total cost of innovation in the sector. We have also seen water companies working in partnership with nearly 100 other companies, many of which are new to the sector.

In April 2022, we consulted on how the fund would operate for 2022–2025.¹²⁸ We proposed continuing broadly with our current competitions, as well as removing barriers to entry and opening access to attract new innovators and a greater diversity of entries. We will publish our decisions in July 2022.

We also asked whether we should continue the Innovation Fund after 2025. The respondents were supportive, as extending the fund into the PR24 period will create certainty to further invest in innovation. It will allow companies to build new, long-term partnerships outside of the sector, to bring in new ideas and stimulate greater levels of innovation, as well as build a pipeline of innovations to support the sector to deliver on the challenges they face and make progress towards government targets, such as net zero.

Over the coming months, we will work with the water sector and innovators to look at how the fund can continue to stimulate innovation to help meet the strategic challenges facing the water sector over the longer term. This will include considering the size of the fund and how it could operate, as well as whether it could be delivered in partnership with other innovation funds and join up with other sectors.

5.3 Facilitating efficient long-term investment

As well as better long-term planning and investment identification, we want to ensure that we have the mechanisms in place to facilitate the efficient delivery of long-term investment that also adequately protects customers. We have considered the stakeholder feedback we

¹²⁸ Ofwat, [Innovation fund consultation – Approach for 2022–25](#), April 2022.

received on our proposals and set out our assessment and draft methodology proposals to facilitate long-term investment below.

Our May 2021 discussion document

We said that we consider reviewing company plans every five years provides a balance between certainty for customer bills and allowing companies to get on with delivery, with the flexibility to accommodate changes in requirements. We consider there is already significant flexibility and adaptability in the existing regime to meet challenges now and into the future.

We said that we are keen to understand whether there is more that we can do in our cost assessment approach to take account of the long term in our assessments. We proposed to continue to review the arrangements for enhancement uncertainty and whether we can better trade off complexity and simplicity while continuing to protect customer interests.

Stakeholder responses

Southern Water noted that off-model adjustments or new cost assessment mechanisms may be necessary to take account of programmes of work that deliver long-term benefits against future threats. Wessex Water rejected the need for additional reopeners or uncertainty mechanisms.

Severn Trent Water and Hafren Dyfrdwy suggested that companies should do more to show how investments deliver for the long term and are held to account, with uncertainty being considered as part of this. They suggested that Ofwat could do more to remove barriers/inconsistencies across the methodology, including setting out the criteria for assessing multi-AMP investment that would ensure a fairer balance of risk and would encourage long-term investment.

South Staffs Water suggested that a balance was needed to accommodate uncertainty without hindering incentives for companies to plan more than five years ahead.

Our assessment and draft methodology proposals

The move towards greater focus on long-term outcomes will provide even greater flexibility to companies in how they deliver outcomes for customers, communities and the environment. This methodology seeks to facilitate efficient long-term investment, so the right interventions are delivered, and investments sequenced appropriately. It also reflects that the future can be uncertain, that flexibility is still needed, whilst also protecting customers and the environment against non-delivery. Our proposals are doing this in six key ways:

- a focus on Direct Procurement for Customers (DPC) – see Chapter 3 of the consultation document;

- considering the uncertainty and flexibility in environmental programmes;
- facilitating multi-period investments;
- funding appropriate preparatory work;
- the continuation of strategic regional water resources development funding through a streamlined gated process; and
- the retention of transition funding.

5.3.1 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 due in November 2022, with them to be finalised in March 2023. Consequently, the WINEP/NEP requirements will be known in advance of business plan submissions for PR24, removing a significant proportion of the uncertainty.

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 addition of clarity on multi-period funding 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. 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 have set out proposals to encourage faster delivery for both storm overflows and phosphorus removal, in Section 5.2. 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 technical 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 5.1 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.

5.3.2 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. However, 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 are likely to 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 but may also cover cost sharing arrangements and the timing and scope of any review of expenditure allowances. Where DPC is not suitable, we expect companies to identify and propose appropriate arrangements that are in the interest of customers and provide incentives for efficiency. We propose that bespoke arrangements are considered 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 propose to apply the following principles in funding and tracking delivery of these multi-period 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 propose to fund these based on the evidence submitted. We will not 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 fund 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 10 years of forecast data in the business plan data tables. This includes 10 years of forecast enhancement costs, cost drivers and benefit data for investments starting in 2025–30.

5.3.3 Funding preparatory work for uncertain and long-term options

We propose to 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.

This 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. 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.¹²⁹ The activities associated with gates one and two for the strategic regional water resource development funding are considered base activities,¹³⁰ 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

¹²⁹ Ofwat, '[Strategic regional water resource solution appendix](#)', December 2019, pp. 14-15.

¹³⁰ Ofwat, '[Final guidance on long-term delivery strategies](#)', April 2022, pp. 29-30.

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.

5.3.4 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 2025–2030, so they could proceed if required.

To date we have seen progress, with 19 solutions having been identified and passed through the RAPID gate one assessment process, and two further solutions having already passed RAPID gate two assessment process (a preferred solution and an alternative). Of the 19 solutions, 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 time to develop solutions, including carrying out environmental studies and undertaking planning processes. Therefore, we expect a continuation of development funding into PR24. Our aim is to ensure that customers benefit from projects being delivered in 2025–30 and the 2030–35 period, and we want to incentivise companies to develop solutions efficiently to ensure that they can meet future needs identified through the WRMP process in a timely fashion.

We propose:

- a) that where there is an evidenced need to be addressed and the solution is justified best value within a final WRMP and regional plan to fund the efficient costs of completing development of solutions to be construction ready in 2025–30 and of running a direct procurement for customers tender process. Or, where this is not feasible, to fund the efficient construction costs of those solutions; and
- b) to fund necessary development costs for 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, including those which are a clear alternate, which may be a new solution identified through the WRMP24 process. 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 to share best practice.

We expect that any initial development costs for solutions which will 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 investigations are required in 2025-30.

Where solutions do not appear to be progressing sufficiently to meet established needs, we will set incentive regimes and set allowances on development funding to expedite the development of solutions, with the aim of bringing forward construction activities to meet the gap in these needs. 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 solutions that will be ready when they are needed and maximise value for money for customers.

5.3.5 Transition funding

The transition programme was introduced at PR14 and retained at PR19. Under the transition programme, we allow 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.

Although the expenditure is incurred in the last year of the previous regulatory cycle (eg 2019-20), for the purpose of cost performance incentive, it is considered as expenditure incurred in the following regulatory period (eg 2020-25).

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 cyclicalities around price reviews. As such, we propose to retain the transition 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. We propose to retain the PR19 criteria for accepting expenditure under the transition programme, which are:

- the company provides evidence to justify the early start; and
- the investment has early statutory deadlines in the next regulatory period; or
- the expenditure relates to early design and planning of large, non-routine investments.

The costs that we allow under the transition programme do not represent the result of an efficiency assessment, but only an acceptance that companies are allowed to bring forward part of their totex allowance, up to a specified amount and for the specified purpose. The efficiency of transition expenditure is assessed as part of our overall totex assessment and as such these costs are subject to the same scrutiny and challenge as all other costs.

At PR19, the majority of transition expenditure allowance was under the network plus price controls. We allowed water resources control transition expenditure in exceptional circumstances only. We also did not allow any transition expenditure in the bioresources controls (except for any efficient investment that South West Water incurred for schemes for the Isles of Scilly) or in the retail controls. This is because it was unlikely there would be early delivery dates driven by environmental requirements for these controls. This was also to avoid any additional complexity caused by the different treatment of pre-2020 RCV and post-2020 investment.

At PR24, we expect the majority of transition expenditure to be requested under the network plus controls. We expect companies to request water resources control transition expenditure in exceptional circumstances only. In this case, companies should demonstrate why the investment was not part of its long-term planning from PR19 (eg it is a new issue driven by requirements to deliver that could not be foreseen at PR19), and why it is efficient to bring it forward (eg it represents the best value long-term approach for customers and the environment). 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.

We propose to publish our view of transition expenditure allowances for 2025-30 at the PR24 draft determination. This should provide sufficient time to companies to bring forward the investment to 2024-25.

In addition to the proposed approach outlined above we welcome views on whether there could be transition funding in 2023-24 to make an early start on the PR24 statutory requirements set out in companies final WINEP. This would allow companies that are on track with their PR19 investment programme, to make an earlier start on their PR24 programme.

Expenditure would be undertaken at risk and our assessment and view on 2023–24 transition expenditure allowances would be provided at draft determinations and would be subject to the same scrutiny and challenge as all other costs.

5.4 Ensuring delivery for customers and environment over the long term

We want companies to deliver the funded improvements that are identified. We have considered the stakeholder feedback we received to our proposals and set out our assessment and draft methodology proposals to ensure efficient delivery below.

Our May 2021 discussion document

We said that even with a focus on outcomes we recognise there may still be a need to link funding to specific outputs at PR24. We suggested distinguishing these from performance commitments, renaming them price control deliverables (PCDs). We would then use PCDs to review delivery at PR29 and act if there is non-delivery.

Stakeholder responses

Dŵr Cymru, Hafren Dyfrdwy, Northumbrian Water, Portsmouth Water, Severn Trent Water, SES Water, South Staffs Water, United Utilities, Wessex Water and Yorkshire Water all agreed with the new distinction between performance commitments measuring outcomes and PCDs to track the delivery of outputs.

Anglian Water requested that the incorporation of scheme outputs/outcomes into PCDs does not shift too far from the overall outcomes framework, as well as not over complicating the use of PCDs.

Bristol Water disagreed that PCDs were necessary, and that the outcomes framework should manage any delivery concerns. Thames Water expressed caution at PCD usage and that they should be used in only limited circumstances.

Our assessment and draft methodology proposals

We want to ensure that customers 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. We expect enhancements to be clearly linked to performance commitments (common and bespoke). Where enhancement expenditure will impact on performance commitments, this should be quantified and accounted for in proposed PCLs.

Where investment is material, and the outcome cannot be easily or directly linked to a performance commitment, 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.

PCDs can 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.

Box 3: Proposed design of price control deliverables

We propose that companies build on some of the scheme-specific performance commitments (eg for the delivery of new water treatment works for South West Water¹³¹) or output-based performance commitments (eg for the delivery of smart meters for Thames Water¹³² and Anglian Water¹³³) that were introduced at PR19 when developing PCDs to present in their business plan submissions.

The green economic recovery scheme delivery requirements are also a useful reference for companies when designing PCDs.¹³⁴ 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 capacity of X Ml/d. For volumetric output PCDs, the unit of measure (eg number, area, volume, or flow) 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

¹³¹ Ofwat, '[PR19 final determinations: South West Water – Outcomes performance commitment appendix, December 2019](#)', December 2019, pp. 116–120.

¹³² Ofwat, '[PR19 final determinations: Thames Water – Outcomes performance commitment appendix](#)', December 2019, pp. 142–144.

¹³³ Ofwat, '[PR19 final determinations: Anglian Water – Outcomes performance commitment appendix](#)', December 2019, pp. 92–94.

¹³⁴ Ofwat, '[Green economic recovery final decisions](#)', July 2021.

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 underperformance payments. The level of payment should set the amount of funding to be returned to customers for each unit of output 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.

PCDs could limit the flexibility of the company to adapt its investment programme to reflect new information. To mitigate this risk, 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.

5.5 Nutrient neutrality in England

The UK government has recently consulted on setting targets under the Environment Act 2021 to address nutrient pollution from agriculture and wastewater treatment works by 2037.¹³⁵ This included a proposed target to reduce phosphorous loadings from treated wastewater by 80% by 2037 against a 2020 baseline. The UK government's SPS expects Ofwat to challenge English water companies to deliver against applicable targets set under the Environment Act 2021 and to prioritise improvements to protected sites, including the need to address nutrient pollution. Welsh Government has not published targets on nutrient pollution but is taking a collaborative approach to making improvements by setting up the Better River Quality Taskforce.

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.

¹³⁵ Defra, ['Consultation on environmental targets'](#), May 2022.

5.5.1 What is nutrient neutrality?

Nutrient neutrality (NN) is the term given to an approach developed by Natural England as part of its role as a statutory consultee in the local planning and environmental assessment process. Natural England advises 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,¹³⁶ and whether mitigation measures would be needed to offset this impact. Natural England requires that new construction development activity should not add to the nutrient burden at protected sites in unfavourable condition. Natural England's approach also includes tools and guidance to help developments demonstrate they do no harm, so planning permission can be granted. Natural England's nutrient neutrality policy only applies to England, and so the policy proposals below are focused on England. If Natural Resources Wales introduces a similar policy, we would expect to follow a similar approach in Wales.

5.5.2 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, which stated that development could not proceed near a Protected Site (defined by the Habitats Directive) unless it could be proved that the development was not causing additional harm to a site already in unfavourable condition.¹³⁷

Natural England has previously advised 32 local planning authorities where protected sites were in unfavourable condition due to excess nutrients, that to comply with NN, projects should only be given consent if they will not cause additional pollution. On 16 March 2022, Natural England published a list of 20 additional sites affected by NN with the same advice issued to a further 42 local planning authorities.

The practical impact of Natural England's approach is that local planning authorities in England 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. In turn, this means new housing developments are delayed while local planning authorities, developers and other stakeholders explore the scope for mitigation measures.

¹³⁶ 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.

¹³⁷ Court of Justice of the European Union, '[Joined Cases C-293/17 and C-294/17](#)', November 2018.

Tackling nutrient neutrality in the current price control period could involve different approaches to traditional water company investment. Developers have several options for mitigating the effects of nutrient pollution through schemes that remove phosphorous or nitrogen. For example, they can:

- pay for upgrades to WWTWs that will operate to tighter nutrient standards;
- convert farmland to wetland or woodland that removes nutrients (nature-based solutions); or
- buy 'nutrient credits' from third parties offering nutrient mitigation services.

On 3 May 2022, Defra, EA and Ofwat issued a joint call for evidence to water companies to explore how developers can contribute to the upgrade of WWTWs for the purpose of mitigation of nutrient loads from new developments in areas affected by NN. The call for evidence set out that we are considering whether the incremental costs and revenues associated with WWTWs upgrades due to NN could be accounted for outside of the price control process within the current price control period ending 2025. Under this approach, revenues and costs would lie outside of price control limits until the end of the current price control period. Therefore, companies and developers could undertake commercial negotiations on any potential nutrient mitigation schemes until 2025. To inform the availability of schemes, the call for evidence included several questions around the affected WWTW assets, cost of upgrades and engagement undertaken with developers on NN to date.

We, along with Defra, Environment Agency and Natural England, are considering water companies' responses to the call for evidence. We will also work with developers to examine the scope for developer contributions. This work is being carried out outside of the PR24 process. Therefore, we do not consider the issue of nutrient neutrality and the current price control period (2020-25) further in this document.

5.5.3 Nutrient neutrality in the PR24 regulatory framework

The rest of this section sets out our proposed approach to implementing NN in the PR24 regulatory framework, including:

- our proposed approach to NN expenditure in PR24;
- who should pay for NN mitigation through WWTWs, and how;
- how companies should work out the cost of NN mitigation;
- impact on the PR24 regulatory framework; and
- company requirements for PR24 business plans.

Our proposed 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. This will define the scope of nutrient removal schemes that are 'eligible' for nutrient mitigation, which developers can use to demonstrate NN. Under Natural England's guidance, planned environmental improvements in the 2025–30 period that would have happened in the absence of the NN requirement, but nonetheless would lead to an improvement in phosphorous or nitrogen standards, do not 'count' for NN mitigation. The key principle is that it would be inappropriate for developers to obtain NN mitigation from planned environmental improvements. NN mitigation needs to be separate and incremental to planned environmental improvements to ensure no net deterioration of the relevant site in unfavourable status. Table 5.1 sets out two scenarios of how schemes can be treated in that respect.

Table 5.1 Two scenarios for how nutrient removal schemes could be treated

Gates	Scenario 1	Scenario 2
1. Was the programme 'planned' in company's WINEP programme in the 2025–30 period?	Yes	Yes
2. What is the driver (ie key reason) for planning the scheme?	Achieving general environmental improvements	Compliance with nutrient neutrality
3. Does Natural England allow the scheme to count as mitigation for nutrient neutrality?	No, because scheme will be part of WINEP programme anyway (see 1)	Yes, because scheme would not have been part of WINEP programme had it not been for NN requirement ¹³⁸
4. What is the impact on developers in relation to demonstrating compliance with nutrient neutrality?	Developers need to find an alternative unplanned scheme to demonstrate mitigation for nutrient neutrality; potential reduction in amount of mitigation needed because of general improvement	Multiple developers can contribute towards each scheme, up to the point that the nutrient reduction provided in addition to that required for environmental improvement is 'claimed' as mitigation

Scenarios 1 and 2 include schemes that are both planned in companies' PR24 WINEP programme for the purpose of Natural England's guidance. The key difference between the two scenarios is around the key driver behind proposing the scheme. Under scenario 1, the key driver is achieving general environmental improvements. Therefore, developers cannot

¹³⁸ Natural England stated that this is only applicable if the scheme does not undermine the ability to restore the site. In cases where the WWTW upgrade is the only way to restore the site to favourable condition, the scheme does not count for NN mitigation.

use those schemes to demonstrate NN mitigation. On the other hand, schemes under scenario 2 are mainly driven by the need to comply with NN. Even though those schemes are 'planned' for the purpose of the PR24 WINEP, they will only be put forward to address the NN requirements set out in Natural England's guidance. Therefore, they are eligible for developers to demonstrate NN mitigation.

We consider that it is important to establish a clear distinction between scenarios 1 and 2 from legal, environmental and policy development perspectives. Natural England and the Environment Agency published the Water Industry Strategic Environmental Requirements (WISER)¹³⁹ guidance on 11 May 2022. The WISER is a strategic steer to water companies on the environment, resilience, and flood risk for PR24 business planning purposes. WISER contained some expectations on water companies in relation to NN. It stated that water companies may be required to achieve the technically achievable limit (TAL) for nutrients at WWTWs impacting on Habitats sites failing to achieve favourable conservation status due to nutrient levels. On this basis, companies should start to cost and plan to meet TAL ahead of a direction setting out the requirements in detail. 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.

Our proposed PR24 regulatory approach to NN depends on whether there is a statutory requirement to go further than water companies' environmental obligations in areas affected by NN (such as the potential obligation to achieve TAL at WWTWs):

- if there is an additional NN statutory requirement, **we propose to treat NN mitigation as a price control activity**. The obligation would form part of a total scope of required investments as part of the price control. Whether the investment counts towards NN mitigation depends on whether the work is required to meet existing environmental obligations (scenario 1) or goes further than this (scenario 2). Under scenario 1, the costs would be recovered from customers. Under scenario 2, we would expect a contribution from developers (see below); and
- if there is not an additional NN statutory requirement, **our preferred option is our proposed 2020–25 approach of treating NN mitigation as a non-price control activity** with flexibility for companies and developers to undertake commercial negotiations on any potential nutrient mitigation schemes with minimal regulatory intervention from Ofwat.

The policy set out in the rest of this section only applies to schemes that can be used for NN mitigation by developers and assumes the TAL obligation is implemented.

¹³⁹ Environment Agency, Natural England, '[Water Industry Strategic Environmental Requirements: technical document](#)', May 2022.

Who should pay for NN mitigation through WWTWs and how?

Under Natural England's approach to nutrient neutrality, developers need to demonstrate how their proposed developments will not add to the nutrient burden in the environment. They can take action to mitigate the nutrient impacts by:

- building additional mitigation into their plans onsite;
- working with the local planning authority to arrange for mitigation offsite;
- purchasing nutrient credits via a nutrient trading scheme (where other landowners in the catchment have taken action to reduce their nutrient load); or
- contributing to investments carried out by the water company.

When water companies invest in upgrades to their WWTWs, we class these as strategic assets. Under our charging rules, developers do not pay for strategic assets, because most costs associated with new assets are due to population growth (which can occur even without new development) or environmental improvements, and these assets generally cover a large area (larger than a new development). It can be complex to allocate the costs of strategic assets accurately between developers and other customers. Therefore, water companies currently recover the costs of strategic assets through wastewater charges to their wider customer base.

However, we recognise that developers should pay their fair share of costs, particularly in instances where it would be in their commercial interests to contribute to strategic assets to address environmental requirements and support planning applications. If developers are required to contribute towards NN mitigation at WWTWs, this would require a change to our charging rules.¹⁴⁰

An assessment of the potential charging arrangements for developers to pay for NN is beyond the scope of this document. However, if water companies are required by the UK government to go beyond current environmental permits for NN mitigation purposes, we will consult on a revised charging framework in relation to NN. We will do this in good time for companies to be able to set charges under the new charging rules from April 2025.

Developers would contribute a lump sum to fund the relevant WWTW upgrades commensurate with their demand for NN mitigation. The total cost of the upgrades can be divided over a fixed number of NN mitigation nutrient credits (eg on a population equivalent (PE) basis). Developers would then only buy the nutrient credits they demand to demonstrate NN mitigation based on their need. Where there is a potential mismatch between the supply

¹⁴⁰ The cost of NN mitigation borne by developers will help to determine the market price they are willing to pay for land in affected areas when negotiating with landowners. This will mitigate the actual net impact on developers of any NN charges that they pay.

of NN mitigation credits and the demand for NN mitigation credits, the remaining credits will be available for other developers that seek NN mitigation in the future. In practice, that would lead to customers bearing the cost of NN in the short term where supply outstrips demand.

How companies should work out the cost of NN mitigation

Natural England's guidance requires that NN mitigation measures should be in place in perpetuity.¹⁴¹ Therefore, for the purpose of working out the cost of upgrades at WWTWs, companies need to consider the lifetime costs of NN mitigation. We consider that this would provide consistency with other forms of NN mitigation provided by nutrient credit markets.

Impact on the PR24 regulatory framework

Our proposed approach to considering NN mitigation as a price control activity in PR24 has some implications for the PR24 regulatory framework. Developer contributions for NN mitigation have a direct impact on two reconciliation mechanisms:

- **cost sharing** as Grants & Contributions (including developer contributions for NN mitigation) are subtracted from gross totex and cost sharing calculations are based on net totex (gross totex – G&Cs). This was applied in PR19 because expenditure data was not available, and excluding G&Cs as cost reflective charges was the only available option to calculate net totex; and
- **any revenue reconciliation mechanism** used to reconcile developer services revenues, given that our proposal is to exclude developer services from the RFI (see Section 3.8 of the consultation document).

In principle, undertaking the cost sharing calculations on a net totex basis would ensure NN does not have an impact, since the additional cost of NN mitigation is netted off by the developer contribution. Therefore, net totex is the same regardless of the extent of NN mitigation activity. However, that assumes that revenue from developer contributions for NN matches the WWTW upgrade costs incurred by the water company in 2025–30. As explained earlier, in practice there will be some WWTWs in NN-affected areas where the demand for NN mitigation would be insufficient to use up the supply of nutrient mitigation credits created by the WWTW upgrades. In these cases, customers would bear some of the cost in the short term, with developers buying up the available NN mitigation credits over time. That introduces a cost sharing impact, as customers will bear 50–60% of the 2025–30 cost of outstanding nutrient credits through the cost sharing adjustment at PR29 (see Section 2.5

¹⁴¹ Natural England, '[Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites](#)', March 2022, p. 10.

for more detail on our overall approach to cost sharing in PR24). To avoid this impact, we propose to exclude costs of WWTW upgrades carried out for NN mitigation from cost sharing.

In addition, potential differences between forecast NN revenue in the PR24 business plans and outturn NN revenue would lead to a risk of over- or under-recovery of NN mitigation costs through revenue allowances. Section 3.8 of the consultation document sets out our proposal to exclude developer services from the RFI. Outturn NN mitigation revenues would be included in the total outturn PR24 wholesale revenues, while the allowed revenue price cap would remain the same. To address this forecasting risk, we propose to develop a reconciliation model that adjusts wholesale wastewater network plus revenue allowances for any differences between outturn and forecast NN developer contributions for NN mitigation as an end-of-period reconciliation adjustment applied in PR29.

Finally, we are mindful of the potential for Natural England to update the list of sites affected by NN on an ongoing basis. We consider that the list of all NN schemes to be funded in PR24 needs to be completed by 31 May 2023, to give companies sufficient time to plan for delivering WWTW upgrades in the October 2023 business plan submission. If there is any uncertainty on the full list of sites affected by NN, we propose that companies should include all schemes associated with potentially affected sites in PR24 business plans. We propose to implement a reconciliation adjustment at PR29 to strip out the funding of any NN mitigation schemes that are ultimately not taken forward.

Company requirements for PR24 business plans

We want PR24 business plans to set out company plans to address NN over 2025–30. We expect companies to demonstrate an ambition of strong leadership, working collaboratively with all stakeholders to address both the immediate nutrient mitigation needs introduced by NN and nutrient pollution more widely.

Companies should set out how they propose to approach NN over the PR24 period, including:

- ring fencing of NN proceeds from developers;
- measures to facilitate the development of an effective nutrient credit market; and
- promoting the use of nature-based nutrient mitigation solutions.

6. Delivering best value

Delivering best value is a core part of our strategy. One of the three strategic goals in our 2019 Strategy, 'Time to act, together', is "For water companies to provide greater public value, delivering more for customers, society, and the environment".¹⁴²

Delivering wider value is also a main theme in the UK government's SPS and Welsh government's strategic priorities and objectives. 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 deliver value to customers, the environment and wider society over the long-term".¹⁴³ The Welsh government's strategic priorities and objectives include to "deliver best value solutions by encouraging investment that responds to multiple drivers or has multiple benefits and that takes account of outcomes and the wider environmental and social value of solutions".¹⁴⁴

Our cost assessment approach already incorporates best value considerations to some extent. At PR19 we considered wider social and environmental impacts when deep diving proposals to identify the whole life best value solution. Furthermore, strategic planning frameworks, such as water resources management plans and the water industry national environment programme, already apply a form of best value assessment at the option appraisal stage for companies to develop their long-term programme.

In our May 2021 discussion document we highlighted areas where we could improve our consideration of best value as part of our cost assessment.

- We were keen to understand whether it is possible to consider wider social and environmental impacts more robustly and extensively in our cost assessment approach.¹⁴⁵
- We highlighted concerns from stakeholders on elements of our regulatory approach that could inhibit companies making more use of nature-based solutions which deliver wider benefits.¹⁴⁶

¹⁴² Ofwat, '[Time to act, together: Ofwat's strategy](#)', October 2019, p.11.

¹⁴³ Defra, '[The government's strategic priorities for Ofwat](#)', March 2022.

¹⁴⁴ Best value is also a priority for Natural Resources Wales.

¹⁴⁵ Ofwat, '[PR24 and Beyond: Creating tomorrow, together](#)', May 2021, p.104.

¹⁴⁶ Ibid, p.105.

- We supported a partnership approach where water companies work together with other parties to deliver broader outcomes and additional value beyond their statutory functions.¹⁴⁷

In this section we set out how we propose to deliver best value through our cost assessment approach in PR24. We also address issues raised in the responses to our May 2021 discussion document.

This section is organised as follows:

- our proposals on how we will take account of wider social and environmental impacts in our cost assessment;
- our proposals on how we will facilitate the use of nature-based solutions; and
- our proposals on how we will encourage companies to work in collaboration with others and leverage on third party contributions.

6.1 Accounting for wider economic benefits

Our May 2021 discussion document

In our May 2021 discussion document we said that we expected companies to continue to place an appropriate emphasis on social and environmental factors to show that their business plans represent overall 'best value', rather than just least cost.¹⁴⁸

We said that we were keen to understand whether it would be possible to consider wider social and environmental impacts more robustly and extensively in our cost assessment approach.¹⁴⁹ We recognised that valuing social and environmental impacts was challenging and that we expected companies to work together to ensure there is an appropriate degree of comparability in such estimates and their use. We also said that, to this effect, we expected companies to build on the results of the collaborative research on customer valuation.¹⁵⁰

¹⁴⁷ Ofwat, '[PR24 and Beyond: Creating tomorrow, together](#)', May 2021, p.105.

¹⁴⁸ Ibid, p.104.

¹⁴⁹ Ibid.

¹⁵⁰ Ibid.

Stakeholder responses

In response to our May 2021 discussion document, companies broadly supported the idea of considering wider benefits more extensively as part of our cost assessment approach.¹⁵¹

There was recognition that this could be a complex and challenging exercise given the need to take a view of whole life costs and benefits and the possibility of companies taking different approaches to measuring and assessing best value.

There were also calls for clarity as to how customers will be protected in relation to the delivery of long-term benefits and how companies will be protected from policy changes that could materially impact costs.

To address some of these challenges, some stakeholders suggested that we should apply targeted reviews of business cases, supplemented by activity-based models.¹⁵² Other stakeholders suggested the adoption of an industry wide approach to assessing environmental and social impacts (such as the use of a natural capital accounting approach and the use of standard benefit values to assess impacts).¹⁵³ Northumbrian Water suggested that, for PR24, we should focus our best value assessment on enhancement expenditure before extending it to our assessment of base costs in following reviews.

Our assessment and draft methodology proposals

At PR24 we want companies to deliver wider environmental and social benefits in the course of them carrying out their statutory functions, where this is best value for customers, communities and the environment. To support this, we are proposing to take into account wider environmental and social benefits more robustly and extensively in our assessment of enhancement proposals. This will allow us to set appropriate cost allowances for companies to deliver best value improvements where this is efficient and affordable to do so.

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.

¹⁵¹ See responses from [Severn Trent](#), [Yorkshire Water](#), [Northumbrian Water](#), [South West Water](#), [Thames Water](#), [Affinity Water](#).

¹⁵² See responses from [Severn Trent](#), [Hafren Dyfrdwy](#), [Thames Water](#).

¹⁵³ See responses from [Northumbrian Water](#), [South West Water](#), [United Utilities](#), [Affinity Water](#).

- The conditions under which we may provide additional cost allowances on the basis of best value. These conditions relate to cost efficiency and customer support.
- How we propose to protect customers to ensure that they receive the benefits that companies are paid to deliver.

6.1.1 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 costs 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.¹⁵⁴ 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 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 urban 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 smaller net benefits (even if they are still value for money). Similarly, schemes that generate additional benefits may not necessarily cost more than traditional solutions and so can also be those that cost least.¹⁵⁵ Therefore, companies need to approach the optioneering and options appraisal process with an open mind and 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.

¹⁵⁴ 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.

¹⁵⁵ 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.

6.1.2 Assessing and valuing long-term benefits

We expect the benefits that most influence the choice of enhancement solution need to be measurable and robustly demonstrated.¹⁵⁶ 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 network storage capacity and volume of water to deliver.

Wider benefits which companies do not propose to reflect in performance commitments nor PCDs need to be clearly evidenced. Examples of these benefits may include access, amenity and engagement outcomes.¹⁵⁷ These benefits are significantly harder to robustly demonstrate and track. Therefore, consistent with water industry national environment programme methodology¹⁵⁸, we would not expect these benefits to be a material driver of overall costs and should be reasonably modest.

We agree with stakeholders that we need a common approach to valuing benefits. Where possible, companies should use the valuations identified by the **collaborative research** on initial outcome delivery incentives (discussed in Section 5 of the consultation document). This will ensure that companies use a robust and consistent approach to valuing the benefits of enhancement schemes.

The water industry national environment programme options development guidance provides recommended values for a range of environmental and social outcomes.¹⁵⁹ Where the collaborative outcome delivery incentive rates research cannot be used to derive a monetary value, companies should use this guidance. 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.¹⁶⁰ Therefore, we expect

¹⁵⁶ 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.

¹⁵⁷ 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.

¹⁵⁸ Defra, '[Water industry national environment programme \(WINEP\) methodology](#)', May 2022, Section 4.2.

¹⁵⁹ Ibid, Section 7.3.1.

¹⁶⁰ An explanation of the context for which the value is recommended is provided in the water industry national environment programme options and appraisal guidance.

companies to apply the recommended values appropriately for the situation being assessed and to provide a robust justification for this.¹⁶¹

As set out in the water industry national environment programme guidance, where companies consider that the standardised values are not suitable or applicable to the benefits that are expected from company actions, then companies can use alternative unit values.¹⁶² In these instances, companies will have to present compelling evidence supporting these alternative values. Sources of evidence used to support these values must be considered robust, sufficiently detailed and be openly available to us to verify, if required. We note that 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 benefit values produced by the collaborative outcome delivery incentive research, rather than duplicate this through competing research.

To assess the benefits presented by companies, we intend to compare the benefits of similar schemes across companies, where appropriate. This will be possible for benefits which have common industry standards. Examples of these benefits may include operational greenhouse gas emissions and biodiversity gains, which are covered by performance commitments. For this purpose, we propose to request companies to provide benefit information, for both the business plan enhancement proposal and the alternative least cost option, as part of their business plan submission.

6.1.3 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 will have to compare the benefits and costs of additional benefit schemes with the benefits and costs of least cost schemes and other alternatives.

¹⁶¹ 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.

¹⁶² Defra, ['Water industry national environment programme \(WINEP\) methodology'](#), May 2022, pp.30-31.

In doing so, companies should take into account the risks and uncertainties¹⁶³ 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 schemes we expect companies to examine the **benefit to cost ratio** of each scheme 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 for 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.¹⁶⁴ 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 scheme business case. Where this is the case, the alternative options should also be assessed using the longer appraisal period. 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.

Costs should include the allowed return on capital. Capital expenditure should be converted to a stream of annual costs for the duration of the appraisal period, where the annual cost is made up of depreciation costs plus the allowed return on capital. Depreciation (or run-off) costs should be calculated using straight-line depreciation over the whole life of the asset. The allowed returns should be calculated using the PR19 allowed return on capital rate unless we specify a new rate for PR24.

To discount the benefits and costs over time, companies should use the social time preference rate as set out in the 'The Green Book'.¹⁶⁵

¹⁶³ This might include risks and uncertainties associated with driver compliance, delivery date, outcome, cost, resources, technology, supply chain, and/or public perception.

¹⁶⁴ This is consistent with the methodology set out in Defra, 'Water industry national environment programme options development guidance', May 2022, Section 7.3.

¹⁶⁵ HM Treasury, '[The Green Book](#)', 2022, Sections 2.23, and 5.32 to 5.39.

6.1.4 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.

We will aim to use benchmarking wherever possible. That is, where comparable data exists for similar schemes across enough companies, we will benchmark scheme costs to set efficient cost allowances for the additional benefit scheme. This may include benchmarking the costs of the least cost scheme and using the results of this analysis to challenge the costs of the additional benefit scheme.

6.1.5 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**.¹⁶⁶

Therefore, where companies seek to deliver wider environmental and social benefits when delivering above their minimum statutory requirements and at a greater cost to customers, we will require companies to demonstrate customer support. We provide further details on how we expect companies to satisfy this condition in Section 2.2 – where we set out our proposed enhancement assessment criteria.

6.1.6 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 reflect the additional benefits of the scheme in **performance commitment levels** or **price control deliverables**. We set out our expectations of how companies should do this in Section 5.4.

¹⁶⁶ Principle #4 states that "Delivery of social and environmental value outcomes should not come at greater cost to customers without customer support".

6.2 Facilitating the use of nature-based solutions

Our May 2021 discussion document

In our May 2021 discussion document we expressed our desire to encourage companies to make more use of nature-based solutions. We said that our totex approach adopted since PR14 has helped in this regard by breaking the link between capital expenditure and the RCV.¹⁶⁷

We nonetheless indicated a concern raised by stakeholders that our approach may have discouraged companies from proposing nature-based solutions which require on-going management and operating expenditure (opex).

This issue was raised by United Utilities in its Future Ideas Lab submission.¹⁶⁸ To solve this issue, United Utilities recommended we make allowances for totex based on whole-life net present value costs, rather than each price control period's expenditure. Under this approach, in-period opex would form part of allowed revenue with the remainder of the net present value added to the RCV, while RCV run-off assumptions could be varied to provide the ongoing cost of managing opex solutions.

We highlighted that this approach could increase complexity, as it would need separate reporting for opex-based solutions. We also said that we needed to understand how such an addition to the RCV might impact on financial metrics and notional financeability.

Stakeholder responses

The majority of stakeholders broadly agreed with the issue raised by United Utilities. They concurred that the current cost assessment approach disadvantages solutions which are opex heavy. Some stakeholders¹⁶⁹ stressed that this is not a problem facing nature-based solutions exclusively, and that this is also a problem for traditional solutions with significant opex requirements. Dŵr Cymru thought that the solution proposed by United Utilities may be unnecessarily complex and that a simpler approach should be explored.

Furthermore, some stakeholders mentioned that nature-based solutions have a different risk profile to traditional solutions and that this needs to be recognised by the regulatory framework to prevent inhibiting companies from adopting them.

¹⁶⁷ Ofwat, '[PR24 and Beyond: Creating tomorrow, together](#)', May 2021, p.105.

¹⁶⁸ United Utilities, '[Evolving the Water Industry National Environment Programme to deliver greater value](#)', 2020.

¹⁶⁹ Yorkshire Water and Bristol Water.

These same issues have been raised more recently by Water UK.¹⁷⁰ This paper and other Future Ideas Lab submissions¹⁷¹ also identify the need to move to an outcomes-based approach for environmental regulation to facilitate the use of nature-based solutions.¹⁷²

Our assessment and draft methodology proposals

One way companies can deliver wider environmental and social benefits is by making more use of nature-based solutions. Nature based solutions provide the opportunity to companies to carry out their statutory functions and deliver wider environmental and social benefits compared to grey solutions.

The UK government's SPS and Welsh Government's strategic priorities and objectives expect us 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".¹⁷³ The Welsh Government's strategic priorities and objectives expects Ofwat to "deliver best value solutions by encouraging investment that responds to multiple drivers or has multiple benefits and that takes account of outcomes and the wider environmental and social value of solutions" and to "challenge companies to seek new ways of working to deliver for customers and the environment more efficiently".

In this subsection we set out how we propose to encourage the use of nature-based solutions through our cost assessment approach in PR24. We discuss issues around risk and uncertainty associated with nature-based solutions first. We then set out how we propose to deal with concerns around the treatment of enhancement opex in our cost assessment.

We discuss the issue of moving towards a more outcomes-based approach to regulation in Section 5.2.

6.2.1 Accounting for risk and uncertainty

At PR24 we want companies to make a greater use of nature-based solutions to deliver their statutory functions when this is effective and efficient do so.

¹⁷⁰ Water UK, '[Water 2050: A white paper](#)', 2022, p.27.

¹⁷¹ Wessex Water with Frontier Economics, '[Outcome based environmental regulation](#)', November 2021. Yorkshire Water, '[PR24 and beyond: 10 years of investment?](#)', 2021.

¹⁷² Water UK, '[Water 2050: A white paper](#)', 2022, p.26.

¹⁷³ Defra, '[The government's strategic priorities for Ofwat](#)', March 2022, Section 'Environmental ambition'.

There are risks and uncertainties that companies need to take into account 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 could 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 third-party behaviour. 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 type of nature-based solution. For example, sustainable urban drainage systems are increasingly being recognised and understood by companies and regulators for their important role in wastewater and drainage management. Therefore, we would expect this type of solutions to face lower risks and uncertainties than other less well-established nature-based solutions.¹⁷⁴

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".¹⁷⁵
- 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

¹⁷⁴ 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.

¹⁷⁵ Defra, '[Water industry national environment programme \(WINEP\) methodology](#)', May 2022, Section 7.2.2.

with driver compliance; delivery date; outcome; cost; resources; technology; supply chain; and/or public perception".¹⁷⁶

- 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.¹⁷⁷

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. If so, companies need to set out how they propose to monitor and report the progress and outcomes of the pilot 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.

We would not expect that a more extensive use of nature-based solutions at PR24 will necessarily increase the level of risk that companies are exposed to.¹⁷⁸ This is due to the following reasons.

- The nature-based solutions that we expect companies to propose at PR24 are those for which companies have high confidence in delivering the required outcomes.
- Companies should reflect the expected outturn cost of schemes when proposing them, taking into account uncertainties and mitigations.
- Companies will share the risks associated with the costs of the scheme with customers through cost sharing.
- Companies have the ability to diversify the risks of individual schemes across their enhancement investment programme (ie portfolio effect).

6.2.2 Treatment of enhancement operating expenditure

In response to our May 2021 discussion document, some stakeholders identified less certainty of continued funding as one of the barriers affecting a wider use of nature-based solutions. They argued that nature-based solutions are typically more reliant on longer-term operating expenditure (opex) than traditional schemes, and that companies face less certainty of funding in relation to opex compared to capital expenditure (capex).

¹⁷⁶ Defra, ['Water industry national environment programme \(WINEP\) methodology'](#), May 2022, Section 7.3, pp.15-16.

¹⁷⁷ Ibid, Section 7.3.2, p.17.

¹⁷⁸ Note that the Environment Agency is setting up an Innovative Permitting Team to embed new permitting methodologies to support nature-based solutions, such as catchment permitting and catchment nutrient balancing.

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.¹⁷⁹ 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.

We consider that this is more of an issue for some nature-based solutions than others. Some nature-based solutions, like sustainable urban drainage systems and reedbeds, have a cost structure which is similar to that of traditional solutions. These solutions require significant capex in the initial years followed by ongoing opex to maintain the initial investment in the subsequent price control periods. In some instances, a portion of these opex may be funded by third parties. Consequently, we are not convinced that we need to amend our cost assessment approach to support all types of nature-based solutions. This is a problem that is likely to affect mostly those solutions that are wholly or primarily based on on-going opex and we are keen to try to develop a workable solution.

Currently, companies can:

- absorb the additional opex in the period before they are reflected in the base models;
- resubmit as enhancement in the next period; or
- submit a cost adjustment claim for an adjustment to the modelled base allowance.

This differs to enhancement capex which is added to each company's Regulatory Capital Value (RCV) in the period in which it is allowed. Companies then receive funding through the RCV run-off as well as a return on RCV.

Companies argue that this different treatment results in bias towards capex rather than opex. Therefore, this reduces their incentives to invest in solutions which are more reliant on opex over the whole life of the scheme.

One solution put forward by companies is that the **net present value of the whole-life opex could be capitalised** and added to companies' RCVs.

We are keen to support this option if possible, however there are several challenges that would need to be overcome for this to become a workable solution.

- **Cost sharing and reconciliation** – in the first period the whole amount would be added to the RCV but because of the long-term nature of the spend, actual costs in that period

¹⁷⁹ We discuss the base cost models in Section 2.1 of this appendix.

would indicate a significant underspend. This would not be a true underspend and therefore amendments would either be needed to the end of period reconciliation to remove the allowance and expenditure, or that any reconciliation adjustment would need to be considered when identifying the initial value added to the RCV. This is because companies would be earning a return on opex that is not incurred, meaning it would need to be added to the RCV at a discounted value.

- **Double funding risk** – after ten years the initial period's enhancement opex would be included in the base cost models. Therefore, an element of the modelled base allowance would include an allowance related to the ongoing opex. Companies would still be receiving funding through the RCV run-off and therefore, funded twice for the same activity.
- **Impact on financial metrics** – depending on the level of nature-based solutions proposed, there could be a range of impacts on financial metrics. For example, it could understate gearing and overstate regulated equity which would in turn impact Return on Regulatory Equity. Also, we would have to consider whether the PR24 average allowed return remains the appropriate discount rate as it will change over the lifetime of the solution.

We welcome views on how this option could work in practice while protecting customers from increased risk. We also welcome views on whether any increase in the complexity of the regulatory framework resulting from this option would be justified by the likely impact on cost allowances and on the incentives of companies to invest in different intervention types.

An alternative proposal is that we set a **ten-year allowance** (to be recovered over two price control periods) for the efficient opex related to nature-based solutions which are wholly or primarily opex based. The cost allowance for 2030–35 could be added to the RCV at the PR29 determination. 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. If expenditure is not as forecast, customers would be protected from funding more over a longer period of time as actual costs would be reconciled at the end of each period. We propose to retain flexibility to review allowances at PR29 if costs are materially different to those forecast at PR24. However, companies will have to provide compelling evidence to support any reassessment of costs.

Companies will still be able to submit **cost adjustment claims** once the ongoing costs of the solution are picked up by the base models. This is, after ten years, if the company considers that the modelled base allowance does not adequately reflect its circumstances (for example, if it has implemented more opex based enhancement solutions than the industry average), it can submit a cost adjustment claim.

We are also open to companies recovering the proposed ten-year allowance partly through the RCV by not adjusting **PAYG rates** because of the increase in their opex to capex ratio.

6.3 Encouraging companies to collaborate with others and maximise co-funding opportunities

Our May 2021 discussion document

In our May 2021 discussion document we said that we supported a partnership approach where water companies work together with other parties to deliver additional benefits beyond their statutory functions, with companies funding their fair share of the costs of any improvements.¹⁸⁰

We stated that water customers can only be expected to fund activities consistent with a water company's statutory functions. We also said that funding should be allocated such that each partner pays its fair and efficient share of the costs of solutions, considering 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.

Stakeholder responses

Stakeholders were broadly supportive of a regulatory framework that encourages partnership working.¹⁸¹

Affinity Water however raised a concern in relation to the role that Ofwat could play in determining how funding gets allocated between water companies and partners. It stated that it is not in Ofwat's remit to allocate value between companies and potential partners up front and that Ofwat's focus should be on assessing value to customer and the water company.

Our assessment and draft methodology proposals

In relation to Affinity Water's concern we note that it is our role to set efficient cost allowances for the proper carrying out of the water companies' functions. This may require us to reach a view about the likely contributions that third parties could make towards the cost of enhancement projects.

Below we set out how we propose to consider third party contributions when setting efficient cost allowances for enhancement activities. We also set out our expectations about how (and

¹⁸⁰ Ofwat, '[PR24 and Beyond: Creating tomorrow, together](#)', May 2021, p.105.

¹⁸¹ See responses from [Southern Water](#), [United Utilities](#) and [Wessex Water](#).

under what circumstances) companies should work with others, and leverage on third-party funding, to deliver wider outcomes for customers, communities and the environment.

6.3.1 Working with others can allow companies to deliver best value at a lower cost for customers

The UK government's SPS and the Welsh Government's strategic priorities and objectives set out expectations for Ofwat to encourage a collaborative approach to delivering wider benefits.¹⁸² This includes expecting Ofwat to encourage water companies to collaborate or develop partnership working across catchments and maximise co-funding to deliver better outcomes for customers and the environment.

Working in collaboration with others could allow companies to maximise the delivery of economic benefits while minimise the costs for customers.

For example, many of the elements of nature-based solutions (like Sustainable Drainage Systems and wetlands) may require input from local authorities and third-party organisations such as estate developers, farmers, community groups, catchment partnerships and charities. Examples of inputs from third parties include access to land, planning permission and behavioural change from third parties (eg farmers using less water pollutants, etc.). Therefore, working with third parties could enable companies to rollout nature-based solutions more efficiently and ensure that customers do not pay more than they should. Working with others could also allow companies to share the risks of nature-based solutions and thus reduce their exposure to these risks.

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".¹⁸³

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

¹⁸² 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"; and "encourage and support the water industry to collaborate with others in the implementation and future development of DWMPs and encourage the increased use of catchment-wide, nature based solutions and sustainable drainage schemes, where appropriate".

¹⁸³ Ofwat, '[Ofwat's final public value principles](#)', March 2022, p.7.

and third parties, and the incremental costs compared to a solution the water company would implement to address only its requirements".¹⁸⁴

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 6.1.¹⁸⁵

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".¹⁸⁶ 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.¹⁸⁷

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".¹⁸⁸ 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.

¹⁸⁴ Ofwat, ['Ofwat's final public value principles'](#), March 2022, p.7.

¹⁸⁵ 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.

¹⁸⁶ Ofwat, ['Ofwat's final public value principles'](#), March 2022, p.4.

¹⁸⁷ 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.

¹⁸⁸ Ofwat, ['Ofwat's final public value principles'](#), March 2022, pp.7-8.

Table 6.1: Examples of collaborative working and third-party funding

Scheme name	Description	Partners	Funding
Killingworth and Longbenton, Northumbria ¹⁸⁹	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 ¹⁹⁰	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)
Rye Brook Wrington ¹⁹¹	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 ¹⁹²	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 ¹⁹³	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) ¹⁹⁴

¹⁸⁹ Susdrain, '[Killingworth & Longbenton Surface Water Management Scheme, North Tyneside](#)', 2020, p.10.

¹⁹⁰ UKWIR, '[How best to align the funding processes with the various bodies involved in resolving flooding](#)', 2016, Appendix A, pp.67-70.

¹⁹¹ Ibid.

¹⁹² South West Water, '[South West Peatland Partnership](#)', 2018.

¹⁹³ Get nature positive, '[United Utilities: Petteril Project](#)', 2015.

¹⁹⁴ United Utilities, '[PR24: Unlocking nature-based solutions to deliver greater value](#)', 2021, Appendix 1, p.10.

Scheme name	Description	Partners	Funding
Ribble Life Together ¹⁹⁵	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.

6.3.2 Accounting for uncertainty with regards to third-party funding

We recognise that third-party funding for enhancement projects is subject to risks and uncertainties.

Companies should consider the risks and uncertainties associated with third-party funding when developing their business plan proposals. For example, if a company can secure £1 million of third-party funding with 50% probability and £0 with 50% probability for a wetland project, we would expect the company to consider £0.5 million of third-party funding for that project. Companies should provide an indication of how uncertain any third-party funding is when giving representations about this funding in their business plan submission. If third-party funding does not materialise as expected, we do not expect customers to pay for any shortfall. Companies should propose how they intend to protect customers against securing less third-party funding than was forecast.

To evidence third-party funding in their business plans, companies can present absolute or best endeavours commitments, or no likely commitments from third parties. We will take this into account in our assessment of enhancement expenditure proposals. For example, for benefits that are harder to evidence (such as access, amenity and recreation), we will take the amount of absolute third-party funding commitments as evidence of the scale of these benefits where there is a clear linkage between the commitments and the benefits being evidenced. Stronger third-party commitments may also help reduce the need for evidence on customer support. For example, this could happen where any additional costs (of additional benefit schemes) are offset by third-party contribution commitments.

¹⁹⁵ Ribble Rivers Trust, [Ribble Life Together](#).

6.3.3 Companies should maximise co-funding opportunities

We expect companies to maximise co-funding opportunities when seeking to deliver wider economic benefits through enhancement activities. The water industry national environment programme methodology sets out a 20% co-funding aspirational target for non-statutory actions.¹⁹⁶

To further encourage companies to maximise co-funding opportunities, we propose to take account of third-party contributions in our benchmarking of enhancement expenditure.

Benchmarking is one of the tools we use to set efficient cost allowances as part of our cost assessment. As in PR19, our benchmarking will set efficient cost allowances based on an appropriate benchmark (eg upper quartile). This means that, by considering third-party contributions, benchmarking will reward those companies that manage to secure more third-party funding as they will perform better in the benchmarking exercise. Performing better than the selected benchmark, will allow companies to keep a portion of the secured third-party contributions to lower their cost base. This will encourage companies to maximise co-funding, and bring benefits to customers in the form of lower net cost allowances.

¹⁹⁶ Defra, ['Water industry national environment programme \(WINEP\) methodology'](#), May 2022, Section 4.4.

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 options proposed within the business plan are the best option for customers and a proper appraisal of options has taken place.
- The plan and the expenditure proposals within them are deliverable and that the company has put in place measures to ensure that they can be delivered.
- 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.
- The expenditure proposals reflect customer views, and where appropriate are supported by customers.

8. Consultation questions

Providing companies with an efficient cost allowance

1. Do you agree with our proposed approach to setting efficient expenditure allowances at PR24?
2. What are your views on how we can best align the treatment of third-party costs and revenues?
3. Do you agree that companies that submit the most stretching and well evidenced business plans should receive the most favourable cost sharing rates at PR24?

Funding for water companies to maintain good asset health and resilience

4. Do you agree that resilience enhancement should be used to fund companies to manage increasing risks to specific hazards that are beyond their control and not covered by base expenditure and other enhancement areas?

Delivering service improvements to customers and the environment from expenditure allowances

5. Do you agree with our proposed approach to setting performance commitment levels at PR24?
6. Do you agree with our view on what performance commitments should be set using common or company specific performance commitment levels?

Facilitating efficient investment over 2025–30 and the long term

7. Do you agree with our proposed approach to incentivising and funding efficient investment in reducing greenhouse gas emissions and reducing the use of storm overflows?
8. Do you agree with our proposed approach to implementing nutrient neutrality in the PR24 regulatory framework?

Delivering best value

9. Do you agree with our proposed approach to encouraging companies to deliver best value through our cost assessment?
10. Do you agree with our proposed approach to removing the potential disadvantage that nature-based operating expenditure solutions may face in relation to the treatment of enhancement operating expenditure?

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 2.2 and 2.3.

The remainder of this annex is organised as follows:

- Enhancement assessment criteria
- Cost adjustment claim assessment criteria
- Additional cost adjustment claim guidance

A1.1 Enhancement assessment criteria

In Section 2.2.3 we propose that, for all enhancement expenditure requests at PR24, we will consider the need, 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? (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?

- d) Does the need and/or proposed enhancement investment overlap or duplicate with activities already funded at previous price reviews?
- e) Is the need clearly identified in the context of a robust long-term delivery strategy within a defined 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 range of options to meet the identified need?
- b) Has a robust cost–benefit appraisal been undertaken to select the proposed option? There should be 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) Is 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) Where appropriate, has the company secured appropriate third-party funding (proportionate to the third-party benefits) to deliver the project?
- 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 2.3.3 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 2.3 in appendix 9, setting expenditure allowances, of our PR24 draft methodology.

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 2.3.4 of appendix 9 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 examples are purely illustrative and should be considered alongside the cost adjustment claim assessment criteria in Section 2 above. 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 challenge):

- 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).

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