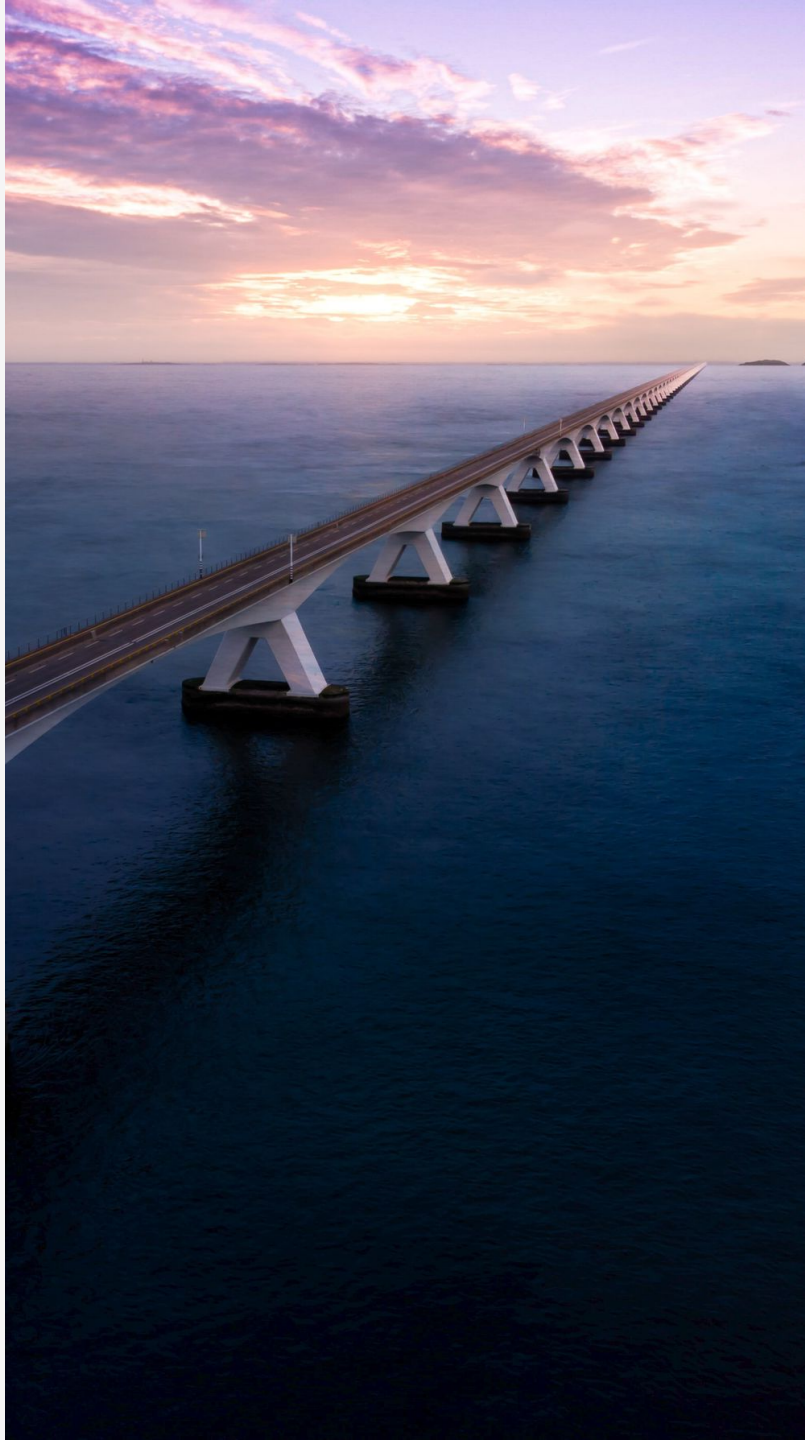
Reckon LLP
Data analysis | Economic regulation | Competition law

Improvements to the regulatory framework for asset health and operational resilience

Workstream 2: main report (working draft) - 15 May 2024



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Section 1

Introduction

Introduction

Reckon is a consultancy specialising in economic regulation, with a particular focus on water companies and energy network companies in the UK. In January 2024, four water companies - Affinity Water, Anglian Water, Northumbrian Water and Wessex Water - commissioned Reckon to consider potential reforms to the regulatory framework for water companies, in relation to the treatment of capital maintenance and asset health. This is intended to support the development of the approach to the PR29 price review.

The motivation for the project is a growing concern that the current regulatory approach to funding capital maintenance expenditure (e.g. asset replacement) - and the wider regulatory arrangements relating to asset health - are not fit for purpose.

The client companies identified for example that: Ofwat's current approach to setting cost allowances is largely backward-looking; the framework may not be effective at taking into account future asset health needs, and associated expenditure requirements, which may differ from the levels of spend observed historically; and that the framework makes limited use of asset health and operational resilience metrics as a means to track asset health over time.

The main objective of the workstream led by Reckon (workstream 2) is to identify a shortlist of potential reforms to the regulatory framework to tackle concerns with the current approach relating to capital maintenance and asset health.

The process to develop this shortlist has included: consideration of the problems with the current regulatory framework; a review of past studies and regulatory approaches in other sectors; the development of a long list of potential remedies; and the structured assessment of a number of policy packages against a set of evaluation criteria.

This document is a *working draft* of the main report to the initial phase of work. It is being shared with stakeholders in advance of a stakeholder workshop on 21 May.

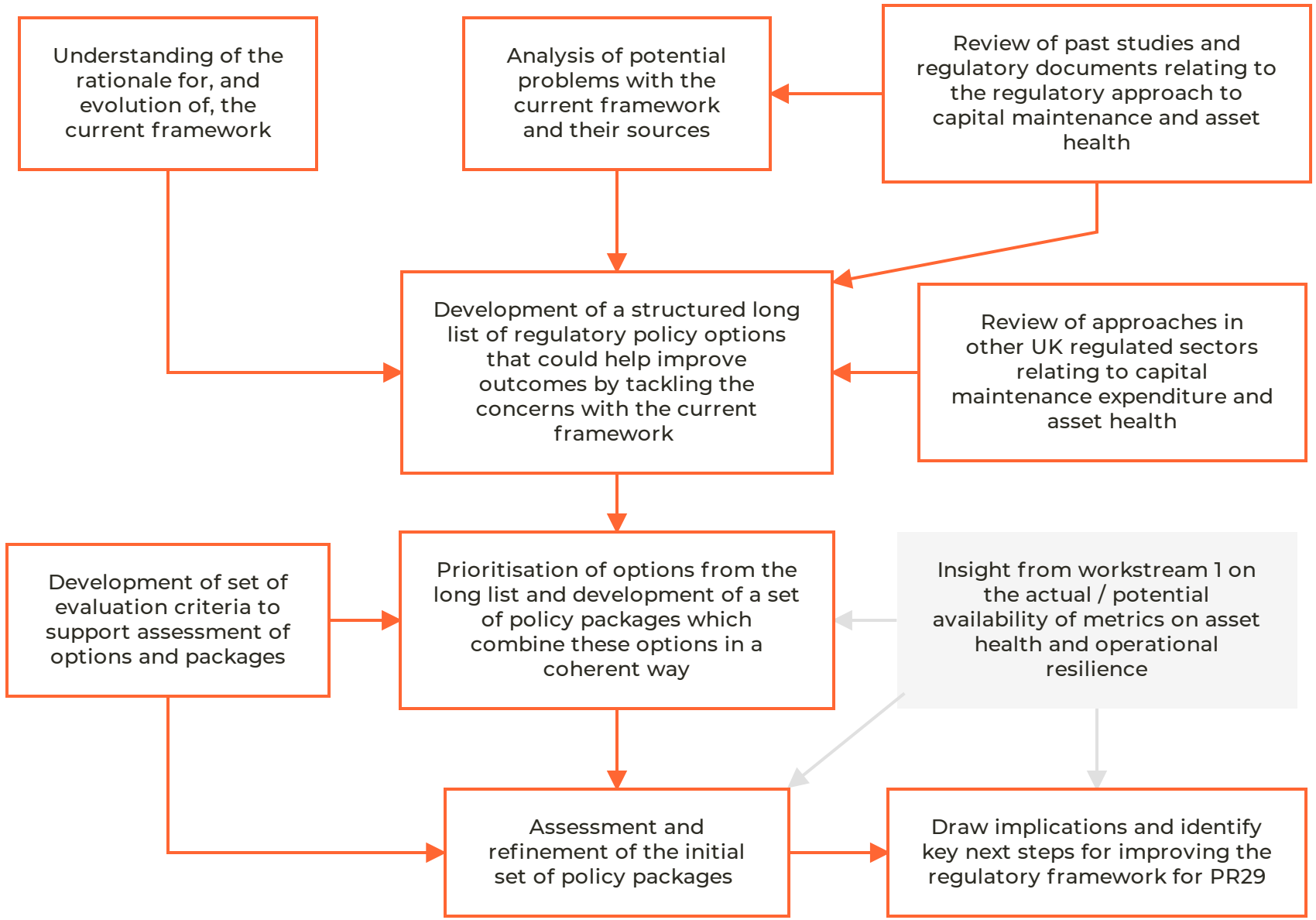
Alongside the workstream led by Reckon, the client companies commissioned a workstream from Jacobs (workstream 1). This is intended to identify and assess a range of metrics that could help to reveal current and future asset health risks, and track trends in asset health over time. This includes metrics that could support the potential changes to the regulatory approach identified in the workstream led by Reckon .

Overview of our approach

The diagram provides an overview of the approach we adopted for workstream 2.

The box in grey shows some interactions with workstream 1 carried out by Jacobs.

Over the course of the workstream we have shared material relating to key steps in the process with the project steering group and with a wider industry working group. We have refined material in light of feedback and discussion.



Section 2

Context for the current regulatory framework

For its PR14 price review, Ofwat made major reforms to its regulatory framework.

These reforms, and the principles behind them, provide important context for the current project.

Some key aspects of these reforms, and the evolution through to PR24, are shown in the boxes opposite.

Outcomes

Greater focus of the regulatory framework on outcomes rather than just inputs and outputs.

Totex

Steps to reduce the differences between the treatment of opex and capex as part of the approach to cost assessment and price control incentives, to help tackle concerns of a perceived capex bias.

Cost benchmarking

Greater emphasis on the use of benchmarking of water companies' costs as a means to set expenditure allowances.

Performance benchmarking

A greater role for benchmarking of water companies' performance (e.g. in relation to key outcomes) as a means to set baselines for performance incentive schemes.

Business plan competition

Encouraging companies to compete against each other to provide business plans that Ofwat considers to be ambitious and well-supported.

Company accountabiity

Seeking to make companies accountable for their short-term and long-term performance, with a more limited role for Ofwat in assessing what asset management approaches are likely to be appropriate.

The potential long-term benefits to customers from a regulatory approach based around outcomes and benchmarking - and practical limitations

Ofwat's current regulatory framework places considerable weight on cross-company econometric benchmarking of base costs, drawing on historical data. This is combined with financial incentives relating to performance metrics linked to outcomes and cost-sharing incentives.

This type of regulatory approach could, at least in principle, make an important contribution to the long-term efficiency of water companies in respect of their decisions around asset management and capital maintenance. See the box opposite for further explanation.

However, in practice these benefits may be diluted by the way that benchmarking is implemented - and may even be unattainable in real world conditions. A range of factors – acting in combination – may tip the balance in favour of companies adopting more short-term approaches to asset management, which may bring undesirable risks to outcomes in the future. We expand on these factors in section 3.

- An emphasis on cross-company benchmarking to set cost allowances can help provide companies with a long-term financial stake in their assets and systems.
- This type of approach exposes companies to financial incentives and risk in relation to the quality of their asset management systems and investment decisions, over a timeframe well beyond a single price control period.
- It represents a policy not to bail out individual companies (e.g. via a fresh forward-looking assessment of expenditure requirements at each review) who let their assets and systems deteriorate in pursuit of short-term gains.
- It provides a way to avoid customers paying twice for investment that a company chooses (e.g. in response to incentives for short term cost control) to defer from one price review period to another.
- It can also help give confidence to a company that there will be some financial benefits in the future from action it takes today that improves its long-term efficiency and performance.

The PR14 reforms and evolutionary selection processes in asset management

A key idea behind the PR14 reforms is that the regulatory framework can support evolutionary selection processes – helping to encourage and reveal better asset management approaches over time.

The PR14 reforms *intentionally* disrupted the prevailing approaches to asset management used across the industry. For instance, Ofwat had been concerned about a capex bias and that too little attention was being given to the outcomes achieved for customers and the environment. Ofwat took intentional steps to tackle these concerns.

Our understanding is that companies have responded to these reforms by questioning and testing asset life assumptions, moving away from established asset replacement regimes, and putting greater focus on some key areas of customer service and environmental performance than on their assets.

These developments can be seen as part of an evolutionary process of adaption, selection and learning in asset management approaches and in the ways that water companies deliver services to customers.

Such processes of exploration, experimentation, innovation and learning can, in principle, play an important role in improving companies' asset management practices over time.

However, the scope for such improvements depends on the conditions under which water companies develop their asset management approaches and the basis on which these approaches are selected (e.g. the basis on which a company might favour one approach to asset management over another, or the perceptions of what counts as success relative to peers).

There are important questions as to whether the current regulatory framework is likely to *create the conditions* that lead to the discovery and selection of asset management approaches that promote the best outcomes for customers and the environment over the long term.

While there seems to have been some mitigation of the concerns that influenced Ofwat at PR14, new concerns have come to the fore - in particular the concern that water companies are too focused on short-term performance against measured outcomes, with insufficient action to understand and manage risks to outcomes over the longer term.

Our project is concerned with how the regulatory framework should evolve going forwards. This is less about critiquing the PR14 and PR19 approaches and more about learning and adaptation for the future.

Section 3

Concerns with the current framework in relation to capital maintenance and asset health

The perspective of outcomes

When thinking about the performance of the current regulatory framework, and the benefits and drawbacks of potential changes to it, we have been guided by views on the desirable outcomes under the regulatory framework.

We set out opposite a possible position on what the desirable outcomes are *at a high level*.

We do not identify asset health and operational resilience as desirable outcomes. But problems in these areas could have adverse effects on the outcomes shown opposite.

- Good customer service, across a range of areas
- Good environmental outcomes, across a range of areas
- Affordable bills that represent value for money
- Public trust in the water industry
- Fairness between current and future customers
- Fair remuneration of equity investors

Concerns with the current framework

We have identified four high-level and inter-related concerns with the current regulatory framework which relate to capital maintenance, operational resilience and the risks to outcomes in the future and which fall within scope of workstream 2.

A number of different features of the current regulatory approach - acting in conjunction - give rise to these concerns (as indicated later in this section).

These concerns capture issues raised in previous studies, Ofwat documents, consultation responses and our own assessment.

Informational concern: there is not enough useful information available about the risks of service disruption and adverse environmental outcomes in the future that may arise from asset deterioration or poor asset health, and how these risk are being managed by water companies.

Behavioural concern: the behaviour and decision-making of water companies, which is heavily influenced by the regulatory framework, may not be well-aligned with the achievement of good outcomes for customers and the environment over the long term, especially in terms of the adequacy of investment in asset health to manage risks to future outcomes in an efficient way over time.

Funding concern: the funding available to water companies from customer bills, as governed by the regulatory framework, would not be sufficient to properly remunerate efficient companies who adopt good behaviour in relation to asset health and the management of future risks.

Responsibilities concern: given how companies act (or are likely to act) under the current regulatory framework, the regulator may not take enough responsibility for understanding and mitigating - through its own actions and decision-making (e.g. in relation to the adequacy of cost allowances) - long-term risks to customers and the environment that may arise from asset deterioration or poor asset health.

Examples of the risks to customers and the environment in the future that arise from these concerns with the current framework

1. **Future performance risks**: risks to the provision of reliable and high-quality services to customers, and the achievement of good environmental outcomes, due to deterioration in the reliability and performance of the assets and systems used to deliver services.

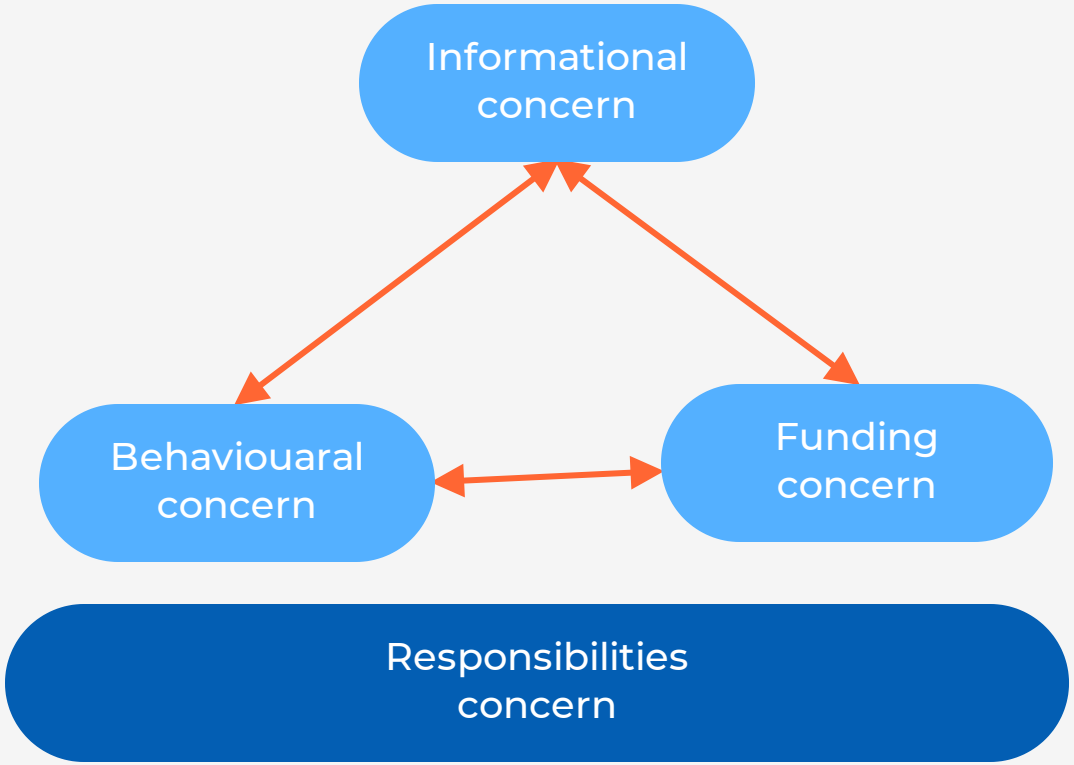
2. **Under the radar outcomes**: potential for greater risks in areas of customer service, environmental performance and public safety, which have not been captured through Ofwat's set of financial ODIs or the monitoring and compliance arrangements of other parties (e.g. the EA).

3. **Insufficient resilience**: risks of undesirably low levels of resilience of service provision to unexpected incidents and extreme conditions (especially in context of climate change).

4. **Risks of higher bills**: risks that companies will need to adopt relatively high-cost responses in the future to maintain services if performance issues from past under-investment arise and need to be resolved (e.g. to avoid ODI penalties), exposing customers to inefficient levels of costs over the long-term.

5. **Sustained performance problems**: a combination of the factors above may mean that addressing the identified problems is viewed as unaffordable for customers, and that poor/deteriorating outcomes will be tolerated for an extended period.

There are important interactions between the first three concerns and each of these may be be exacerbated by the underlying concern about responsibilities



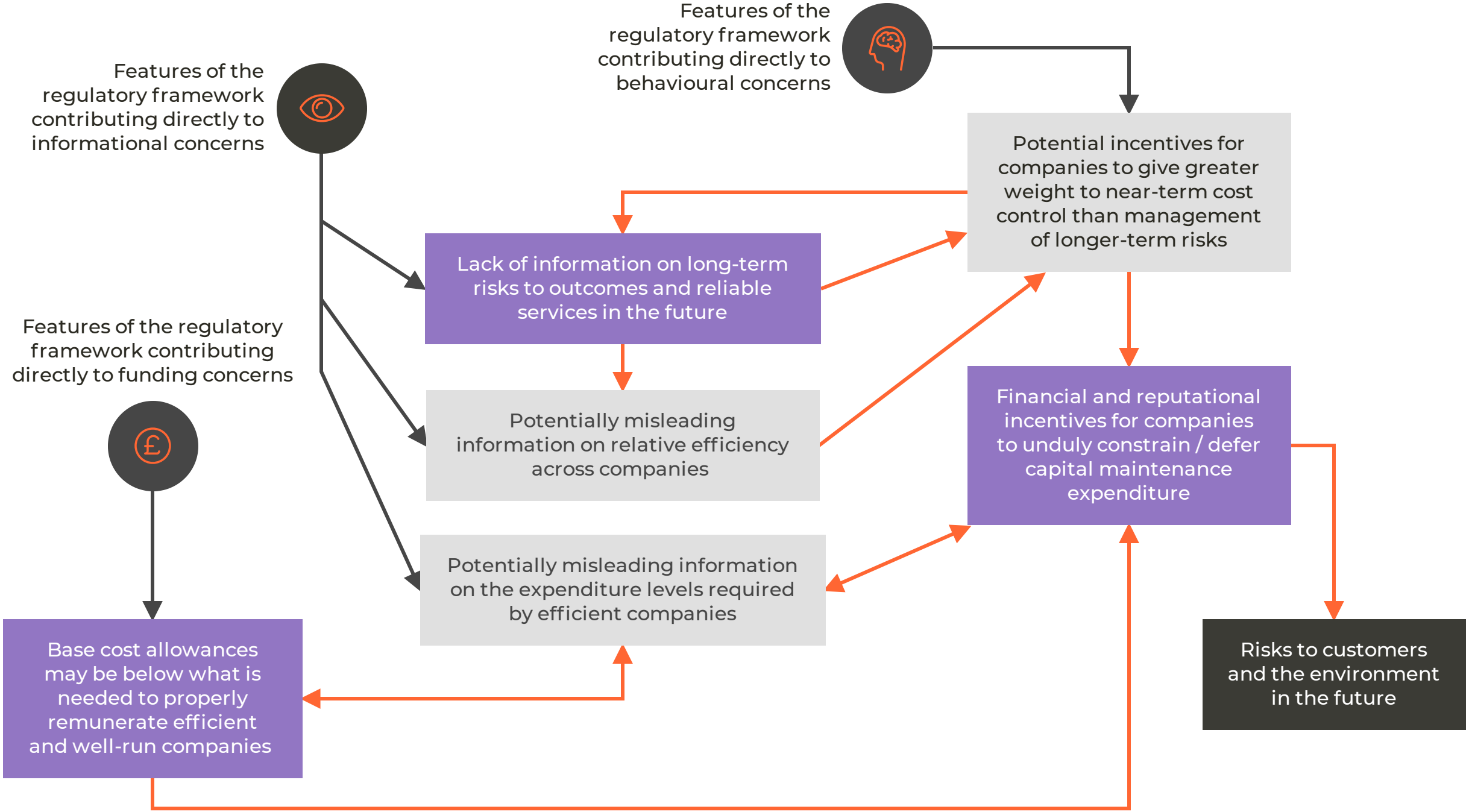
A company perspective on some of these interactions

"To us, it is clear that a system within which: future allowances are assessed with reference only to past expenditure; companies have strong disincentives to exceed those allowances; outperformance (or underspending) does not necessarily lead to adverse outcomes in the observable period; and the outturn expenditure resulting from the application of those incentives is again used to determine future allowances …risks leading to a downward spiral of allowances … The danger arising from the incentives in this system is that companies are tempted to take more risk on asset maintenance, nursing ageing assets through a variety of compensating strategies. If risk-taking is mistaken for efficiency, the whole industry is benchmarked against an inappropriate comparator, with adverse consequence for customers and the environment."

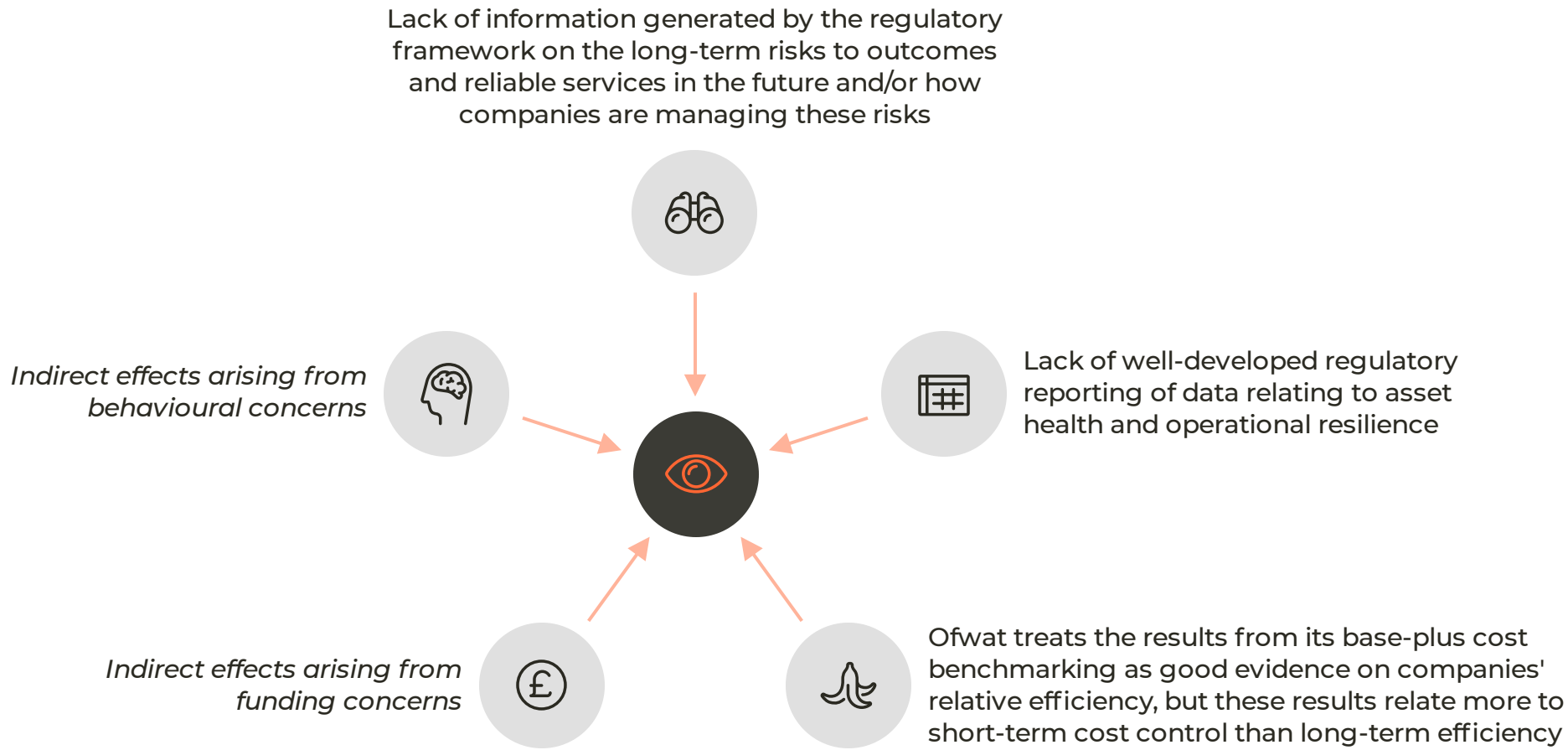
Anglian Water response to Ofwat consultation on *Assessing base costs at PR24* (February 2022)

	Impact on informational concerns	Impact on behavioural concerns	Impact on funding concerns
Impacts arising from informational concerns		Informational concerns mean that a company may face incentives to focus more on near-term cost control than future risks to outcomes, in order to be perceived favourably (or avoid being perceived unfavourably) relative to other water companies	Informational concerns mean that cost assessment is hampered by: (a) lack of good information about how efficient costs in the future will differ from historical costs; and (b) potential misconceptions about which companies are operating efficiently
Impacts arising from behavioural concerns	Behavioural concerns mean that companies may have stronger incentives to find ways to improve near-term performance than to invest in understanding future risks to outcomes and the capabilities to best to manage these risks over time		If behavioural concerns mean that some/all companies suppress capital maintenance expenditure below levels that would be efficient over the long-term, this would contribute to funding concerns as costs incurred in one period feed directly into funding levels in the next period
Impacts arising from funding concerns	A company over-spending its allowance may be perceived as inefficient or badly run, but that may be due to an unduly low allowance arising in light of the funding concerns rather than providing good information on efficiency and relative performance	If base-plus allowances for a price control period are set unduly low, this may lead a company to reduce its capital maintenance expenditure below levels that would be appropriate for the long-term	

The table above provides specific examples of the interactions between the first three high-level concerns, while the diagram on the next slide further elaborates on the interactions between these concerns.


Features of the regulatory framework contributing directly to informational concerns
Features of the regulatory framework contributing directly to behavioural concerns
Features of the regulatory framework contributing directly to funding concerns
Potential incentives for companies to give greater weight to near-term cost control than management of longer-term risks
Lack of information on long-term risks to outcomes and reliable services in the future
Potentially misleading information on relative efficiency across companies
Potentially misleading information on the expenditure levels required by efficient companies
Financial and reputational incentives for companies to unduly constrain / defer capital maintenance expenditure
Base cost allowances may be below what is needed to properly remunerate efficient and well-run companies
Risks to customers and the environment in the future

Features of the regulatory framework contributing to the informational concerns



Understanding the features contributing to each concern is highly useful when it comes to the identification of potential remedies to that concern, and it has guided our development of potential regulatory reforms

Ofwat and the National Infrastructure Commission have recognised a lack of information about asset condition and future risks

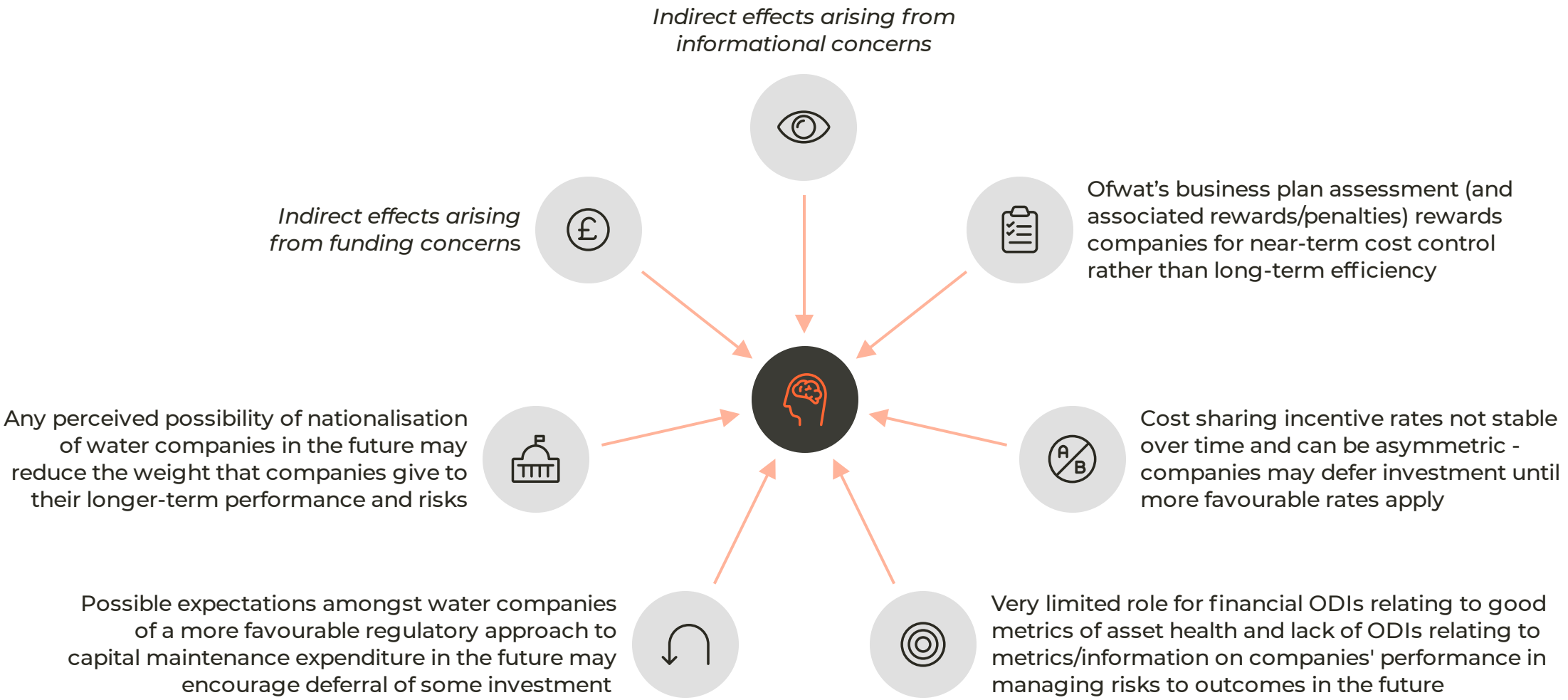
> "We focus on a range of service performance measures complemented by a small number of asset health performance commitments that provide some information on operational resilience. While the outcomes regime does capture a company's failure to mitigate risks when they have an impact on service, it focuses on performance at a point in time. Therefore, it may not always provide the breadth and depth of information needed to gain insight into the effectiveness of a company's approach to maintaining assets or managing current and future risks"

Ofwat (2022) *Operational resilience discussion paper*

> "... the metrics Ofwat uses to incentivise maintaining asset health and to understand industry performance when benchmarking efficient replacement rates in its base cost model – mains repairs, unplanned outages and sewer collapses – are lagging indicators. ... At present there does not appear to be a comprehensive and consistent understanding of asset condition across the sector and how this may change in the future. A more complete view of asset health in the sector would support a multi-AMP view of the investment required to maintain asset health and, consequently, service performance and reliability."

National Infrastructure Commission (2023) *Letter to Ofwat on water company asset management*

Features of the regulatory framework contributing to the behavioural concerns



Ofwat has recognised concerns about a lack of attention to the long-term in companies' decision-making and delivery

> "Our intention with the PR14 outcomes framework and totex approach was to encourage a long-term focus on asset health, using short-term incentives as a stepping stone. But many companies commented that, although they set out longer-term strategic contexts in their business plans, they tended to focus on short-term delivery – where incentives were clear – at the expense of longer-term objectives. In particular, some companies said that they delayed spend on capital maintenance in order to focus on delivering against specific PCs by the end of the 2015-20 period"

Ofwat (2022) PR14 Review

> "... we agree that the outcomes framework does incentivise some focus on the long term. However, the AMMA report highlighted that few companies have been able to demonstrate that they looked at longer term asset health trends outside of the established performance commitment framework. It also found that only a minority of companies engaged with their boards specifically on asset health and operational resilience risks and mitigations.... we consider there is evidence of insufficient focus on the long term during the PR14 period."

Ofwat (2022) PR14 Review

Features of the regulatory framework contributing to the funding concerns

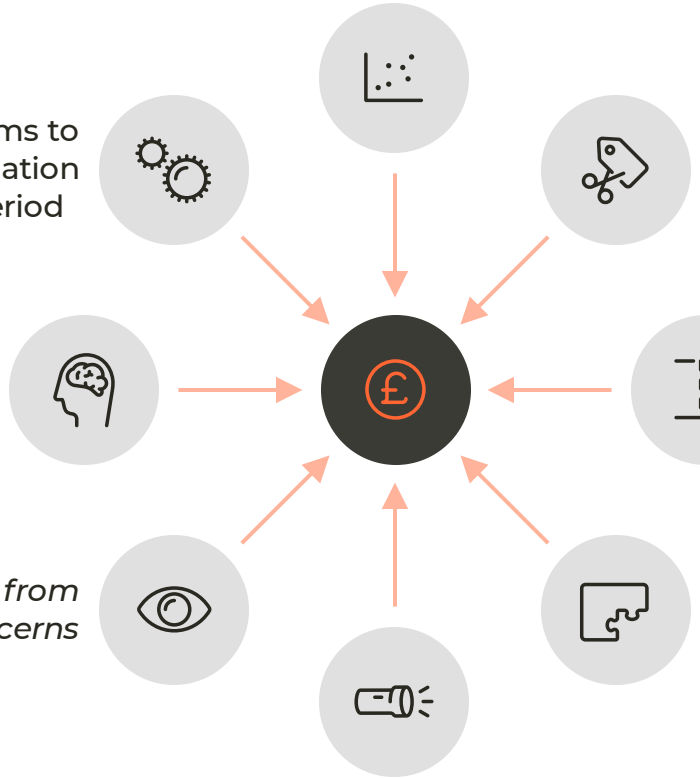
Base-plus allowances primarily determined by cross-company benchmarking models that cannot be expected to take full account of all factors that affect each company's efficient levels of base expenditure over the next AMP

Limited role for uncertainty mechanisms to adjust ex ante allowances in light of information emerging during the price control period

Upper quartile (or similar) "efficiency score" calculated over historical five-year period used to reduce allowances below levels estimated by the benchmarking models

Indirect effect from behavioural concerns

Limited attention to evidence on whether base-plus cost allowances would be sufficient for an efficient company that faces the PCLs that will apply over the next AMP



Indirect effects from informational concerns

Lack of coherent and consistent distinction between "base" and "enhancement" expenditure may contribute to funding gaps

No proper assessment by Ofwat of how industry-wide levels of efficient costs may differ in the next AMP compared to costs predicted by static models estimated using historical data (and high evidential burden for company evidence on this)

Relevant views from two past reports commissioned by Anglian Water

> "… projections for future capital maintenance expenditure cannot reliably be built up solely from analysis derived from past spending patterns. Any method which uses inter-company aggregate cost benchmarking and/or which rolls forward historical levels of expenditure risks locking in a fixed level of maintenance activity, irrespective of current or prospective engineering requirements. Such analysis ought therefore to be complemented and bolstered by some form of follow-up work which allows for the possibility that required volumes or work at company level may need to be higher or lower than in the past and which takes account of changing requirements over time and associated risk management issues"

Bush and Earwaker (2019)

> "Under its current approach, Ofwat applies both a forecast efficiency challenge and, in addition to that, forecast improvements to service (based on an assumption that all companies in the industry can, in future, achieve forecast upper quartile performance costlessly). But there is little science – or knowledge – to underpin such assumptions; they are little more than assertions based on a form of management judgment, rather than rooted in evidence of what can reasonably be achieved by companies managing very different service environments. Of course, it is important that regulators are not taken for a ride, and that customers are not over-charged. But aggressive efficiency and/or service improvement targets can, in themselves, intensify biases in the regulatory regime that lead to underfunding of base allowances, as well as undermine the longer term focus required by the sector"

Skylight Consulting (2022)

Unresolved questions about which parties have responsibility for understanding and mitigating long-term risks

The concerns set out in the previous slides may be exacerbated if Ofwat were to give too little attention to the influence that its price control decisions have on what water companies spend in practice.

One key issue is whether all companies will incur an appropriate amount of expenditure (e.g. in terms of long-term efficiency and management of future risks) regardless of what ex ante allowances Ofwat sets.

We see a real risk that, under the current framework, companies' capital maintenance expenditure levels are unduly constrained by the base-plus allowances that Ofwat sets (e.g. that lower allowances by themselves act to reduce what companies spend).

But our interpretation of Ofwat's cost assessment approach at PR19, and at PR24 so far, is that it shows limited recognition of - or response to - that risk.

This matters because in exercising its regulatory discretion, Ofwat may give insufficient weight to the future risks to customers and the environment - and insufficient attention to tackling these risks (e.g. through a fuller Ofwat-led assessment of how efficient expenditure requirements in the future may differ to the costs observed in the past).

More broadly, Ofwat sometimes behaves as if the responsibility for ensuring that companies carry out sufficient investment in asset health has been successfully allocated to water companies to manage by themselves.

However, we think that customers, as well as investors, are exposed - especially when it comes to industry-wide performance problems that companies may attribute to insufficient funding from past price reviews. In this context, there is arguably a key role for Ofwat (as well as water companies) in taking action to protect customers from such risks.

Responsibilities concern

Given the issues highlighted, we have identified an underlying concern with the current regulatory approach, which we label "the responsibilities concern".

We define this as: the concern that, given how companies act (or are likely to act) under the current regulatory framework, the regulator may not take enough responsibility for understanding and mitigating - through its own actions and decision-making (e.g. in relation to the adequacy of cost allowances) - long-term risks to customers and the environment that may arise from asset deterioration or poor asset health.

The significance and scale of these concerns

The main focus of workstream 2 is the identification, development and assessment of a set of regulatory policy options to help address the concerns with the current regulatory approach to capital maintenance and asset health.

It is not within scope of this workstream to collate and assess evidence on the *scale* of those concerns.

However, the informational, behavioural and funding concerns have been given attention in a number of previous reports, studies and regulatory documents (with differences across these in terms of which concerns are given most emphasis).

Rather than asking whether there is a proven case on the scale of the problems identified, we see the immediate policy question in terms of whether - in light of an identification of the set of inter-related concerns and evidence - the current regulatory framework should be deemed "safe".

We think the answer to that is a no, and that this motivates serious work on potential remedies well ahead of the design of the framework for the PR29 review.

Further consideration of the extent of risk under the current framework may be relevant when it comes to choosing a preferred approach for tackling the existing concerns.

Examples of relevant past reports and regulatory documents

- National Infrastructure Commission: *Letter to Ofwat on water company asset management (18 May 2023)*
- Skylight Consulting (2022) *How should Ofwat's approach to price control regulation focus on the long-term?*
- Economic Insight (2022) *Options for a sustainable approach to asset maintenance and replacement: report for Water UK*
- Ofwat (2022) *Operational resilience discussion paper*
- Bush and Earwaker (2019) *Providing appropriate regulatory funding for capital maintenance activity: ensuring capital sustainability and service resilience*
- Northumbrian Water *Regulating for the long-term: resilient essential services require healthy assets*
- United Utilities *Asset health in the water sector – framework proposal*

Section 4

Prioritised options and an initial set of policy packages

Introduction to the prioritised options and policy packages

As highlighted in section 1, our approach to workstream 2 has involved developing a long list of potential remedies to the concerns identified in section 3. The long list was informed in particular by our analysis of the sources of those concerns as well as our review of approaches in other UK regulated sectors.

These concerns cut across different aspects of the framework and we see a need for a coherent package of reforms, rather than simply action in one specific area (e.g. the approach to cost assessment).

In this section we first highlight some of the potential remedies from the long list that we considered to be higher priority, and provide some further information on these approaches.

We start by considering alternative options for cost assessment before turning to other types of remedy from other areas that might be combined with these.

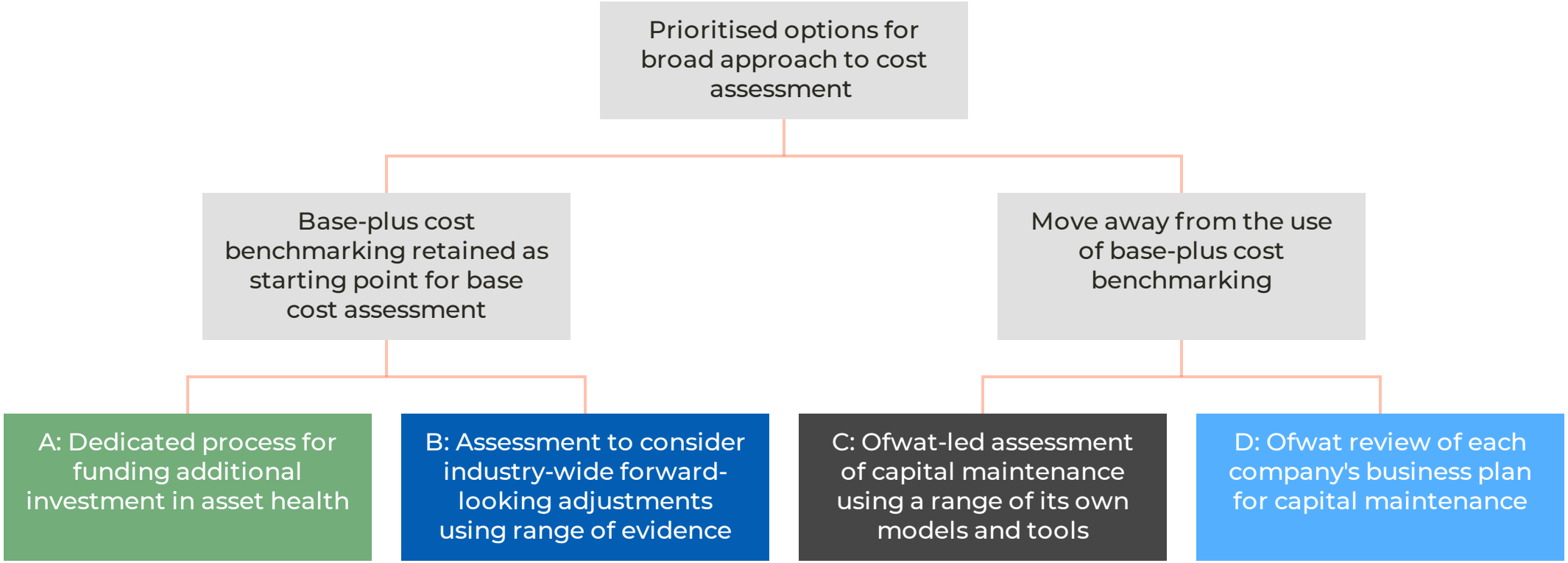
We then specify a number of packages that combine an approach to cost assessment with other elements. We have specified five packages of options, in addition to the current regulatory approach. We comment later in this section on factors that have guided our choice of packages.

The packages presented in this section are not intended to be comprehensive of all the permutations of prioritised options or to rule out any role for options that are not covered in these packages.

We comment at the end of this section on the role for asset health and operational resilience metrics under the set of packages (these metrics are considered in more detail as part of workstream 1 led by Jacobs).

The packages we have defined are geared more towards tacking the informational, behavioural and funding concerns. While they can make some contribution to tackling the responsibilities concern, to varying degrees, further efforts may be needed for this concern which is somewhat different in nature: it is partly about the design of the regulatory arrangements and partly about the way that the regulator views its own role.

Having reviewed a long list of options for the broad approach to cost assessment, four of these seemed a priority for the inclusion in the workstream 2 policy packages



The next two pages expand on these four high-level approaches to cost assessment

Prioritised options that would retain a key role for base-plus cost benchmarking

A: Dedicated process for funding additional investment in asset health

- Expands on the current cost adjustment process, but would cover asset health investment taken broadly - might include some enhancements
- Companies make proposals for targeted increments to investment
- Assessment process and guidance tailored to asset health investment
- Potential for adjustments to be applied to all companies in cases where multiple companies make claims covering common issues
- Reconsideration of the evidential threshold for Ofwat to accept proposed adjustments, to reflect customer benefits from asset health investment
- Less scope for financial and reputational downside, under Ofwat's business plan assessment, from unsuccessful claims

B: Assessment to consider industry-wide forward-looking adjustments using range of evidence

- New explicit stage in cost assessment process to consider whether to apply a sector-wide forward-looking adjustment for the forthcoming AMP and, if so, the scale of adjustment
- Explicitly consider a set of industry-wide "dynamic factors" that may mean that the level of efficient costs over next AMP is likely to differ to the level of costs observed historically
- Analysis of these factors uses range of methods and evidence
- One key dynamic factor concerns the potential for desirable / efficient levels of asset health investment to differ from those reflected in cost benchmarks derived from historical costs
- Analysis would draw on increased reporting of asset health data to understand changes over time in asset health and to assess the need for expenditure increases to manage future risks
- Regulatory judgement on what scale (if any) of uplift on historical costs is appropriate - recognising the risks to company investment levels if allowances are set too low
- Cost adjustment process for company-specific issues retained

Prioritised options that move away from the use of base-plus cost benchmarking

C: Ofwat-led assessment of capital maintenance using a range of its own models and tools

- Assessment of appropriate levels of capital maintenance for each company drawing on a range of modelling approaches and tools
- More Ofwat ownership of (and visibility of) the analysis/models used for assessing expenditure needs than under option D
- Potential for granular / diaggregated analysis within capital maintenance as well as more aggregated analysis
- Models and analysis would draw on increased reporting of data on asset health and operational resilience
- Range of methods might include econometric benchmarking of historical capital maintenance expenditure (or parts of it), analysis of trends over time in replacement volumes and metrics of asset reliability/performance as well as granular asset deterioration modelling and unit cost benchmarking
- May also include the type of evidence used by WICS (e.g. cost estimates derived from asset inventories, replacement cost estimates and estimated asset lives)

D: Ofwat review of each company's business plan for capital maintenance

- Starting point is companies' business plan proposals for capital maintenance and the evidence provided to support these
- Ofwat reviews the evidence provided for each company's proposed volumes, scope and timing of asset replacement, and potentially adjusts if it finds that these are not well evidenced
- Ofwat also compares business plan forecasts for levels of expenditure and/or activity levels against those observed for the company in the past, and assesses the strength of evidence in the plan for proposed changes going forward
- Role for granular unit cost benchmarking across companies, but limited role for benchmarking of broader expenditure categories or for benchmarking volumes of work
- Potential Ofwat review of each company's asset management practices and processes, in order to inform its view on the quality of the company's plan and the extent to which adjustments from business plan costings are appropriate

High-level comparison of the four cost assessment approaches in terms of some potentially competing regulatory priorities

	A	B	C	D
Ofwat owning the modelling and analysis that provides the foundation for allowances as a means to tackle information asymmetry and/or quality risks from company business plans	✓	✓	✓	✗
Using cross-company benchmarking (alongside outcomes-based ODIs) as a means to support financial incentives on efficiency in asset management and outcome delivery (beyond unit cost efficiency)	✓	✓	◌✓	✗
Providing a broad opportunity for cost assessment to draw on a forward-looking assessment rather than being primarily based on historical costs	✗	✓	✓	✓
Using information on each company's asset health to support the assessment of that company's forward-looking expenditure requirements	◌✓	✗	✓	✓
Drawing on rich company-specific forward-looking information and analysis from business plans to try to promote accuracy of the cost assessment	✗	✗	✗	✓
Using industry-wide (rather than company-specific) information on asset health to inform allowance for each company to avoid rewarding a company for contributing to its own relatively poor asset health	◌✓	✓	◌✓	✗

N.B. A tick in a half circle indicates an optional element

Comments on other cost assessment options identified in our long list

Option from long list	Comments
Base-plus models with time trend explanatory variables	Not sufficient on its own to address concerns with current approach to cost assessment - does not capture all dynamic factors that may mean that efficient level of costs in next AMP is significantly different to the costs observed historically; better to treat this approach as a potential source of evidence that feeds into a broader assessment that draws on a range of evidence and methods (e.g. under option B).
Company forecasts of costs used as input data in cost benchmarking models	We do not consider that there is sufficient credibility in company forecasts to view this approach as an alternative to the current approach or a sufficient response to the existing funding concerns; while evidence drawing on company forecasts may be useful it would be better to use this alongside other sources of evidence (e.g. under approach B) rather than placing 100% weight on it.
Base-plus models include explanatory variables relating to asset health	We consider this option unlikely to provide an adequate response to the funding concerns on its own, given the range of dynamic factors that are overlooked under the current approach to cost assessment, and the limitations of high-level benchmarking as a means to capture these factors. Furthermore, in making projections for the next AMP from the model results, assumptions would be needed for the values of explanatory variables relating to asset health and broader forms of assessment seem necessary to inform these assumptions. This points to the potential role of such models as a source of evidence under broader options (e.g. under option B or C) rather than being a candidate option for the overall approach.
Assessment based on econometric benchmarking of capital maintenance	The issues raised in relation to the option above also apply here. It seems more relevant as one type of analysis that might be used as part of a broader approach to capital maintenance assessment (e.g. option C).
Capital maintenance allowance based on asset inventory, estimates of asset replacement costs and estimates of asset lives	This type of approach (in its pure form) seems overly simplistic as a means to set regulatory allowances for a group of private sector companies for capital maintenance expenditure that will run into tens of billions of pounds over a price control period. There may also be substantial concerns over the reliability of data used for the approach which would call into question placing 100% weight on results from it. It seems more credible that this type of analysis could be one relevant source of evidence under a broader cost assessment approach that involves the regulator forming its own view on appropriate capital maintenance allowances using a range of evidence (e.g. options B or C).

Regulatory strategies for tackling the behavioural concern

- Changes to the approach to cost assessment are unlikely to be adequate on their own
- As it stands, the wider framework may lead companies to prioritise short-term performance (and cost control) over the understanding of - and efficient management of - future risks
- The behavioural concerns we identified imply risks that any increases in cost allowances might not be used to improve asset health in a well-targeted way
- This may limit the effectiveness of the changes or act as a deterrent to Ofwat setting higher ex ante allowances in the first place
- We identify opposite two key strategies to help tackle the broader behavioral concerns

i) Retain focus on outcomes while enhancing the incentives on long-term performance

- Series of measures to better align the financial and reputational incentives that companies face with long-term performance
- Informational remedies that give more exposure to companies' operational resilience and potential outcomes performance over the long term
- Possible role for new financial ODIs relating to how well companies seem to be managing future performance risks
- Other changes to tackle risk that regulatory framework promotes short-term focus

ii) Supplement outcomes with deliverables based on asset risk metrics or investment programmes

- Tie capital maintenance funding to the delivery of specified deliverables
- Aim that longer-term outcomes are protected by incentivising companies to deliver specified things during each five-year price control period
- Bulk of capital maintenance allowance could be conditional on delivery against composite asset risk metrics (e.g. Ofgem NARM approach) or delivery could be assessed against a more detailed set of PCDs based on specified asset replacement volumes or projects

We see the choice between these two strategies as a key policy issue for PR29

Strategy (i): Retain focus on outcomes while enhancing the incentives on long-term performance

As indicated on the previous page, one broad strategy we identify for addressing the behavioural concern (beyond changes to cost assessment) is to retain a regulatory focus on outcomes but enhance the incentives that companies face on their long-term performance.

To make substantial and ambitious improvements to incentives, we have identified a set of complementary measures. These involve a series of informational initiatives, as well as targeted modifications to the way that the regulatory framework operates and is presented. This set of measures has been inspired, in part, by our analysis of the sources of the behavioural and informational concerns under the current framework (see section 3).

We refer to this set of measures as the "**Enhanced set of incentive and informational remedies**". The table spanning the following two pages outlines the measures within this set. We organise these into five areas which we summarise in the box opposite. This set of measures is intended as a starting point and there are likely to be opportunities for extension or refinement.

The table also shows a narrower set of remedies on information and incentives which might be viewed as a more proportionate and consistent set if the preferred strategy is to tie capital maintenance expenditure to deliverables (e.g. NARMs). But there may be benefits from the broader enhanced package even in that case.

How might incentives be improved?

- Increasing the prominence and credibility of information relating to future outcomes performance
- Use of financial ODIs applied to information on operational resilience
- Steps to help avoid misleading inferences being drawn on companies' current performance
- Other targeted changes to reduce risks of undue incentives on short-term performance
- Other targeted changes to support decision-making with a long-term perspective

Overview of initiatives and measures in the enhanced incentives and information package and other options

	Current approach	Enhanced set of incentive and informational remedies	Narrow set of informational remedies
Increasing the prominence & credibility of information relating to future outcomes performance			
Companies report against a broad set of metrics of asset health and operational resilience	✗	✓	✓
Each company produces long-term forecasts of its PCs/outcomes performance under common set of well-specified scenarios (including scenario of future capital maintenance expenditure matching recent levels/trends) and explains how it has made these projections	✗	✓	✗
Each company publishes its policy on how it manages asset health and controls risks to future outcomes, referring to projections above and updating in light of actual practice	✗	✓	✗
Comparative evaluation by Ofwat or a third party of which companies are performing relatively well / less well in terms of management of risks to future outcomes (drawing on the metrics, projections and policies above as well as outturn performance and costs)	✗	✓	✗
Ofwat publishes shadow RCV adjustment for each company under scenarios for its future outcome performance (e.g. to reflect potential future ODIs) drawing on elements above	✗	✓	✗
Assessment of best practice / maturity in asset management and guidance for improvement	✓	✓	✓
Use of financial ODIs applied to information on operational resilience			
Financial ODIs applied directly to metrics of asset health and operational resilience	✓	✗	✗
Financial ODIs apply to outcome of evaluation of risks to future outcomes referred to above	✗	✓	✗

... Continued from previous page

	Current approach	Enhanced set of incentive and informational remedies	Narrow set of informational remedies
Steps to avoid misleading inferences being drawn on companies' current performance			
Ofwat to make clear to stakeholders why over-spend against ex ante allowances does not necessarily imply inefficiency and may reflect a good long-term approach	✗	✓	✗
Ofwat to make clear to stakeholders why base-plus cost benchmarking results are not on their own a reliable guide companies' relative efficiency or performance	✗	✓	✗
Other targeted changes to reduce risks of undue incentives on short-term performance			
Ofwat's business plan assessment process avoids rewarding / penalising companies according to a narrow assessment of their near-term cost control	✗	✓	✗
Use an alternative to the catch-up (e.g. upper quartile) efficiency challenge that is less vulnerable to risk of treating near-term cost control as efficiency	✗	✓	✗
Other targeted changes to support decision-making with a long-term perspective			
Policy of cost-sharing incentive rates that are symmetric and stable over time in order to limit risk of distortions to the timing of investment or artificial incentives for deferral	✗	✓	◐
Use dynamic PCLs (e.g. more like C-MeX approach) rather than ex ante PCLs to provide a more visible/credible mechanism through which investment today that improves (relative) performance in the future would bring quantifiable financial benefits over time	✗	◐	◐

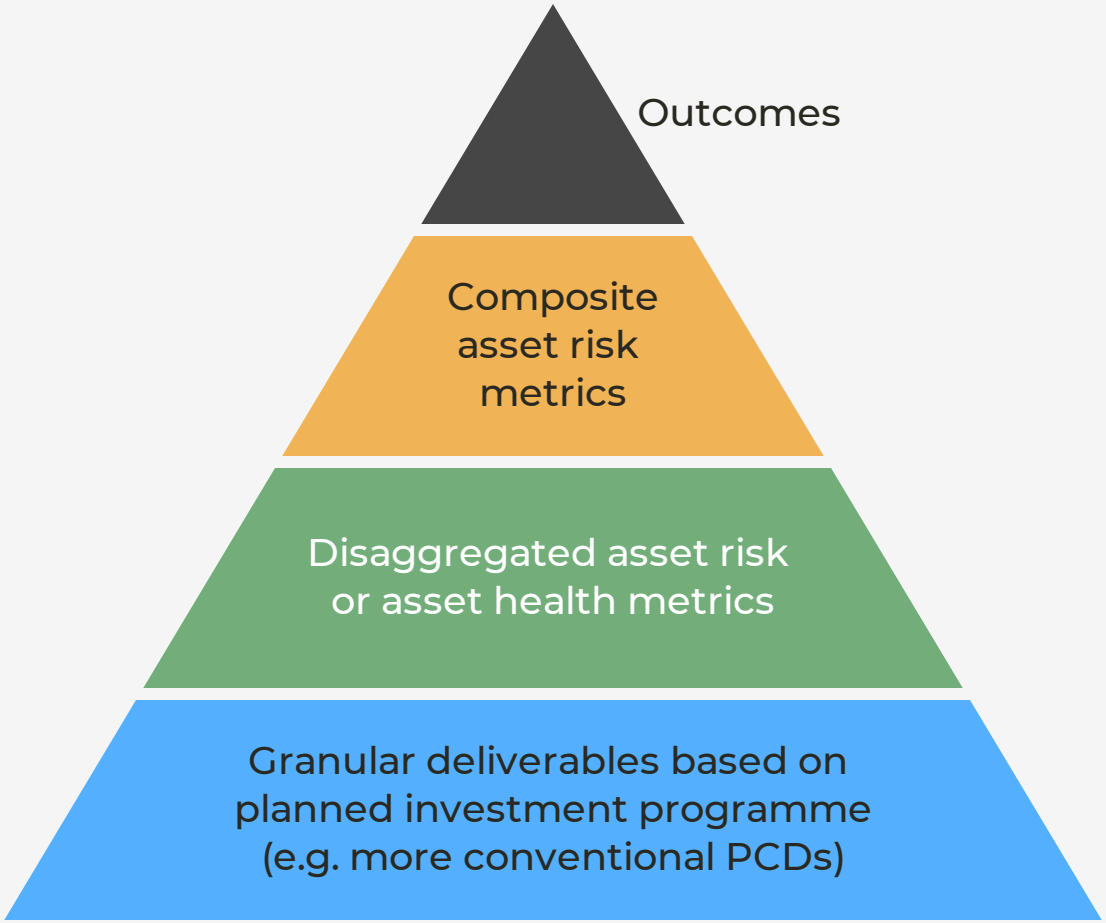
N.B. A tick in a half circle indicates an optional element

Strategy (ii): Supplement outcomes with deliverables based on asset risk metrics or investment programmes

The second strategy we identify for addressing the behavioural concern is to **supplement outcomes with deliverables based on asset risk metrics or investment programmes.** A company's funding for capital maintenance would be conditional on its delivery of specified deliverables by the end of the price control period, with funding clawed back in proportion to any under-delivery. There could also be some flexibility for over-delivery to be funded where this is justified.

There are a range of options for how deliverables could be specified but if feasible the preference might be the type of composite network-wide / system-wide asset risk metrics used by Ofgem (see example on next slide). This has potential benefits in targeting expenditure at asset risk reduction, while providing more scope for flexibility and a clearer line of sight on delivery expectations than a large number of separate PCDs based on a detailed programme of planned investments.

A key feature of this strategy is that deliverables would apply alongside - rather than in place of - financial ODIs relating to outcomes. This can help to reduce (though not eliminate) the risk that the deliverables agreed are not the best way to achieve good



Example from energy network regulation: network asset risk metric (NARM)

The NARM plays a key role in the deliverability accountability arrangements that Ofgem uses for energy network companies. The specific approach varies by network sector under the RIIO-2 controls, but we synthesise key aspects below.

Ofgem's approach involves setting each licensee a baseline network risk output, which is the target NARM score that the company must achieve at the end of the period.

Each company is required to report its outturn NARM score annually.

In the case of a company under-delivering against its NARM output by the end of the period, Ofgem can claw back (i.e. return to customers) ex ante funding associated with the shortfall.

There is also the potential for a financial penalty for unjustified under-delivery.

In the case of over-delivery, If Ofgem assesses the over-delivery as being justified, Ofgem can make an upward adjustment to ex ante allowances.

The adjustments for under- and over-delivery are based on estimates of the average unit cost of network risk outputs (e.g. calculated as the ex ante allowance divided by the scale of risk reduction on the NARM metric).

The bulk, but not all, of asset replacement is covered by the NARM approach. Ofgem also uses more conventional PCDs for asset replacement investment funded via the price controls that does not fall in scope of the NARM approach.

Network asset risk metric (NARM)

- The NARM is a monetised value of the failure risk associated with the assets owned/operated by the network company
- The NARM is computed by multiplying the probability of failure of an asset by the monetised consequences of that failure, aggregated across all failure modes and assets within the scope of NARM.
- In the absence of intervention such as asset replacement, the NARM would be expected to exhibit increasing monetised risk over time, due to assumptions (e.g. informed by asset deterioration models) that failure risk for specific assets increases with asset age.
- The NARM at a point in time will also be informed by inspections of asset condition.

De-prioritisation of options involving forms of cost passthrough

Another potential strategy for tackling the behavioural concern - and related concerns about under-spends - would be to move away from cost-sharing incentives towards some form of cost passthrough of capital maintenance expenditure (see box opposite). This could remove or reduce financial incentives for companies to constrain their investment in asset health.

If taken forwards, it may make sense to apply cost passthrough to the whole of base costs rather than just capital maintenance - to help avoid highly misaligned financial incentives between operating and capital expenditure and consequent distortion to asset management practices.

Applying cost passthrough to such a large area of expenditure (e.g. all capital maintenance or base costs) would be a major departure from the practice of incentive regulation. We would expect Ofwat to be concerned about a lack of incentives for efficiency, cost control and innovation over time.

For instance, under an approach of cost passthrough up to a cap, there may be some degree of financial incentive for a company to spend that capped amount efficiently (e.g. so as to perform better under the financial ODIs). But there would be limited financial incentive to under-spend the cap, even if this is (inadvertently) set at levels that are higher than needed by an efficient company taking a long-term perspective.

A capped approach also involves structural asymmetric risk which could (under CMA precedent) increase the cost of capital - unless the cap is so high as to eliminate any overspend risk (thereby worsening the issue above).

At this stage, the two strategies (i) and (ii) put forward on the previous pages seem to offer a more credible basis for considering regulatory reforms for PR29. But if both of these turn out to be difficult to progress, options involving cost passthrough might provide a more simple fall back to revisit further down the line.

Examples of passthrough options

- Cost passthrough up to approved cap and subject to DIWE provision (provision that expenditure found to be demonstrably wasteful or inefficient is excluded from what is recoverable by the company).
- Cost passthrough subject to ex post efficiency review.
- Cost passthrough within a defined expenditure deadband, with conventional cost sharing applying to levels of expenditure above or below the deadband.

Potential adjustment mechanism for industry-wide outturn expenditure

Within our set of prioritised policy options we have included the idea of an adjustment mechanism for differences between assumed and outturn levels of industry-wide expenditure. This can be seen as a new type of uncertainty mechanism and/or a more sophisticated way to update allowances in light of outturn expenditure data. It would apply in addition to conventional cost-sharing incentives (e.g, company exposure to 50% of its over- or under-spend).

The primary role of the mechanism would be to make the process of forward-looking cost assessment more manageable, in a context of substantial uncertainty about how future levels of efficient costs will differ from costs incurred historically.

Key features

- Company allowances would be based more on costs revealed over time across the industry rather than subjective and contentious ex ante regulatory assumptions about efficient costs.
- Involves ex post adjustment (e.g. at end of control reconciliation) to expenditure allowances in light of how, on average across companies, outturn expenditure has evolved relative to the ex ante allowances set at price review.
- Could apply to base-plus expenditure or some other defined scope of costs.
- Could be calibrated so that on average across companies there is no net under-spend or over-spend in each control period.
- Needs to be applied in combination with other remedies (e.g. remedies to promote desirable long-term behaviour).

Potential benefits

- Tackles what might otherwise be a key deterrent for Ofwat in setting ex ante expenditure allowances that are above historical levels or trends.
- Mitigates the uncertainty faced in trying to quantify the net impact of industry-wide factors that could mean that efficient levels of expenditure could be quite different to expenditure levels observed historically.
- If Ofwat provides increased allowances and companies (on average) do not spend it, customers are refunded; if companies (on average) spend more then additional funding is released.
- Use of industry-wide expenditure data for ex post adjustment preserve desirable efficiency incentives and risk allocation on companies.

From policy options to policy packages

In the previous pages we have highlighted a number of options and approaches that seem to be higher priority as a means to tackle the concerns with the current regulatory approach that we identified in section 3. We now present some potential packages of complementary options.

Before turning to this, we summarise a number of considerations that have guided the choice of policy packages.

What has guided the selection of the initial set of policy packages

1. The need to select a manageable number of packages to discuss with stakeholders and cover in a more structured assessment process as part of workstream 2.
2. The desire to have packages that reflect a good diversity of potential regulatory approaches.
3. Our views on prioritisation of individual options reflecting: (a) options that seem capable of making stronger contributions against key criteria; and (b) options that seem to be have significant weaknesses without countervailing benefits.
4. Our understanding of the potential interactions between the options in different areas of the framework (e.g. where options might be complementary and where they might be at odds with one another).
5. A recognition that we start with the current regulatory framework and for PR29 there is particular value in packages that can be seen to evolve from that approach, while also including some more radical options.

Introduction to the initial set of policy packages from workstream 2

On the next page we introduce an initial set of potential packages of options. We have developed and refined these in light of feedback and discussion from the project steering group and working group.

We have defined five packages of options (P1 to P5), in addition to the current regulatory approach (which we refer to as P0).

The table on the next page provides an overview of the packages in broad terms. The table summarises key elements of each package in relation to: (a) the option applied for the high-level approach to cost assessment; (b) whether the option of an industry-wide adjustment mechanism for outturn expenditure is included in the package; (c) whether capital maintenance funding is tied to within-period deliverables; and (d) the role for informational and incentive remedies. Each of the specific options under (a) to (d) above have been introduced earlier in this section, and the table shows how we combine these options into packages.

In terms of the strategic question we raised about how to tackle the behavioural concern (besides changes to cost assessment), packages P2 and P3 adopt the first strategy (hence inclusion of the enhanced set of incentive and informational remedies); packages P1, P4 and P5 adopt the second strategy (hence use of some form of PCD or deliverable tied to capital maintenance funding).

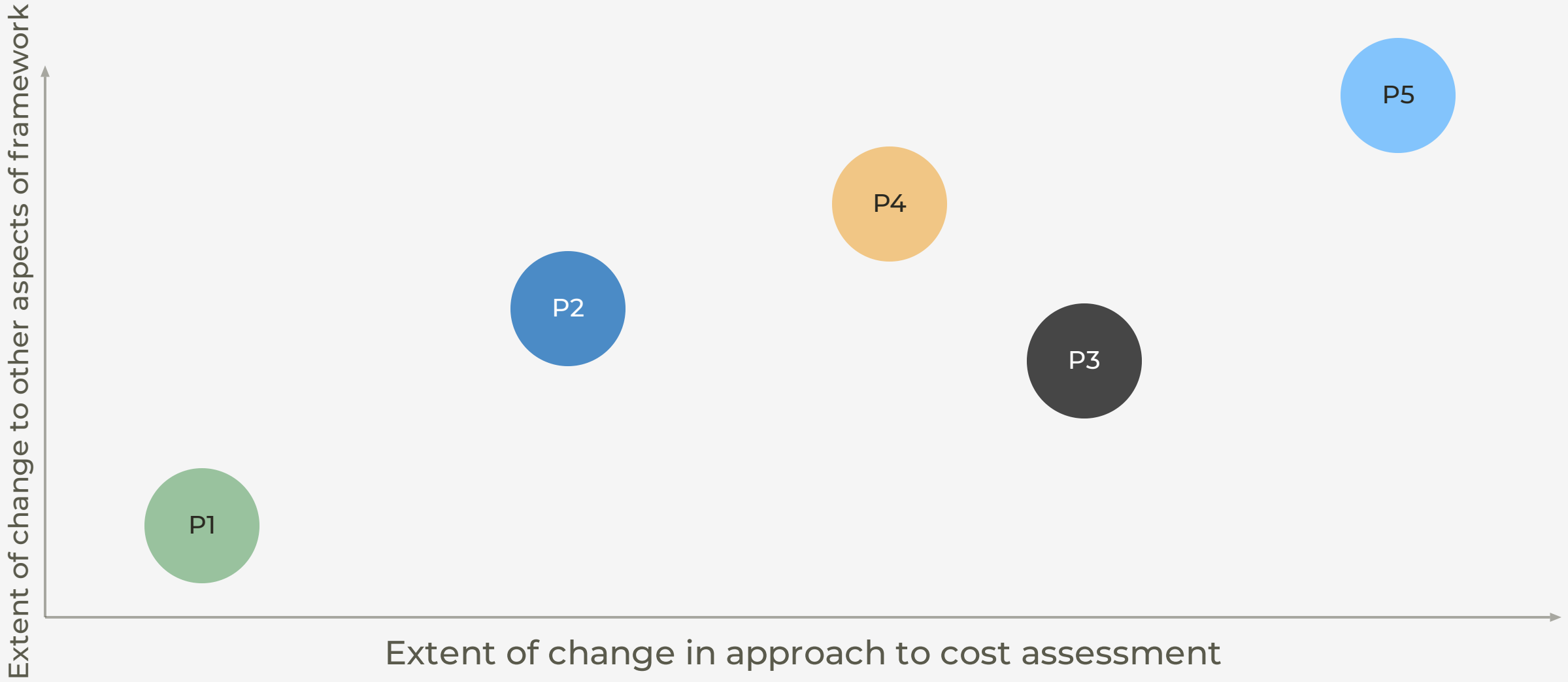
Other permutations

The set of five policy packages is intended to be helpful in supporting progess towards improved regulatory arrangements at PR29 that tackle the concerns raised in section 3. They are not intended to be comprehensive of all possible permutations of options.

For instance, it would be possible to combine elements from two of the packages to create a further package (e.g. the enhanced set of incentive and informational remedies might be combined with packages 1, 4 and 5). Or the approach to cost assessment may combine assessments from two separate approaches (e.g. weighted 50% each). And some elements of the packages could potentially be removed (e.g. the adjustment mechanism might be dropped from P2).

Package	P1	P2	P3	P4	P5
High-level approach to cost assessment?	Base cost models with potential adjustments based on Ofwat review of company proposals for additional investment in asset health	Base cost models with Ofwat assessment to consider industry-wide forward-looking adjustments for factors including asset health, drawing on a range of evidence	Ofwat detailed assessment of capital maintenance using a range of its own models and tools (move away from base cost models)	Use of approach from package 2 and/or 3, in a way that draws on NARM data	Ofwat cost assessment starts from review of each company's business plan for capital maintenance (move away from base cost models)
Introduction of adjustment mechanism for industry-wide outturn expenditure?	No	Yes	No	No	No
Is the expenditure allowance for capital maintenance conditional on delivery of specified deliverables/outputs?	Yes in part - PCDs in specific areas for which additional funding is provided (not for the rest of capital maintenance)	No	No	Yes - NARM-style composite asset risk metric used to assess delivery against ex ante allowances	Yes - PCDs for whole of capital maintenance based on detailed investment plan or granular asset health metrics
Other remedies to address behavioural and informational concerns?	Narrow set of informational remedies	Enhanced set of incentive and informational remedies	Enhanced set of incentive and informational remedies	Narrow set of informational remedies	Narrow set of informational remedies

How packages compare in terms of the extent of change from the current regulatory framework (high-level judgement)



The role for metrics of asset health and operational resilience under the packages

Metrics relating to asset health and operational resilience could play a number of different roles in the regulatory framework - as shown in the box opposite.

In the table on the next page we map the set of policy packages against a number of different types of data or metrics, as a means to show which packages would draw on which types of metrics. Our primary interest here is metrics of operational resilience (including metrics relating to asset health) but we also show metrics relating to outcomes and inputs in the table for further context.

In the table we score each metric between one and five for each package. A score of five means that that water companies *reporting information on a common basis against the metric* is likely to be highly important to the successful implementation of the policy package and a score of one indicates that common reporting of the metric would have a relatively limited (if any) role under the package. The scoring is indicative and may benefit from refinement over time as both regulatory options and potential metrics are developed in more detail.

The table focuses on metrics. In addition, there may be other important informational requirement under the packages. For instance, the informational and incentive remedies under packages 2 and 3 would draw on scenario analysis of future outcomes performance and evidence on how well companies are managing risks to future performance. This type of analysis and evidence would go beyond reporting against defined metrics and is not covered in the table.

Roles that metrics of asset health and operational resilience might play

1. Providing information on the risks to future outcomes and how well they are being managed.
2. Improving the incentives companies face to manage their long term performance
3. Informing cost assessment and the setting of ex ante allowances - through both interpretation of past expenditure data and informing future needs.
4. Delivery accountability arrangements that tie ex ante price control funding to deliverables or outputs that defined against operational resilience metrics.

Workstream 1 has considered different types of metrics in greater detail

Mapping of metric types to policy packages

Score of 5 indicates that the type of metric is likely to be highly important to the successful implementation of the policy package; score of 1 indicates a limited role.

Potential types of metrics	PO: Current regulatory approach	P1: Base cost benchmarking with improved process for funding additional investment in asset health	P2: Base cost benchmarking with forward-looking and dynamic industry-wide adjustments and enhanced incentives on long-term performance	P3: Ofwat-owned assessment of capital maintenance with enhanced incentives on long-term performance	P4: Funding and delivery accountability based on composite asset risk metrics	P5: Regulatory review of business plans for capital maintenance with granular PCDs
Activities (e.g. replacement rates/volumes)	2	3	1	1	1	5
Asset reliability, performance and resistance	2	3	5	5	3	3
Redundancy	1	1	2	2	1	1
Response to asset failure / emergencies	1	1	2	2	1	1
Risk metrics reflecting asset failure risk and criticality	1	1	4	4	5	2
Remaining asset life vs target life	1	1	3	3	2	2
Adverse outcome events attributed to asset failure	1	3	4	4	3	3
Modelled probability/frequency of adverse outcome events	2	2	4	4	2	2
Outcomes experienced by customers and the environment	5	5	5	5	5	5

Section 5

Evaluation criteria

Top-tier evaluation criteria

Approach to the evaluation criteria

Our terms of reference for this workstream asked for an assessment of regulatory options against a set of evaluation criteria. We introduce the criteria in this section and turn to the assessment in the next section.

We have identified evaluation criteria at two levels. First a set of four top-tier criteria which represent broad dimensions of interest when considering changes to the regulatory framework to tackle the concerns we identified. These are shown opposite.

It can sometimes be difficult to make meaningful comparisons between specific options when these are only assessed at a high level; doing so can limit both the transparency and reliability of the assessment. So we have also identified a set of subsidiary considerations and criteria which fall under each of the top-tier criteria. These capture significant ways in which the benefits or drawbacks of policy options may differ. Our subsidiary criteria have been informed in part by practical work to draw comparisons between candidate policy packages. We show the subsidiary criteria on the next three pages.

C1: Capability to address concerns identified with the current framework

C2: Risks of unintended consequences

C3: Implementation challenges

C4: Ongoing regulatory burden

	Subsidiary considerations under criterion C1: capability to address concerns identified with the current framework	Concern that criterion maps most directly to
C1.1	Extent of generation and exposure of information about the risks to outcomes in the future which relate to asset health and operational resilience	Informational concern
C1.2	Extent to which the framework can promote behaviour that does not unduly favour short-term performance at expense of future outcomes	Behavioural concern
C1.3	Facilitation of investment targeted at identified asset health or operational resilience concerns	
C1.4	Anticipation and/or adaptability of price control funding to changes over time (e.g. in external conditions or investment needs)	Funding concern
C1.5	Extent to which price control allowances take account (where appropriate) of differences between companies' circumstances and historical funding	
C1.6	Opportunity for a coherent and credible allocation of responsibilities between companies and Ofwat for the management of risks relating to asset health and future outcomes	Responsibilities concern

	Subsidiary considerations under criterion C2: risks of unintended consequences
C2.1	Risk that companies face inadequate incentives/risk in relation to quality of asset management, operational and investment decisions
C2.2	Risk that expenditure directed at planned deliverables/activities even if these are not a good way to achieve desired outcomes
C2.3	Risk of tensions with comparative competition & incentives for performance against outcomes-focused PCs
C2.4	Risk that customers pay twice for capital maintenance and/or pay for benefits not delivered
C2.5	Risks to incentives and remuneration of efficient costs from differences in the regulatory treatment of operating expenditure and capital maintenance expenditure
C2.6	Risks to incentives and remuneration of efficient costs from differences in the regulatory treatment of base costs and enhancement costs
C2.7	Risk to customer and environmental outcomes from the regulatory approach being vulnerable to asymmetric information
C2.8	Risk to behaviour from less predictability in price control expenditure allowances (post reconciliation)
C2.9	Risk of increased cost of capital arising from company exposure to non-diversifiable risks under the package

	Subsidiary considerations under C3: implementation challenges
C3.1	Risk of poor outcomes from reliance on information that may be of low accuracy / quality
C3.2	Risk of implementation problems (including delays) from the complexity and novelty of the arrangements
C3.3	Transitional challenges arising from the move from current regulatory approach to new regulatory approach
	Subsidiary considerations under C4: ongoing regulatory burden
C4.1	Data/informational burden on water companies (including assurance requirements)
C4.2	Scale of regulatory activity and engagement from Ofwat, companies and other stakeholders

Evaluation criteria: further considerations

- There are different ways to approach the design of evaluation criteria, but reflecting feedback from the project steering group it seemed helpful to try to link these to the problems that lie at the heart of the project (hence criterion C1).
- It does not seem appropriate to attach equal weight to each of the top-tier criteria, and some of the subsidiary criteria may be considered more important than others. For instance, given scale of current capital maintenance expenditure across the industry, and the extent of concerns we identify with the current approach in section 3, more weight might be given to criterion C1 than to the regulatory burden under C4.
- While we have identified a considerable number of subsidiary considerations and criteria, this seems to reflect the significant ways in which options may differ and, in practice, we found that it supports the comparative assessment of policy packages.
- We also considered transparency as an additional evaluation criterion but thought that most options could be implemented in a reasonably transparent way if desired and this did not seem a key criterion for choosing between options that all involve considerable amounts of information and complexity.
- We considered affordability and bill impacts as a potential criterion. But customer bills will depend on specific decisions and judgements made by Ofwat in implementing the approach rather than being an inherent feature of an approach. Instead, we use a range of factors that affect affordability and value for money, such as those relating to efficiency, the risks of inefficiency and the risks of customers paying twice or for benefits not delivered.

Section 6

Preliminary assessment of the packages against the criteria

Introduction to the comparative assessment

In this section we present a preliminary assessment of the set of policy packages identified in section 4 against the evaluation criteria from section 5.

This is a complicated exercise and we appreciate that the results shown are not straightforward to digest. This reflects the complexity of the subject matter - both in terms of the scope of some of the policy packages and the the range of different ways that policy packages differ in terms of their potential performance and risks (which has fed through to the number of subsidiary criteria).

We first present an overall comparison of packages against the four top-tier criteria. We then provide further details in relation to criteria C1 and C2 (the more complicated and important criteria) showing a comparison against the subsidiary considerations and criteria.

For each package, and each criterion, we present a score between one and five, where one indicates that the package does relatively badly under the criterion compared to the other packages and a five indicates that it does relatively well.

A five is always indicative of better performance of a package even where criteria relate to risks.

The comparison of options is relative rather than absolute. Where a policy package is given a five (marked in green) for a specific sub-criterion, this indicates that we consider it better than other packages shown, not that it is perfect or optimal against the criterion. Similarly, where a score of one is shown (in red) this is a relative score and does not imply complete failure against a criterion.

As highlighted in section 5, we do not think that it would be appropriate to give equal weight to each of the top-tier criteria. For instance, more weight might be given to addressing current problems than to the ongoing regulatory burden.

Furthermore, we caution heavily against treating the detailed scoring against criteria as a firm output of workstream 2. Our suggestion is that further work is done to flesh out some of the key options and ideas within a subset of preferred packages and the assessment is revisited as that work proceeds. The evaluation criteria and preliminary assessment that we set out in this report provide a foundation for that work.

Performance against top-tier criteria: preliminary assessment

		P0	P1	P2	P3	P4	P5
C1	Capability to address concerns with the current framework	1	2	4	4	4	3
C2	Risks of unintended consequences	4	3	4	3	3	2
C3	Implementation challenges	5	4	3	2	1	3
C4	Ongoing regulatory burden	5	4	2	1	3	3

The scores reflect a judgment for each criterion (score of 5 being best in relative terms). The next two slides provide a more granular scoring against a set of subsidiary considerations for criteria C1 and C2, which has informed the assessment above. We caution against giving the criteria equal weight; it is not appropriate to simply aggregate scores across these criteria to produce an overall ranking.

C1: Capability to address concerns identified with the current framework - subsidiary assessment

		P0	P1	P2	P3	P4	P5
C1.1	Extent of generation and exposure of information about risks to future outcomes which relate to asset health	1	2	5	5	4	2
C1.2	Extent to which framework can promote behaviour that does not unduly favour short-term performance	1	1	4	4	3	3
C1.3	Facilitation of investment targeted at identified asset health or opeational resilience concerns	1	2	4	4	5	5
C1.4	Anticipation and/or adaptability of price control funding to changes over time in investment needs	1	2	4	4	4	4
C1.5	Extent to which allowances take account of differences between companies' circumstances and historical funding	2	3	2	4	3	5
C1.6	Opportunity for a coherent/credible allocation of responsibilities for management of asset health risks	1	1	4	3	3	2

The more granular assessment here helps to indicate the relative strengths and weaknesses within different aspects of criteria C1

C2: Risk of unintended consequences - subsidiary assessment

		P0	P1	P2	P3	P4	P5
C2.1	Risk that companies face inadequate incentives/risk on quality of asset management, operations and investment	3	3	5	4	4	2
C2.2	Risk that expenditure directed at planned deliverables even if these are not a good way to achieve desired outcomes	5	4	5	5	3	1
C2.3	Risk of tensions with comparative competition & incentives for performance against outcomes-focused PCs	5	4	5	4	3	1
C2.4	Risk that customers pay twice for capital maintenance and/or pay for investment not delivered	4	4	4	3	4	3
C2.5	Risks to incentives and remuneration of efficient costs from regulatory differences between opex and capital maintenance	4	4	4	2	3	2
C2.6	Risks to incentives and remuneration of efficient costs from regulatory differences between base and enhancements	3	3	3	3	3	4
C2.7	Risk to customer / environmental outcomes from regulatory approach being vulnerable to asymmetric information	5	4	4	3	3	1
C2.8	Risks to behaviour from less predictability in price control expenditure allowances (post reconciliation)	4	4	2	4	4	4
C2.9	Risk of increased cost of capital arising from company exposure to non-diversifiable risks under the package	3	4	5	4	4	5

High-level comments on the assessment

1. Overall, our assessment indicates a reasonably strong case for change, at least on the view that the regulatory and administrative burden and implementation challenges are viewed as less important than addressing the concerns identified with the current regulatory framework.

2. Packages 2, 3, 4 and - to a somewhat lesser degree 5 - seem capable of making a substantial contribution to tackling the concerns with the current framework, in particular by expanding information and improving price control incentives and/or funding arrangements.

3. Package 1 seems to offer more limited scope for improvement on the current approach, which reflects the more incremental nature of this package.

4. Package 5 performs worst in terms of the risk of unintended consequences. This score reflects concerns including more limited incentives on the efficiency of asset management decisions, the risks to innovation and flexibility from assessment of delivery against a granular investment programme, and concerns about asymmetric information from the greater weight on business plan costings.

5. Package 4 scores lowest in terms of implementation challenges. This reflects its dependency on the creation and reporting of composite asset risk metrics for the wholesale water and wastewater value chains. Package 3 also seems to involve relatively high implementation risk due to the extent of change to the approach to cost assessment.

6. Packages 2 and 3 perform least well in terms of the ongoing regulatory and informational burden. These two packages involve more extensive informational remedies, and package 3 places greater reliance on more detailed forms of cost assessment.

Section 7

Emerging views and potential next steps

The development of regulatory remedies for the concerns from section 3

We see a strong case for making changes to Ofwat's regulatory approach to tackle the informational, behavioural and funding concerns we have identified in relation to capital maintenance and risks to future outcomes (see section 3).

These concerns cut across different aspects of aspects of the framework and we see a need for a coherent package of reforms, rather than simply action in one specific area (e.g. the approach to cost assessment).

In section 6 we presented a structured assessment of the policy packages from section 5 against the set of evaluation criteria.

Of these, three packages (P2, P3, and P4) seem particularly promising as a basis to tackle the concerns. We highlight some common features of these packages in the box opposite.

At this stage, and with a view to reforms for PR29, we see considerable merit in water companies and Ofwat taking forward the development of packages P2, P3 and P4 *in parallel*. This reflects a number of considerations, as shown on the next page.

Common elements of packages P2, P3 and P4

- More comprehensive and more informative data reported, on a common basis, on the reliability and performance of water companies' assets, and their broader operational resilience.
- An approach to setting price control expenditure allowances that remains driven by Ofwat-owned modeling and analysis (rather than starting from companies' business plans) but which is more forward-looking. This would involve more explicit consideration of the expenditure that efficient companies would need to manage the performance of assets going forwards, and greater attention to how asset reliability has evolved over time when drawing on evidence on historical costs.
- More effective arrangements for ensuring that water companies are accountable - and incentivised - to manage risks to asset reliability and future outcomes effectively when taking decisions relating to capital maintenance activities.

Rationale for progressing packages 2, 3 and 4 in parallel

Overlap across the packages

There is considerable overlap between these packages which means that some of the work needed to implement one of them could also support the others.

The development of a common approach for reporting composite asset risk metrics is essential for package P4, but is also highly useful for packages P2 and P3.

Some of the analytical tools for cost assessment that would be needed under package P3 could also benefit packages P2 and P4.

And some of the enhanced informational and incentive remedies under packages P2 and P3 could also benefit package P4.

Implementation challenges

At a practical level, there is uncertainty about whether the arrangements for reporting composite asset risk metrics - which are needed for package P4 - would be in a sufficiently developed state to apply P4 from PR29.

This is a key reason for starting the development of these metrics soon if this package is considered to be potentially attractive. But that work is likely to be challenging and time-consuming and it seems unwise to focus exclusively on this package as the basis for the approach at PR29.

Similarly, package P3 would place emphasis on new models and tools for cost assessment that carry implementation risk and it seems sensible to keep other options for cost assessment at PR29 open at this stage.

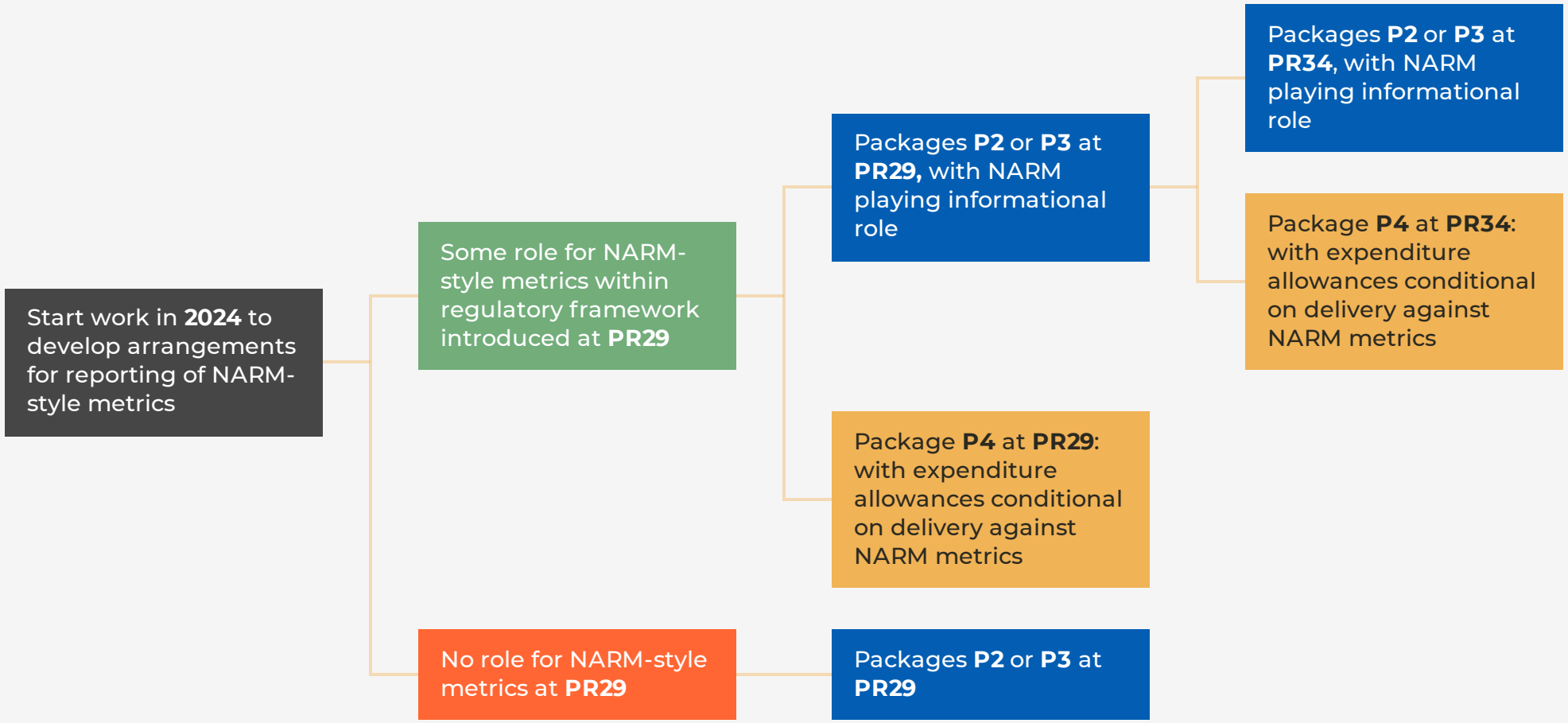
Strategic regulatory questions

The choice between packages P2/P3 and package P4 involves important and potentially far-reaching questions about regulatory strategy. The strategic choice highlighted in section 5 has had quite limited attention so far and it seems premature to take a firm position on it now.

More informed decisions can be taken in light of (a) work to flesh out further what the packages would involve in practice, and (b) further engagement with stakeholders.

There are other policy questions affecting the choice of options which would benefit from wider discussion and consideration (e.g. on the circumstances in which companies identified with relatively poor asset health should be given price control funding to catch up to their peers).

Outline illustration of adaptive pathways relating to NARM-style composite asset risk metrics (pathways and decision points would need further development and population)



Examples of potential analytical tools and sources of evidence that could help provide a more forward-looking perspective and support cost assessment under P2, P3 and P4

Potential analytical tools and sources of evidence to explore further	Suggest fleshing out further as a next step?
Forward-looking modelling of expenditure to maintain/restore asset health drawing on: (a) asset inventories; (b) asset age data; (c) evidence-based asset life estimates; and (d) replacement cost estimates	✓
Analysis of how, over a time period covered by the historical expenditure data, asset reliability and asset performance have changed at a company and industry level	✓
Analysis of trends over time in base-plus expenditure (and different elements of this) and the evidence of potential drivers of these trends	✓
Econometric models focused on capital maintenance expenditure (or covering capital maintenance and closely associated opex), at a broad level and/or granular level	✓
Econometric models of base-plus expenditure that draw on explanatory variables relating to asset health (e.g. composite asset risk metrics or proxies based on asset age)	✓
Analysis to use companies' business plan forecasts to provide a forward-looking perspective of costs (whether as adjustment to econometric models or input data to models)	✗
Modelling potential asset deterioration (e.g. asset reliability risk) under defined scenarios for expenditure over forthcoming AMPs	✓
Modelling risks to future outcomes under defined scenarios for expenditure over forthcoming AMPs	✓

Potential steps towards implementation at PR29 which seem lower priority in the near term

Potential action	Comments on prioritisation
Further development of potential cost assessment approaches and tools that could be used for packages P1 and P5	Does not seem a priority given weaker case for these packages at this stage, and because the cost assessment approaches would be more familiar and less innovative
Consider further the case for financial ODIs on outcome of evaluative assessment of companies' relative performance in demonstrating effective management of future outcomes risks (under P2/P3)	Does not seem useful to progress much further on this issue before more work done on the informational remedies that would inform such an assessment (see next slide for more on informational remedies)
Develop a first-cut Excel model and outline methodology for implementation of the industry-wide adjustment mechanism that could be used as part of package P2 (and perhaps P3)	Does not seem necessary for initial engagement on this option, but would be needed well ahead of PR29 draft methodology
Development of arrangements for implementation of NARM-style delivery adjustment mechanism further to data requirements (e.g. rules of mechanism, extent of flexibility etc) under P4	Does not seem necessary for initial engagement on this option and no need to lock down details at an early stage; further work needed before moving to a preference between package P4 versus P2/P3
Further development of elements of the enhanced set of informational and incentive remedies under P2/P3 relating to: (a) Ofwat communications around company cost performance; (b) cost sharing rates; (c) business plan assessment process	Does not seem a near-term priority or necessary for further engagement; some further work may be useful before moving to a preference between package P4 vs P2/P3 and development would be needed well ahead of PR29 draft methodology
Consider whether long-term strategy is needed (e.g. from Ofwat, Defra, EA, NIC) on levels of customer service and environmental performance that companies' long term risk management should be directed towards	Does not seem a near-term priority, but could become important as further work is done on potential informational remedies relating to outcome risk management and more forward-looking cost assessment

Potential next steps to take forward packages P2, P3 and P4

Data on asset health and operational resilience

- Start to develop arrangements for reporting granular metrics of asset health and operational resilience across the asset base
- Start to develop arrangements for reporting composite asset risk metrics, drawing in part on Ofgem NARM approach

Analytical tools to support cost assessment

- Flesh out further the analytical tools and sources of evidence that could bring a more forward-looking perspective to cost assessment at price reviews under P2, P3 and P4
- Start to explore tools using available data or illustrative modelling

Informational remedies beyond data reporting

- Flesh out further some of the key informational and incentive remedies from P2/P3 that go beyond the reporting of asset health and operational resilience metrics
- Work with interested companies to explore how these might be put into practice drawing on information and analysis they use already

Further engagement

- Further engagement with stakeholders on key elements of packages of P2, P3 and P4
- Particular focus on achieving a good understanding of the options identified and exploring strategic questions affecting choice of approach

Planning and adaptive pathways for regulatory reform

- Start to map out some adaptive pathways for the development and application of regulatory reforms based on packages P2, P3 and P4
- Highlight how choices can be informed by learning along the way and provide structure for identified next steps