Investability at PR24

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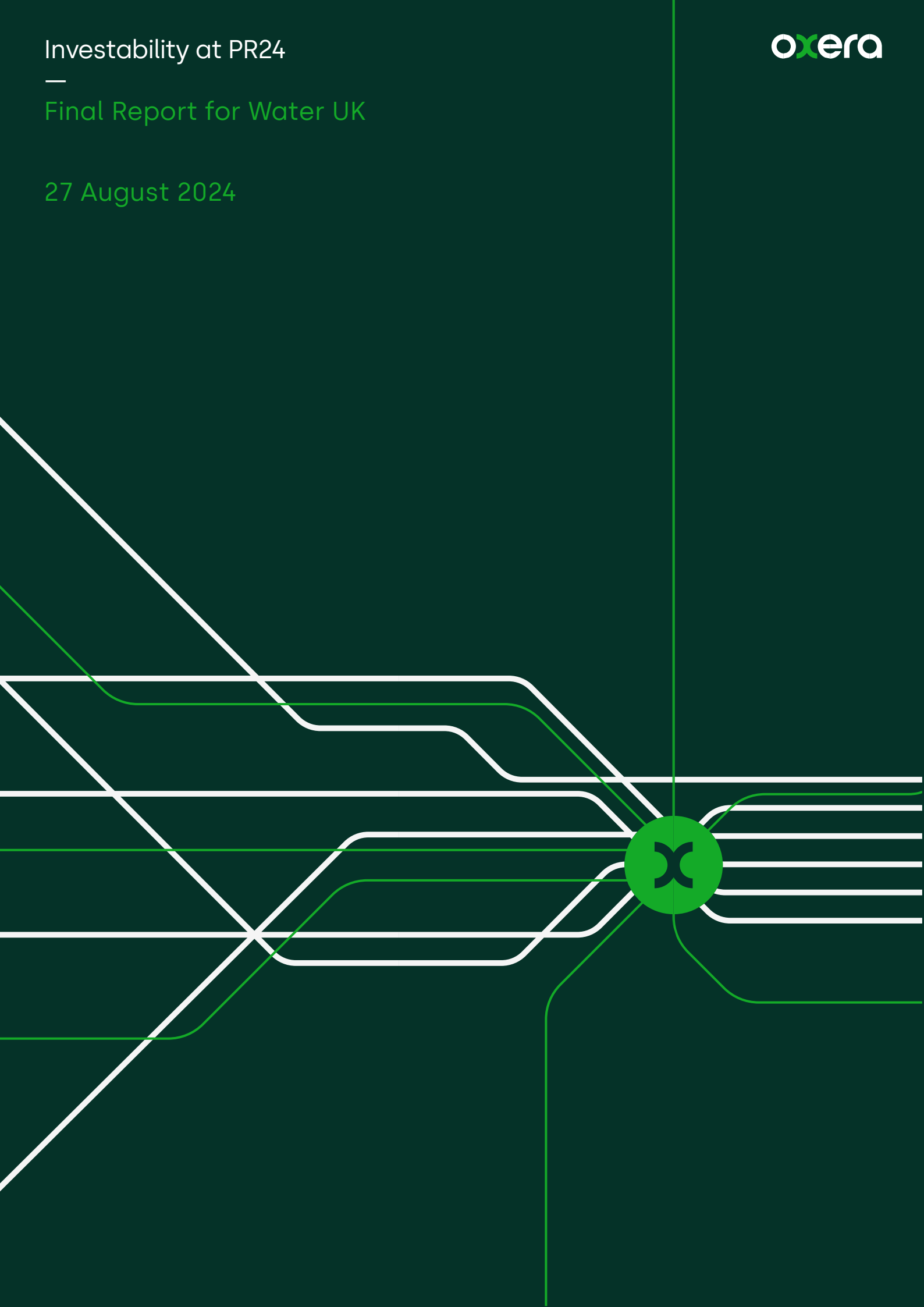
Final Report for Water UK

27 August 2024



Contents

Figures and Tables

Executive summary

Why a framework for assessing investability is needed

This report considers the investability of the water sector in England & Wales, in light of Ofwat's recent PR24 Draft Determinations[1] and the wider market for infrastructure investment. Our report has been informed by a detailed analysis of Ofwat's proposals, as well as direct engagement with over 30 major investors in the England and Wales water and infrastructure sectors, from both the listed and unlisted markets.

We recognise the challenges Ofwat faces in balancing competing objectives at PR24. It is essential that improved services are provided to consumers at the lowest possible cost, with companies incentivised to deliver investment and operations efficiently.

However, if implemented as proposed, **Ofwat's Draft Determinations would likely result in significant investability issues for the sector as a whole**. In particular, there is a material risk that the sector is unable to raise the new equity investment required to finance the proposed investment programme for AMP8, as well as the high levels of expenditure expected over the coming decades.

These issues stem from an inadequate articulation and testing of the investability of the Draft Determinations. By relying on the approach used in previous price reviews to assess the suitability of its determinations, Ofwat fails to account for a fundamental shift in the sector, as it moves into a multi-decade period of high investment requirements. Achieving this necessitates that companies can raise new equity and debt capital on a significant and ongoing basis for the foreseeable future, and for Ofwat to demonstrate well-evidenced confidence in this occurring, in line with its financing and other duties.

This stands in contrast to Ofwat's own approach to financing major projects outside the price control framework, as seen in its 2015 arrangements for the Thames Tideway Tunnel (Tideway). Tideway is a c. £5bn London wastewater investment that is financed, owned and

[1] Ofwat (2024), 'PR24 Draft Determinations', July, https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/draft-determinations/ (last accessed 27 August 2024).

managed separately from Thames Water.[2] In order to raise the required equity and debt finance, Ofwat put in place arrangements to ensure the project's investability, including:

- a clear market-based approach to setting cost of capital, reflective of contemporaneous market conditions;
- an acknowledgement that the lowest cost equity for the project would only be provided if coupled with key risk-mitigants, including predicable cash distributions to shareholders through the life of the project, accepting an efficient debt structure, carefully calibrated operational risk levels, and longer-term signalling of regulatory stability.

In contrast, these types of arrangements are noticeably absent from the Draft Determinations as they currently stand. In particular, Ofwat's approach to PR24 fails to recognise the importance placed by investors on predictable cash distributions, and the role this plays in securing finance at a low cost of capital.

A new approach will be needed for PR24 and beyond, since the levels of capital required in future AMPs far exceed the scale of Tideway.

There is a paradigm shift in the financing needs of the sector

The dramatic change in investment requirements in the water sector is seen in Ofwat's proposed TOTEX for AMP8 of £88bn, an increase of 49% over AMP7[3] which will take investment to unprecedented levels (despite a significant reduction from companies' business plans). This step-up in investment is expected to continue, with roughly £260bn of enhancement investment alone forecast between 2025 and 2050, based on companies' PR24 business plans and Long-Term Delivery Strategies.[4]

For context, the current industry regulatory capital value (RCV)[5] stands at £99bn.[6] This means that over the next 25 years, the sector expects to deliver an enhancements programme that is roughly three times the size of the sector's current RCV. In other words, the forecast enhancements

[2] See Thames Tideway Tunnel website, 'The Tunnel', https://www.tideway.london/the-tunnel/ (last accessed 27 August 2024).
[3] 'AMP' refers to 'Asset Management Period'. Since privatisation, each AMP has covered a discrete five-year control period (AMP7 covers the 2020–25 period, AMP8 covers the 2025–30 period, etc.).
[4] We calculate this figure from the values submitted by companies in the LTDS sections of the data tables provided alongside their October 2023 business plans.
[5] Regulatory Capital Value (or 'RCV') is a regulatory construct used by Ofwat when setting companies' price controls. It represents the total investment made by investors which is not immediately remunerated via pay-as-you-go revenues and which is yet to be depreciated.
[6] Ofwat (2024), 'Regulatory capital values 2024', June.

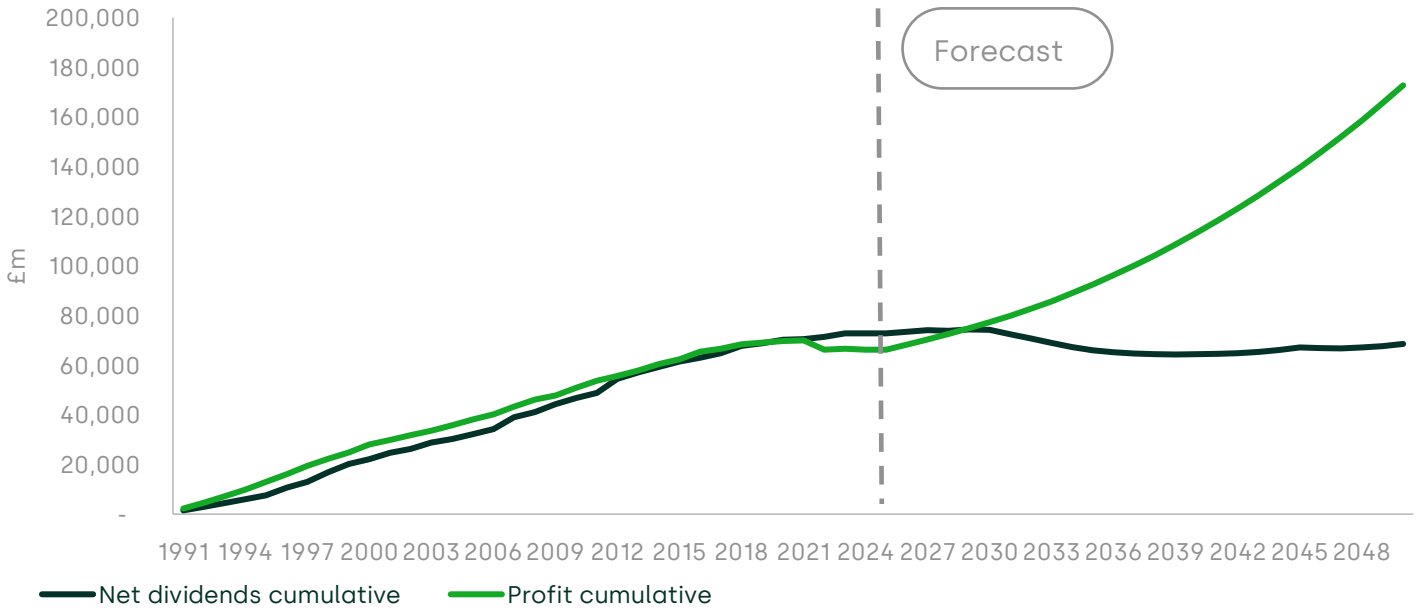
expenditure is comparable to the sector constructing ten Tideway projects per AMP for the next five AMPs, while continuing to operate, maintain and replace the existing asset base. This implies a real, compound annual growth rate in the industry RCV of over 5%.[7]

Supporting this investment will require unprecedented levels of new equity capital, with the sector estimating a short-term requirement for new equity of roughly £7bn, while Ofwat's own modelling suggests more than £4bn is needed over AMP8.[8]

Raising new equity on this scale has never been tested within Ofwat's regulatory regime. As shown in the figure below, since privatisation companies have not needed to rely on retained earnings to finance investment. In contrast, the industry is now entering a period in which new equity will be needed to finance investment, even if companies were to fully retain earnings (that is, equity injections would be required even if dividends were equal to zero). Accommodating such a paradigm shift for the sector requires strong investor confidence in the future regulatory regime, given the increasing levels of capital that investors will commit to—and will remain invested in—the sector.

[7] Assuming LTDS enhancement forecast and maintenance CAPEX equal to the RCV run-off rate.
[8] Ofwat's financeability assessment indicates that under the notional capital structure, companies will need to inject just over £4.0bn in new equity over AMP8. In contrast, companies' business plans suggest a need of around £5.8bn over AMP8, with more than £1bn in additional equity needed in advance of AMP8. See Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', 11 July, pp. 54 and 62–63.

Water companies' cumulative profits and net dividends since privatisation (2022–23 real)



Notes: Historical profits are based on current cost profit after tax. All dividends are net of equity injections. The forecast profits are based on RCV growth projections assuming LTDS levels of enhancement CAPEX and maintenance CAPEX equal to the RCV run-off rate, with profit equal to PR24 Draft Determinations return on equity multiplied by notional regulated equity. Net dividends are calculated as a residual assuming that all enhancement CAPEX must be financed by the notional proportion of debt and equity (55%).
Source: Oxera analysis based on Ofwat data, companies' annual reports and long-term delivery strategies (LTDS).

The wider backdrop to raising new equity at these levels is challenging. Investor perceptions of regulatory risk are high and increasing, as confirmed through investor engagement undertaken in preparing this report.[9] We show that the (even larger) UK energy infrastructure investment needs are underpinned by a regulatory regime seen as significantly more supportive by investors, with a similar view demonstrated by Moody's rating the stability and predictability of Ofgem's framework at Aaa while signalling a potential downgrade of Ofwat's regime to an A rating.[10]

[9] Oxera has undertaken extensive investor engagement to help inform this report, which we reference as the 'PR24 Investor Engagement' where relevant.
[10] Moody's (2024), 'Regulated Water Utilities—UK: Ofwat's draft determination increases sector risk', 14 August.

This backdrop is further complicated by growing evidence of a worldwide infrastructure investment gap, and the UK's attraction as a destination for private infrastructure investment recently reaching an all-time low by some measures.[11] Our investor engagement indicates that investors face multiple alternative options for the deployment of their capital, including sectors seen as more attractive from a risk–reward perspective that have capital requirements at least as great as UK water.[12] Hence, the sector needs to compete for capital, based on its perceived attractiveness and investor confidence.

How Ofwat can assess and ensure investability

Ofwat has acknowledged the need to attract new capital for investment:

> Investability. At any price review, it's vital that companies can access debt and equity markets, but more so at PR24 than perhaps any previous price review. And so we have given careful thought and changed our approach to setting the balance of risk and return.[13]

However, while Ofwat has introduced a 27bps 'aiming up' within its cost of equity range to set a 4.8% CPIH-real return, our analysis finds significant concerns with the investability approach taken and significant delivery risk, arising from a number of issues.

First, there is no explicit definition of investability that would have allowed Ofwat to systematically test potential risks to attracting equity. To address this, we propose the following definition of investability, based on established regulatory principles, economic research and market evidence:

> For a price control to be 'investable', **it must be highly likely that the company can attract and retain the equity capital needed** to deliver desired investment.

In other words, the question for Ofwat to address at PR24 is, based on the Draft Determinations proposed, whether companies will be able to

[11] GIIA (2023), 'Q4 pulse survey shows UK must 'make up ground' in global race for private finance for infrastructure', 20 November, https://giia.net/insights/q4-pulse-survey-shows-uk-must-make-ground-global-race-private-finance-infrastructure (last accessed 27 August 2024).
[12] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[13] Ofwat (2024), 'PR24 Draft Determinations: City briefing—transcript', July, p. 4.

raise equity from the capital markets in line with Ofwat's modelling, at the quantity required and in line with the assumed terms.

To meet this definition of investability, the regulatory contract must provide:

1 confidence that investors are able to recover their capital, plus a fair return, over the lifetime of the investment;
2 a profile of expected returns on equity that investors are willing to accept.

Investor feedback aligns with these key requirements, which are seen as fundamental to long-term infrastructure investment. However, investors see the Draft Determinations, other Ofwat decisions (e.g. enforcement action) and AMP7 outturn as casting doubt on them.[14]

Second, Ofwat needs to review its existing approach to assessing risks around new capital. The (debt) financeability assessment conducted by Ofwat does **not** constitute an assessment of whether the price control is investable. This is a distinction recognised—at least in principle—by Ofgem in its RIIO-3 Sector Specific Methodology Decision (SSMD), in which it says:

While there may be no explicit in-year cash costs that would threaten equity financeability, **investability considers whether the allowed return on equity is sufficient to retain and attract the equity capital that the sector requires… this issue is likely to be increasingly important in the coming years as the need to invest in infrastructure rises significantly** (for energy networks across the UK and globally) and companies are required to seek 'fresh' equity from their investors over and above what they would be able to fund via retained earnings.[15]

Third, the inadequacy of existing tests means Ofwat needs a clear framework for assessing investability. Although late in the PR24 process, given the unprecedented amounts of equity required Ofwat needs to urgently address the issue of investability. This requires recognising both its conceptual importance as a foundational aspect of the price control, and ensuring all aspects of its determinations promote investability.

[14] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[15] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, p. 100 [emphasis added].

While companies raised many aspects of investability earlier in the PR24 process,[16] these suggestions have largely not been adopted by Ofwat. The increase in spend expected—even after Ofwat's cuts to company plans—is an acknowledgment by the regulator of the sheer scale of change at this price review. However, the impact of this paradigm shift on the optimal regulatory approach was inadequately considered by Ofwat, both in the earlier stages of the price review process and within its Draft Determinations. For this reason, we are now proposing an investability framework that Ofwat can use to identify the changes needed to ensure its Final Determinations are investable.

We propose five key questions for assessing whether the price settlement is investable. These are ultimately intended to provide insight on i) the extent to which investors can expect to recover their capital plus a fair return on investment, and ii) the market's willingness to accept the investment proposition that is on offer. The five questions are as follows.

1 **Are Ofwat's assumptions around how equity financing is delivered realistic**, including assumed dividend reductions and/or equity injections?

2 **Is the base return set at an appropriate level**, such that the marginal investor is incentivised to commit equity capital?

3 **Does the calibration of the regulatory settlement provide a 'fair bet'** for investors, with a symmetric distribution of returns, such that the expected return equals the allowed return?

4 **Is the overall risk exposure reasonable**?

5 **What is the equity being used to finance/fund** (e.g. creation of assets versus bill subsidies for current consumers)?

Our review has identified material issues across each of these five areas. Given their importance to investability, Ofwat needs to satisfy itself that its Final Determinations adequately address the issues identified. This will require collecting robust evidence on whether

[16] For example, Ofwat notes that 'a number of companies have stated that our methodology focuses too much on debt financeability and suggested that there should be greater focus on equity financeability, given the need to attract significant amounts of investment into the sector […] A number of companies stated concerns with equity financeability, arguing that the allowed return and the overall balance of risk and return anticipated by the PR24 methodology would result in a determination package that would not be sufficient to attract equity'. See Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 49.

investors would be content to invest on the terms provided—such that companies can raise the equity needed—and making changes to its proposed price controls accordingly. Investor feedback highlights that confidence is being negatively affected by this not being seen to occur, and shows strong support for all five areas proposed.[17]

1) Equity finance delivery

Ofwat's financeability assessment relies on assumptions around the willingness of investors to inject equity into the sector. Its focus is on cash flows and equity requirements within the five years of AMP8. However, given the long-term investment requirements in the sector, Ofwat needs to understand whether over the long run there will be sufficient equity available to support the needs of the industry.

To answer this question, it is important not to treat investors in the abstract, but rather to understand the types of investors who are likely best placed to invest in the water sector. In particular, this requires an acknowledgement of **the 'clientele effect'**, whereby—as longstanding economic research demonstrates—investors prefer specific sectors based on different sectors' returns, risk and economic characteristics, and the objectives of heterogeneous groups of investors.

The current investor base in the England and Wales water sector seeks stable cash-flow investments and stable income streams. Past RCV growth, debt-raising potential and a steady rate of investment permitted satisfaction of the investor base's preferences. However, the combination of:

- a need for transformational levels of investment to improve environmental performance, replace assets and ensure security of supply;
- uncertainty on the precise nature and timing of future investment; and,
- constraints on companies' ability to finance investment via additional gearing, and in some cases to de-gear dramatically using equity funding that could otherwise finance RCV growth;

mean the sector is moving from a context of stable cash flows and income streams, to one with more uncertain cash flows and long-term capital gains. Successfully managing this transition will require a change

[17] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

in regulatory approach, which better understands and takes into account the marginal investor in water.

To meet its financing duty going forward, Ofwat needs to ensure that i) it satisfies itself that there is a pool of available investors that fit into that asset class, and ii) its estimated required returns are consistent with what this investor base requires.

Our analysis of water companies in England and Wales and European utilities demonstrates that these companies maintain dividends even when raising external equity. This raises doubts over Ofwat's assumption that companies can halve dividends while raising significant amounts of new equity, since the new investors are likely to have defined dividend requirements.

2) Appropriate base returns

This report does not assess Ofwat's cost of equity methodology in detail, nor the results it arrives at in its Draft Determinations. Nevertheless, there are some important investability considerations to be taken into account. Investor feedback is clear that Ofgem is seen as likely to offer better returns for lower risk in RIIO-3 and that better risk-adjusted returns are available in other markets, such as European energy networks or US water utilities.[18]

Crucially, UK regulators' approach to setting cost of equity using CAPM is often described as a **'through the cycle'** approach, which assumes investors' overall return requirements are reasonably stable over time. Regulators value this approach since it helps promote regulatory consistency over time, and may be more conducive to fairer longer-term outcomes for investors and customers over time.

However, while a 'through the cycle' approach may mean **existing** investors are fairly compensated over the long run, such an approach risks either under- or over-compensating investors at any one point in time, and risks the ability to attract **new** investors in any specific period. This risk has been specifically recognised by both the UK Regulators Network (UKRN) and Ofgem.[19,20] While Ofwat 'aims up' on allowed

[18] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[19] UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, pp. 19–20.
[20] Ofgem (2024), 'RIIO-3 SSMD Finance Annex', July, para. 3.265.

returns by 27bps in its Draft Determinations, it does not assess whether such an uplift is adequate.

Given the risk of undercompensating against current requirements, and the need for significant new capital in AMP8 and beyond, Ofwat's cost of equity methodology needs amending to take this into account. This will require undertaking more robust cross-checks based on market data, including appropriate differentials between the market cost of debt and equity, so that Ofwat can demonstrate that its allowed return on equity matches current market requirements. Investor feedback universally indicates significant concerns with the level of base returns—even if investors believed these could be earned—with most pointing to benchmarks materially above the Draft Determinations.[21]

3) Providing a 'fair bet' for investors

Beyond assessing whether the base return is adequate, investors will also assess whether they are likely to earn the base return, based on the overall risk/reward package. If investors determine that there is a downside skew in returns and that therefore the price control is not a 'fair bet', this will further compromise investability.

Evidence suggests there is a trend towards increasingly more significant downside skew over consecutive AMPs. Based on the latest APR data, all but two of the companies have overspent TOTEX allowances and paid net ODI penalties (including C-MeX and D-MeX) over the first four years of AMP7.

The Draft Determinations suggest a continuation of this trend in AMP8. Ofwat's own RoRE risk analysis identifies a downside skew in operational returns, with a mid-point of -20bp RoRE. We further find the downside skew is even larger than modelled by Ofwat, due to: cuts made to companies' requested TOTEX allowances; a combination of more stretching PCLs and higher-powered ODI rates; unrealistic assumptions about renewals activity funded through base expenditure allowances; and additional risk via PCD and reconciliation mechanisms. For example, if companies were to deliver their business-plan levels of service, there would be net penalties of £2.4bn across the industry, or an impact in annual RoRE terms of -1%.

[21] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

Given the extent of the issues identified by companies, some of which are discussed here, investors (across listed and unlisted companies) raised this as a key concern, at a higher level of risk than perceived in previous controls and amplified by the levels of underperformance seen in AMP7.[22]

To minimise these risks to investability, Ofwat must ensure its Final Determinations represent a 'fair bet'. This could be achieved by recalibrating incentives and targets 'at source', or making use of mechanisms which eliminate negative skew 'in the round', such as aiming up further on the cost of equity allowance or through asymmetric risk allowances.

4) Overall risk profile

In the presence of 'clientele effects', achieving a low cost of capital requires that regulators take account of investors' risk preferences. The nature of infrastructure capital is that it has a low tolerance for risk. Consequently, the scale of risk exposure—as well as the symmetry of the distribution—is an important regulatory consideration.

The distribution of returns is currently very wide, with reported RoREs ranging from +10.6% to -7.3% in the first four years of the current AMP.[23] Under the Draft Determinations for AMP8, companies' operational RoRE risk exposure range is +3.6% to -4.0%, according to Ofwat's estimates. This risk range is larger and more asymmetrical than the operational risk ranges for energy networks in RIIO-2 and is likely an underestimate, based on companies' outturn performance over AMP7 to date.

Ofwat has sought to address this problem via the Aggregate Sharing Mechanism ('ASM'). However, with combined ±5% ASM thresholds and a base return on equity of 4.80%, investors' equity returns could be negative before the mechanism even takes effect.

Investors agreed with this concern, making two distinct observations. First, that once risk exceeds a level compatible with core infrastructure investing, they may exit and be replaced by other classes of investors (as per the clientele effect referred to above). Secondly, investors noted that—in light of AMP7 experience (i.e. significant downside skew in companies' outturn performance)—Ofwat may not adequately address

[22] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[23] Compiled from Table 1F of companies' 2023/24 annual performance reports.

the 'fair bet' issue, such that higher risk levels will magnify any negative skew and exacerbate the unattractiveness of forecast returns.[24]

To ensure its determinations are investable and the companies can secure equity capital at the lowest possible cost, Ofwat needs to satisfy itself that the level of risk exposure is one which the existing investor base would be willing to accept.[25] Ofwat should therefore consider de-risking elements of the price control, for instance via more achievable performance commitments or lower-powered ODI rates, to reduce companies' risk exposure. It could also consider tightening the ASM thresholds, to provide greater sharing of upside and downside risks.

5) Use of proceeds

In its Draft Determinations, Ofwat reduces RCV run-off rates for certain companies to address perceived affordability concerns. This implies that Ofwat is expecting companies to raise equity to subsidise bills in AMP8, at a cost to future customers.

Ofwat's decision to adjust run-off rates in this manner adversely affects the investability of its Draft Determinations, by signalling a willingness to use financial levers to delay cost recovery in an unpredictable manner. Investability could be further undermined by Ofwat's suggestion that any resulting increase in AMP9 bills can be addressed via similar interventions at PR29,[26] particularly given the expected continued need to raise new external capital beyond AMP8.

While investors understood why Ofwat might look to mitigate bill increases, there were widespread concerns that historically, a bill minimisation approach over consecutive control periods had significantly contributed to a shortfall in investment levels, resilience and quality issues.[27] In addition, the altering of RCV run-off rates was seen as arbitrary, with their adoption insufficiently motivated and explained, raising the concern that this might be repeated in future, while negatively affecting the visibility of cash distributions and new investment economics.

[24] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[25] We note for comparison that Ofgem's 'RAM' mechanism in energy applies at thresholds of ±3% of RoRE, with higher levels of risk sharing at ±4%. The mechanism also applies to overall returns. See Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex (Revised)', February.
[26] Ofwat states that: 'Any increase to customer bills beyond 2030 will be spread over a number of years, and **there are options to similarly mitigate bills at the PR29 price review**'. See Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 44 [emphasis added].
[27] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

Given the importance of predictable cash flows to water sector investors, Ofwat should remove the RCV run-off adjustments that it proposes to address perceived affordability concerns. Ofwat should also consider whether it can credibly signal that it will avoid making similar adjustments in future price reviews, to help make its determinations more investable by providing greater certainty to investors.

Conclusion

We recognise that Ofwat is balancing competing objectives at PR24, including the need for services to be provided at the lowest possible cost and for investor compensation to be no higher than necessary. Achieving this balance is further complicated by the backdrop to PR24, given recent media attention and negative investor sentiment.

Nevertheless, Ofwat has a primary duty to ensure that companies can finance their activities—which clearly includes the ability to access external equity capital where needed—in addition to its general duties to promote the interests of future consumers and promote resilience.

Given the step change in investment required across multiple future AMPs, a change of mindset is needed to ensure a regulatory framework that is supportive of investment. While Ofwat has referenced investability in some of its investor communications, it has not developed or applied an explicit investability framework in its PR24 Draft Determinations. The development of such a framework is needed, to ensure the financing duty is being met.

The decisions Ofwat takes around key regulatory parameters dictate company cash flow and performance prospects, and—by extension—determine the investability of the sector. If implemented as proposed, Ofwat's Draft Determinations would likely result in material investability issues for the sector as a whole. Our framework for assessing investability allows the identification of practical steps Ofwat can take to address these issues in its Final Determinations.

As part of our investability assessment, Oxera has been engaging with over 30 major investors in the UK water and infrastructure sectors, from both the listed and unlisted markets. Universally, the investors spoken to have expressed severe concerns with Ofwat's approach to investability and the absolute level of risk and risk–return balance in the Draft Determinations. There are also major concerns around the dividend and gearing mechanisms, which risk being inconsistent with current investors' criteria. Disincentivising investors from staying in the sector,

potentially to be replaced by other investors with higher return requirements, risks materially increasing the sector's long-run cost of capital and consumer bills. To ensure this will not occur, Ofwat needs to assure itself that these concerns are either unfounded, or have been suitably addressed by changes it makes in its Final Determinations.[28]

A failure to adequately address the issues identified presents a material risk that the required infrastructure capital—in particular, new equity—will not be forthcoming. This would hamper the sector's ability to deliver the environmental and service improvements expected of the sector by its consumers and other stakeholders, and would not be in the public interest.

[28] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

1 Introduction

On 11 July 2024, Ofwat published its PR24 Draft Determinations.[29] These outline the regulator's views on the investment plans proposed by water and wastewater companies in England and Wales over the 2025–30 period (i.e. AMP8).

Companies need to deliver a large increase in investment in the coming five-year period, and in future periods, in order to comply with their legal obligations. Ofwat has set its Draft Determinations with a view to promoting four specific objectives, namely; improving the environmental impact of the industry, protecting the water system, guaranteeing equitable bills for customers and improving levels of service.[30]

Ofwat's Draft Determinations make allowances for TOTEX of £88bn over the period 2025–030, which compares with £59bn over 2020–25. This 49% increase is unprecedented by historical standards and, combined with the high levels of enhancement forecast in subsequent AMPs, raises questions around companies' ability to access the requisite finance and the role that equity is expected to play in this.

Within this context, Water UK has instructed Oxera Consulting LLP ('Oxera') to provide advice regarding the 'investability' of the water sector, assuming Ofwat's PR24 Draft Determinations are implemented as proposed. To do this, we first outline a framework for assessing the investability of a regulatory settlement. We then assess the Draft Determinations against this framework.

Our report is structured as follows:

- section 2 summarises **the backdrop to PR24**, and why this means assessing investability is key to setting Final Determinations for the sector;
- section 3 outlines **a framework for assessing investability** within the water sector, and identifies five specific questions which should be addressed as part of this assessment;
- section 4 considers whether **Ofwat's assumptions around how equity finance is delivered** are realistic;

[29] See Ofwat website, 'Draft Determinations', https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/draft-determinations/ (last accessed 27 August 2024).
[30] Ofwat (2024), 'Our draft determination for the 2024 price review', 1 July, p. 3.

- section 5 considers whether **the base return** has been set at the appropriate level;
- section 6 consider whether the price control as a whole is a **'fair bet'**;
- section 7 considers whether **the overall level of risk exposure** is reasonable;
- section 8 considers **what the new investment is financing**; and,
- section 9 outlines the specific **changes Ofwat should implement** to ensure its Final Determinations are investable.

In the process of preparing this report, we have conducted a series of interviews with current and potential investors in the sector to understand their views on Ofwat's regulatory framework, the contents of the Draft Determinations and the outlook for the sector more generally. These interviews have informed the conclusions laid out in this report and are referenced accordingly.

2 Why the PR24 backdrop means a focus on investability is necessary

2.1 Future investment requirements in the water sector have increased considerably relative to historical levels

When the England and Wales water sector was privatised in 1989, sector-wide expenditure over the previous two decades had averaged around £6bn per year (split roughly one third CAPEX and two thirds OPEX).[31] Following privatisation, TOTEX increased to around £11bn per year on average, with levels of expenditure remaining roughly constant across control periods.

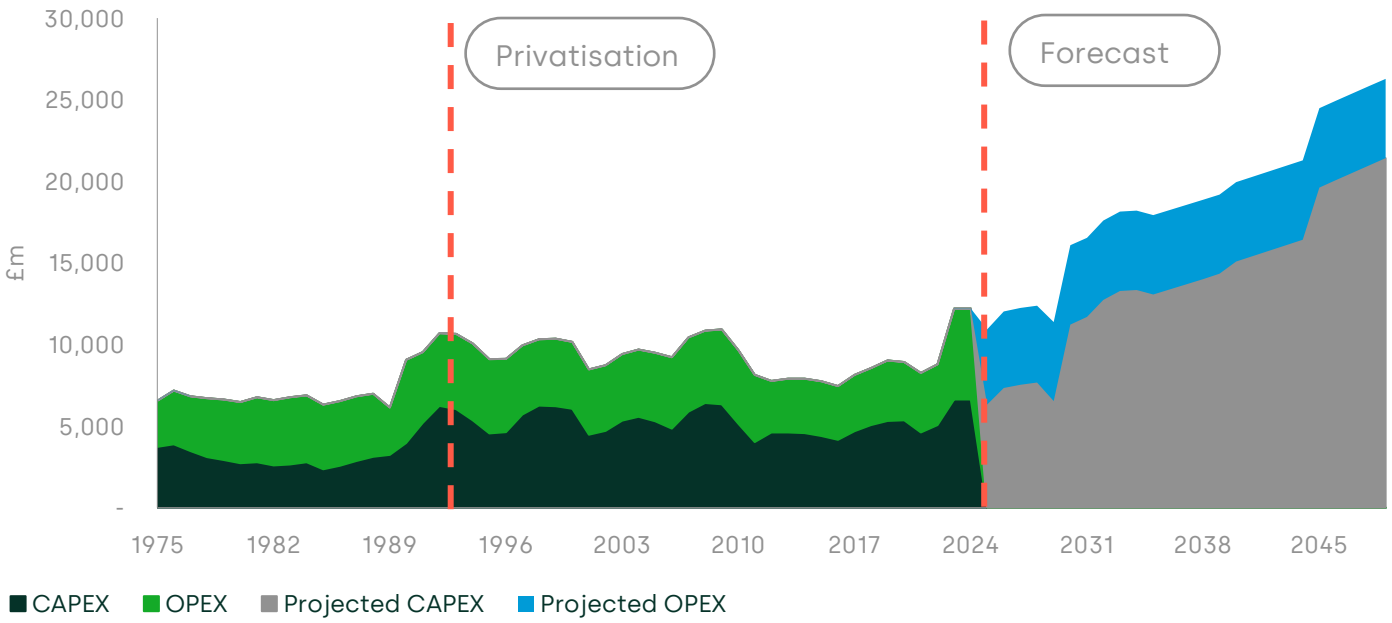
The industry now faces a very different investment outlook. This is driven by factors including climate change and population growth, as well as changes in government policy that seek to address these challenges.

For AMP8 alone, companies put forward plans proposing around £105bn of spend over the five-year period (2025–30). While Ofwat's Draft Determinations allow for only £88bn of this projected spend, this would still amount to nearly £18bn per year, a sizeable increase compared to historical expenditure.

Critically, this step change in investment is not confined to AMP8 alone. This is reflected in the Long-Term Delivery Strategies that companies provided as part of their PR24 submissions, as shown in the figure below.

[31] Assuming a 2020 price base.

Figure 2.1 WASC historical and projected spend (2020-real)



Note: expenditure forecast based on PR24 Draft Determinations for AMP8 and LTDS forecast enhancement CAPEX for the following periods. For AMP9 onwards maintenance CAPEX is assumed equal to the RCV run-off rate. All new CAPEX from AMP9 assumed to be financed by notional capital split at 55%. OPEX forecast is based on the Price Control Financial Models up to 2030, and is then assumed to remain constant thereafter.
Source: Oxera analysis based on Ofwat data.

While the exact scope of future investment requirements is uncertain and will not be known for some time, the sector clearly expects to deliver transformational levels of investment in the coming years.

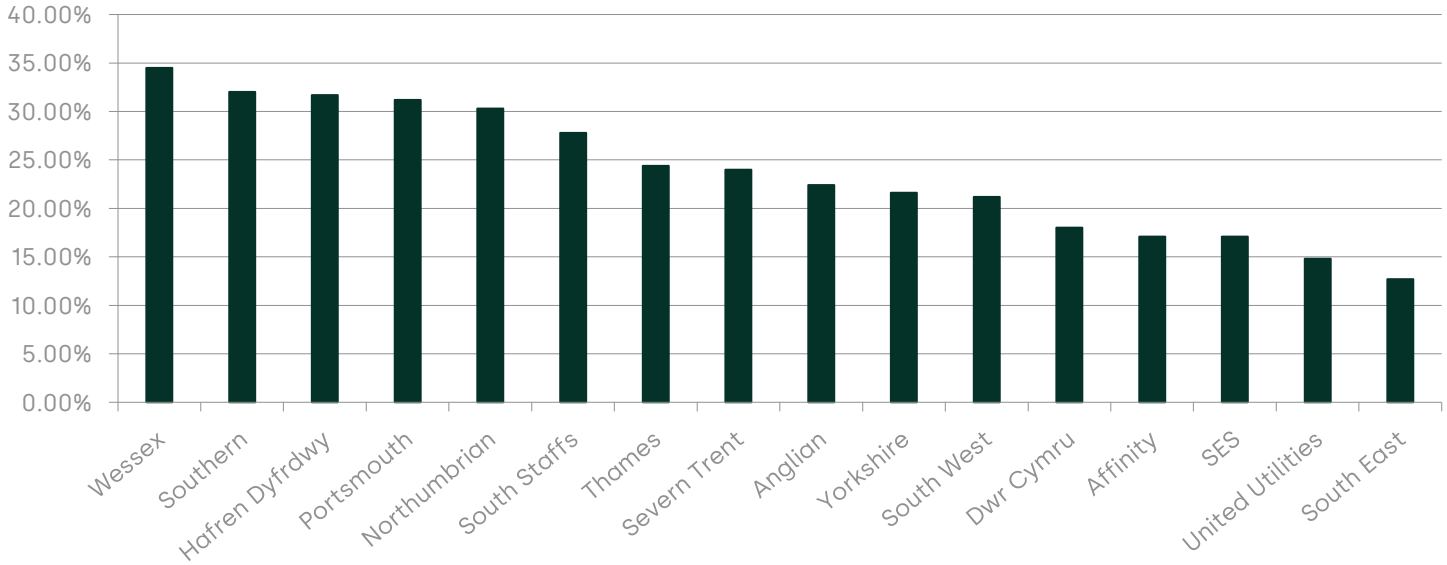
More specifically: based on their PR24 business plans and Long-Term Delivery Strategies, companies forecast around £260bn of enhancement investment alone from AMP8 through to the end of AMP12.[32] This means the sector expects to deliver approximately 10 Thames Tideway projects per AMP for the next five AMPs, while continuing to operate, maintain and replace the existing asset base.

Another way of contextualising this step change in investment is with reference to the industry RCV, which currently stands at £99bn.[33] Over the next 25 years, the sector expects to deliver an enhancements programme roughly three times as large as the sector's current RCV.

[32] Based on values submitted in companies' LTDS sections of the data tables provided alongside their October 2023 business plans.
[33] Ofwat (2024), 'Regulatory capital values 2024', June.

Under Ofwat's Draft Determinations, 11 companies would experience real terms Regulatory Capital Value (RCV) growth exceeding 20% over AMP8 (see the figure below). Real RCV growth for the sector ranges between 11% and 34%.

Figure 2.2 Projected real RCV growth in AMP8 (under Ofwat's DD)



Source: Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix, 11 July, p. 54.

2.2 Financing this RCV growth will require significant new equity and debt

To deliver this investment programme, water companies need access to significant amounts of new debt and equity capital. Indeed, across their PR24 business plans, companies put forward new equity requirements of:

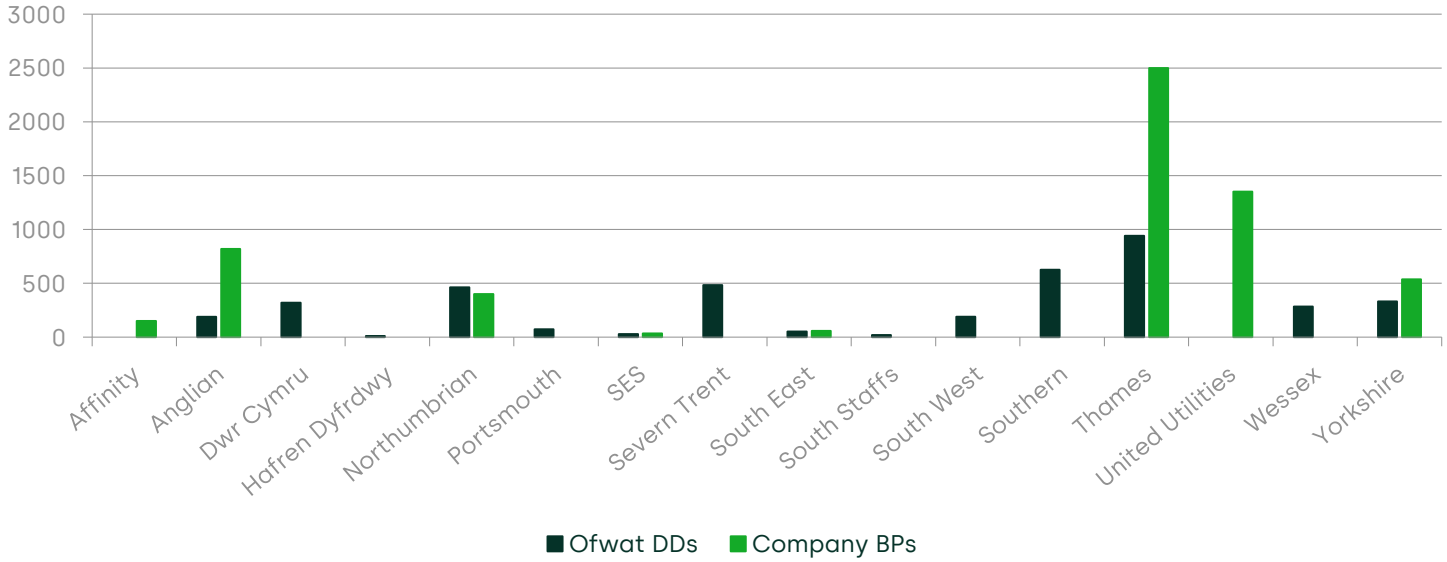
- roughly £5.8bn over AMP8; and,
- an additional c.£1.2bn prior to 2025.[34]

This implies a short-term requirement for new equity of roughly £7bn. Ofwat's own financeability modelling also relies on an assumption that

[34] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', 11 July, pp. 62–63.

companies will inject significant amounts of equity (c. £4bn[35]) over AMP8, as shown in the figure below.

Figure 2.3 Ofwat's modelled equity injections in AMP (£'000)

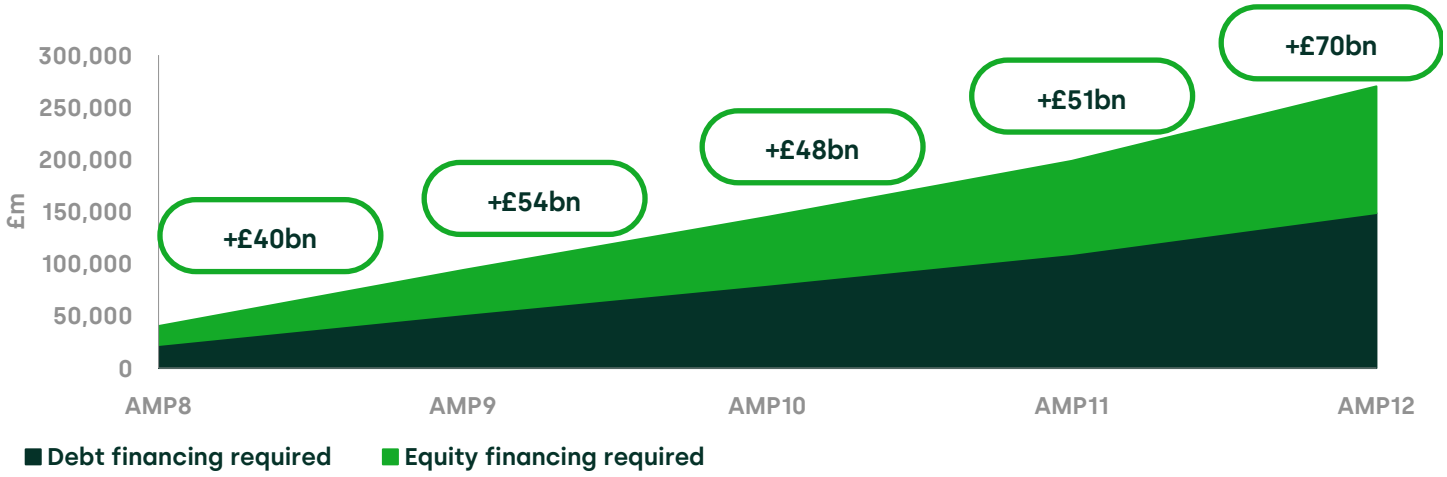


Source: Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix, 11 July, pp. 54 and 63.

Large equity requirements are expected to persist beyond AMP8, as shown in the figure below. [36]

[35] Ofwat's figures differ from those in companies' business plans as the former assume a lower level of TOTEX over AMP8, and reflect the assumptions for the notional company in Ofwat's financeable assessment (including that companies adopt the notional capital structure, and that if gearing exceeds 57.5% dividends are reduced to 2% before new equity is injected).
[36] These figures are distinct from those cited at the start of section 2.2, as these include both new equity issuance and retained earnings (whereas the figures cited earlier relate exclusively to new equity issuance). In addition, the figures from companies' business plans will reflect bespoke assumptions regarding shareholder distributions and reflect companies' actual capital structures.

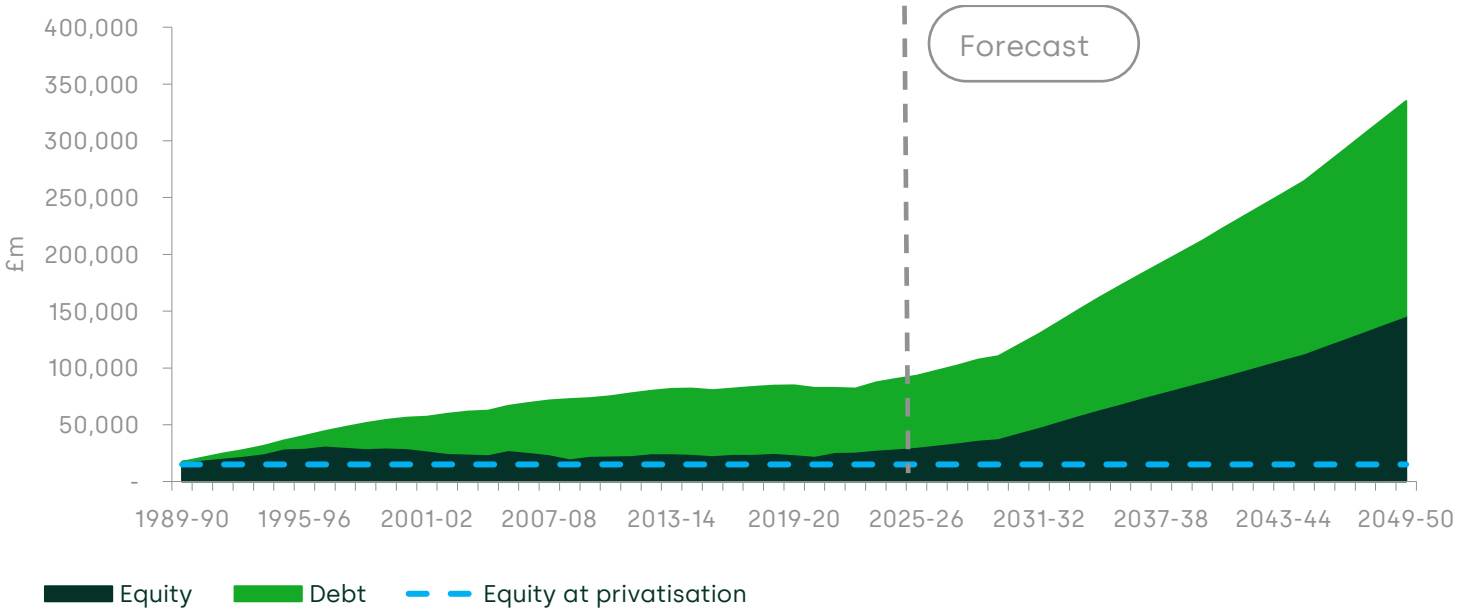
Figure 2.4 Long-term delivery strategies projected cumulative enhancement programme financing needs (2022/23 real)



Source: Oxera based on companies' long-term delivery strategies (LTDS).
Note: total LTDS enhancements assumed to be financed by a notional split of debt and equity at 55%. Chart shows gross financing requirements, irrespective of whether these are sourced via retained earnings or newly issued equity.

The need for equity on this scale represents a paradigm shift for the sector. Since privatisation, RCV growth has largely (though not entirely) been debt financed, as shown in the figure below. This highlights how raising new equity on the scale Ofwat anticipates has not previously been tested within Ofwat's regime.

Figure 2.5 WASC RCV since privatisation, split by debt and equity (2022–23 real)

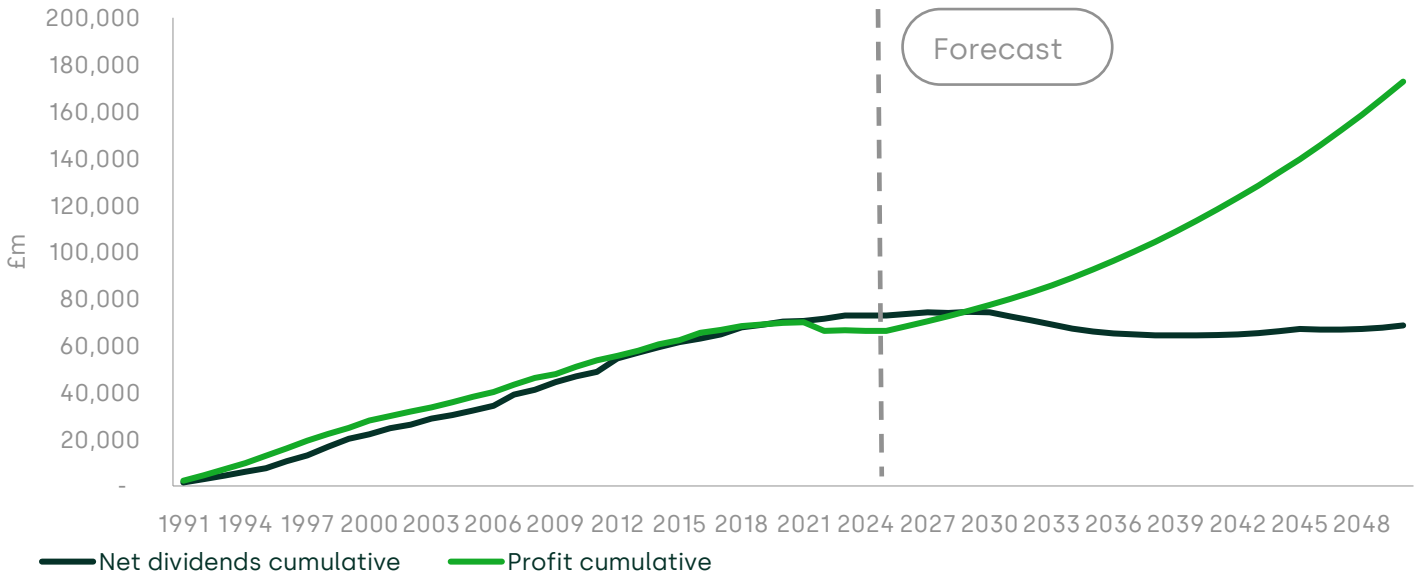


Source: Oxera analysis.
Note: RCV growth forecast based on PR24 Draft Determinations for AMP8 and LTDS forecast enhancement CAPEX for the following periods, for AMP9 onwards maintenance CAPEX is assumed equal to the RV run-off rate, all new CAPEX from AMP9 assumed to be financed by notional capital split at 55%. 'Equity at privatisation' refers to equity on companies' balance sheets at the point of privatisation.

The extent of this paradigm shift is further evidenced based on expected future cash flows.

As shown in Figure 2.6, historically the sector as a whole has retained limited earnings and has paid stable dividends. In contrast, under Ofwat's proposals, the sector would enter a phase of negative net cash flow to equity, whereby companies would need to raise equity even if dividends were set to zero. This represents a fundamental shift in the investment proposition, with water company investors having to make new capital commitments on a regular basis, requiring an assessment of Ofwat's regime against future investment benchmarks, which will vary over time. As a result, Ofwat needs to assure itself of investment attractiveness on an ongoing basis as well.

Figure 2.6 Water companies' cumulative profits and net dividends since privatisation (2022–23 real)



Source: Oxera analysis based on Ofwat data, companies' annual reports and long-term delivery strategies (LTDS).
Note: historical profits are based on current cost profit after tax; all dividends are net of equity injections; the forecast profits are based on RCV growth projections assuming LTDS enhancement CAPEX and maintenance CAPEX equal to the RCV-runoff rate with profit equal to PR24 Draft Determinations return on equity multiplied by notional proportion of regulated equity, net dividends are calculated as a residual assuming that all enhancement CAPEX must be financed by notional proportion of debt and equity (55%).

Investors' concerns around this paradigm shift are likely to be amplified by uncertainty regarding the precise scope and timing of future investment requirements. Without knowing the precise scope of the sector's future CAPEX programme, it is difficult for investors to ascertain when the sector will revert back to positive net cash flow to equity. Several investors referred by analogy to Thames Tideway where the entire programme of work had clear definition and funding for its entirety, along with sufficient certainty on returns, risk, distributions and capital structure to permit investors' assessment. In contrast, investors' noted that five-year price controls leave greater levels of uncertainty, which the adoption of a clear investability framework would start to address.[37]

[37] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

2.3 This new financing needs to be raised at a challenging time for the sector

In addition to being unprecedented by historical standards, this financing requirement comes at a time when investors' views on the sector—including levels of investment risk and the outlook for returns—are likely to be negatively influenced by a number of factors.

First, a large number of companies have been unable to meet the performance targets set by Ofwat at PR19 and the sector has, on average, received ODI penalties over the first four years of the AMP, based on the latest APR data published in July 2024. All companies have also overspent their TOTEX allowances over the course of AMP7 to date. The scatter plot below shows that all but two companies have recorded a combination of both ODI penalties and TOTEX overspend between 2020/21 and 2023/24.

Figure 2.7 TOTEX and ODI performance in RoRE terms (2020/21–2023/24)

Source: Oxera based on Ofwat's Monitoring Financial Resilience datasets and company APR data.

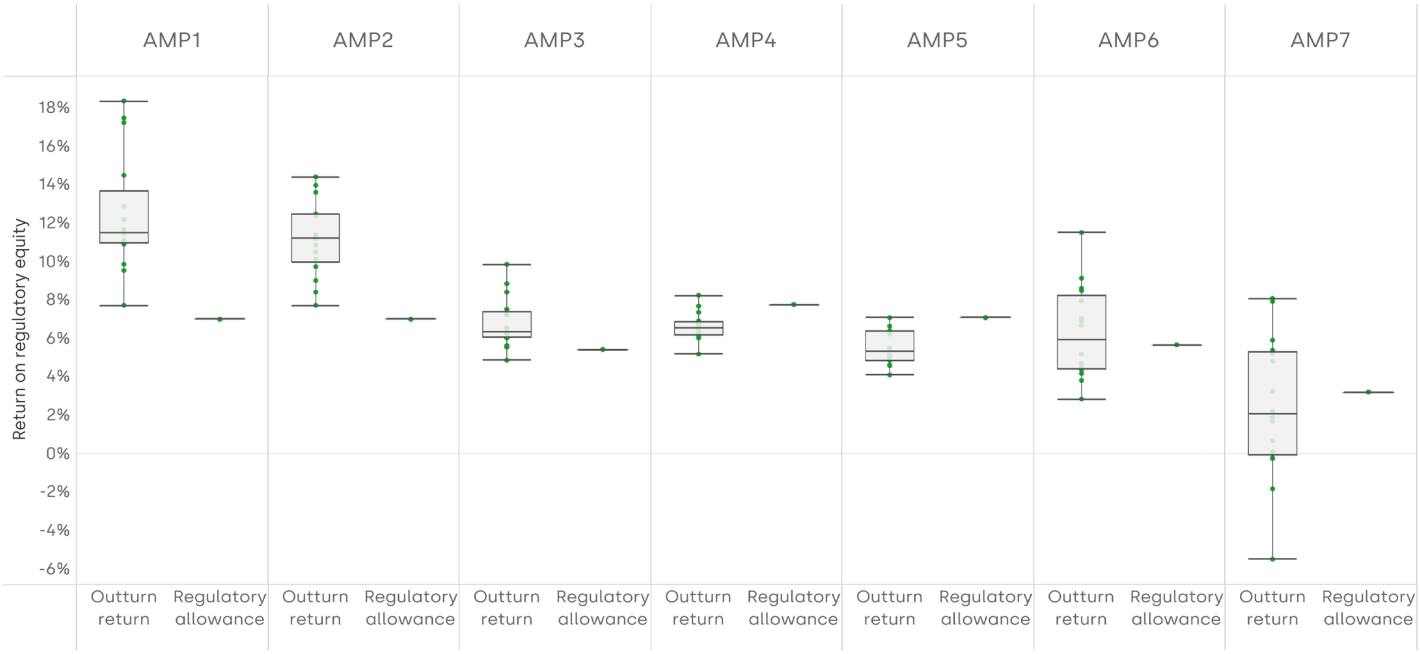
Second, there is a trend of declining and increasingly volatile investor returns in the water sector over consecutive AMPs. This is shown in the figure below, which plots the distribution of outturn returns on regulatory equity, relative to the allowed return on equity, for each of the seven AMPs to date. The figure shows that in AMP7:

1 the average[38] outturn RoRE across companies is at its lowest level of any AMP to date;
2 the average outturn RoRE is below the regulatory allowance—i.e. companies are under-performing the base return on average;

[38] Both mean and median.

3 the distribution of returns is very wide, with considerable variance around the base return on equity.

Figure 2.8 Trends in the return on regulatory equity over time



Source: Oxera analysis.
Notes: we show the 'return on capital employed' value reported in Ofwat's financial performance and expenditure reports up to AMP6. From AMP6 onwards we use the Return on Regulatory Equity as reported in Ofwat's Monitoring Financial Resilience reports. AMP6 based on the data underpinning Ofwat (2020), 'Monitoring financial resilience report', December, p. 12. AMP7 based on the average Return on Regulatory Equity reported across the three AMP7 Monitoring financial resilience reports to date and the values reported in companies' 2023/24 APR within table 1F.17 (RoRE). Allowed return on equity deflated in RPI-real basis for consistency across regulatory periods. The regulatory allowance shown in each AMP represents the Ofwat's CoE allowances. For AMP7, we show the PR19 Final Determination allowance, although we note that several companies received a CoE allowances in excess of this through a Small Company Premium (PRT and SSC), and the four companies that appealed the PR19 Final Determination also received a higher CoE allowance.

This has been recognised by investors and was widely referred to as a source of significant concern, in light of the downside skew, overall levels of risk and inadequacy of returns as seen by the investors with whom we have engaged.[39]

[39] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

Third, the PR24 price review is taking place at a time when the largest water network, Thames Water, is experiencing financing issues, with several of its existing equity investors writing off their stakes and increasing speculation that the special administration regime may be triggered for the first time.[40] The company's bonds have been trading at a significant discount to par value, and the (operating) company's debt was recently downgraded to 'junk' status by Moody's and S&P.[41,42] This has created uncertainty within the sector, including concerns about potential contagion risk.[43]

In addition, we note the sector has received considerable negative media attention—as well as regulatory scrutiny—over its environmental track record. The Environment Agency and Ofwat have conducted investigations into companies' wastewater activities, and Ofwat recently announced its provisional decision to fine Thames Water (£104m), Yorkshire Water (£47m), and Northumbrian Water (£17m) relating to management of their wastewater works and networks.[44] These proposed penalties equate to 9%, 7% and 5% of turnover from the companies' respective wastewater businesses. Irrespective of the justification for these fines, they are likely to influence investors' perceptions of the financial and reputational risks associated with investing in the water sector.[45] Feedback we have gathered from investors suggests this is seen as a particularly difficult issue, attracting significant reputational risks around any decisions to enter the market or commit new capital.[46]

2.4 These financing challenges are exacerbated by increasing competition for infrastructure capital

Finally, it is important to realise that water companies will need to raise this finance at a time when demand for infrastructure capital is

[40] Plimmer, G. and Cumbo, J. (2024), 'Thames Water's biggest shareholder writes off investment', *Financial Times*, 17 May; Morison, R. and Chandler, A. (2024), 'Thames Water Stake Written Off by Australian Shareholder', *Bloomberg*, 23 July.
[41] Moody's (2024), 'Rating Action: Moody's Ratings downgrades Thames Water's CFR to Ba2, outlook negative', 24 July.
[42] Kar, T. and Morpurgo, G. (2024), 'Thames Water Cut to Junk by S&P, Following Moody's Move', *Bloomberg*, 31 July.
[43] For example, Dominic Nash and Peter Crampton of Barclays are cited in the *Financial Times* as saying: 'We consider that the Thames Water situation may have broader severe sector ramifications. Failing to preserve Thames Water's investment grade status and exposing the senior opco bondholders to material losses would lead debt investors to question the resilience and the sustainability of the UK water regulatory framework'. Plimmer, G. (2024), 'Investors fear Thames contagion, Barclays says', *Financial Times*, 23 April.
[44] Ofwat (2024), 'Thames, Yorkshire and Northumbrian Water face £168 million penalty following sewage investigation', 6 August.
[45] We note Ofwat announced in July that it had extended enforcement cases against all 11 wastewater companies in England and Wales. See Ofwat (2024), 'Ofwat announces enforcement cases against four more companies in wastewater treatment investigation', 16 July.
[46] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

increasing across the UK, Europe and Internationally, another point raised strongly by investors. [47]

2.4.1 Competition for infrastructure capital in the UK

The need to finance infrastructure investment in the UK is well documented. Recent estimates suggest an infrastructure investment shortfall in energy, transport and housing infrastructure at £615 billion.[48] According to the National Infrastructure Commission, private sector investment in infrastructure will need to increase from around £30-40bn per year over the last decade to £40-50bn per year in the 2030s and 2040s.[49]

Within the UK, infrastructure investors are being expected to fund over £300bn in energy transmission and distribution networks over the period 2025–50.[50] This has led to large near-term financing requirements, including National Grid's £7 billion rights issue this year[51] and Iberdrola's recent £4bn acquisition of Electricity North West.[52]

There is also competition for capital from other parts of the energy value chain, beyond the regulated networks. One example is the UK's **offshore wind** sector: where committed investment to date is approximately £70bn, though these commitments are yet to be funded.[53] These commitments have been made by a similar investor base to that which might be expected to invest in the water sector, including—for example—infrastructure funds.[54]

The offshore wind sector also offers an illustration that when investment terms offered are uneconomic, levels of investment can collapse. This was the case for Auction Round 5, which took place in 2023: despite warnings from industry that the maximum strike price had

[47] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[48] Investment Delivery Forum (2023), 'UK faces £615 billion infrastructure investment challenge', press release, 6 November, https://idforum.org.uk/wp-content/uploads/2023/11/Investment-Delivery-Forum-REL-Infrastructure-Investment-Challange-Press-Release-06.11.23.pdf (last accessed 1 August 2024).
[49] National Infrastructure Commission (2023), 'The Second National Infrastructure Assessment', October, p. 16.
[50] Oxera projection based on Ofgem Price Control Financial Models, Ofgem Accelerated Strategic Transmission Investment framework projected spend and National Grid ESO (2024), 'Beyond 2030', March. Figure in 2024 real price base.
[51] Morningstar (2024), 'TOP NEWS: National Grid gets 90% acceptances for GBP7 billion raise', 12 June, https://www.morningstar.co.uk/uk/news/AN_1718178440223329200/top-news-national-grid-gets-90-acceptances-for-gbp7-billion-raise.aspx#:~:text=National%20Grid%20said%20it%20received,in%20London%20early%20on%20Wednesday (last accessed 27 August 2024).
[52] Iberdrola (2024), 'Iberdrola acquires €5 billion valued Electricity North West in the UK', 2 August, https://www.iberdrola.com/press-room/news/detail/iberdrola-acquires-5-billion-valued-electricity-north-west-in-the-uk (last accessed 27 August 2024).
[53] Low Carbon Contracts Company (2024), 'ANNUAL INVESTOR ANALYIS 2024', p. 8.
[54] We provide more details on water sector investors in section 4.

been set too low, the government proceeded with the terms of the auction unchanged.[55] As a result the action attracted zero bids by investors for new offshore wind investments, down from an average of over £10bn in commitments secured in each of the preceding rounds.[56]

2.4.2 International competition for infrastructure capital

There is also extensive evidence of a worldwide infrastructure investment gap. Globally, this gap has been estimated at $15tn across all sectors to the end of 2040,[57] $713 bn of which is for the water sector.[58] The level of financing required to plug these shortfalls is driving the growth of infrastructure as a global asset class.

This global demand for capital has grown in recent years, not least because of major investment incentives provided in the US. This includes programmes such as:

- **the Infrastructure Investment and Jobs Act of 2021**—which commits delivery of $1.2 trillion of public funding to infrastructure; and,
- **the Inflation Reduction Act of 2022**—which provides US$369 billion in funding for energy and climate related projects.[59]

Programmes such as these are creating further opportunities for investors for direct and indirect private investment in 'core'[60] infrastructure, driving competition for private capital in other comparable markets.

Likewise, core infrastructure investors are also able—and will be under pressure—to invest in major European markets, which are seen as having lower political and regulatory risk than England and Wales water. For example, significant energy network investment is expected in Germany in the coming decades, with the German state-owned investment and

[55] Institute for Government (2023), 'Failed wind auction takes the shine off a big UK success', 14 September, https://www.instituteforgovernment.org.uk/comment/failed-wind-auction (last accessed 27 August 2024).
[56] Low Carbon Contracts Company (2024), 'ANNUAL INVESTOR ANALYIS 2024', p. 5.
[57] Global Infrastructure Hub (2018), 'Forecasting infrastructure investment needs and gaps' (last accessed 1 August 2024).
[58] Global Infrastructure Hub (2018), 'Forecasting infrastructure investment needs and gaps' (last accessed 1 August 2024).
[59] Goldman Sachs (2023), 'Infrastructure: an Evolving Asset Class', https://privatewealth.goldmansachs.com/public/ACM-Infra-Primer_vFinal.pdf (last accessed 1 August 2024).
[60] 'Core' infrastructure typically refers to little-to-no risk operational assets in developed countries, often with long-term government contracts providing stable cash flows. See Goldman Sachs (2023), 'Infrastructure: an Evolving Asset Class', https://privatewealth.goldmansachs.com/public/ACM-Infra-Primer_vFinal.pdf (last accessed 1 August 2024).

development bank KfW estimating a requirement of nearly €500bn up to 2045, across distribution, transmission and offshore networks.[61]

Investment opportunities of this type were highlighted regularly in Oxera's investor engagement, with pressure from investment and risk committees to prioritise these markets over England and Wales water being flagged by multiple investors.[62]

Taken together, this demonstrates the intense competition for infrastructure capital which water companies face—both domestically and abroad—going into PR24. This highlights the importance of ensuring the PR24 settlement provides an investable package to investors, given other investment opportunities they face, as noted by Ofgem in its recently published methodology decision for RIIO-3.[63]

2.5 Summary—why investability matters

The investment requirements in the water sector will be significantly higher in the future than have been seen in the past. This is not simply the case of a one-off increase in AMP8, but rather a sustained change that will continue over multiple AMPs. To deliver this step change in investment, water companies will need to raise more debt and equity finance over the coming years than at any time since privatisation. Without this, companies will be unable to deliver the environmental and service improvements expected of them, to the detriment of water customers.

The need for new equity comes at a time when the sector is under high public scrutiny and faces considerable risks, while facing strong competition for capital worldwide. We note, in particular, that the UK energy sector has a similarly large investment requirement and is competing for the same pools of capital.[64]

The long-term investment challenge means that this is not a 'turn the handle' price review. Raising this amount of equity has not previously been tested within Ofwat's regime. This raises questions as to whether the regulator's usual assessments when setting price controls remain

[61] KfW (2022), 'Public investment required to achieve climate neutrality in Germany', 19 July, https://www.kfw.de/About-KfW/Newsroom/Latest-News/News-Details_719296.html (last accessed 27 August 2024).
[62] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[63] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, p. 100.
[64] For example, in order to reach net zero, the second national infrastructure assessment identified private sector investment of £20bn–£35bn per year between 2025 and 2050 in renewable generation, electricity networks, hydrogen and carbon capture. National Infrastructure Commission (2023), 'The Second National Infrastructure Assessment', October, p. 16.

appropriate, or whether Ofwat's financing tests may not be sufficient to provide assurance that the price settlement is investable.

The switch to negative net cash flow to equity fundamentally changes the investment proposition, since dividend-paying stock owners now need to provide new capital on a regular basis, or sell their water company stakes to other classes of investors with potentially higher return requirements. Investors in England and Wales water will need confidence that they will be able to recover their investment in the future—plus a fair rate of return—in the face of considerable uncertainty.

Given this context, it is more important than ever for Ofwat to consider the extent to which its price control package is investable, and is consistent with attracting the long-term equity investment that will be needed to enhance and replace the existing networks. Careful consideration needs to be given to how the sector will finance the requirements in AMP8 and beyond, and the extent to which the package is attractive to investors, to avoid the risk of dramatic declines in investor support, as seen recently for UK offshore wind.

3 How should Ofwat assess investability?

The previous section explained why it is critical for Ofwat to consider the investability of its Draft Determinations. However, undertaking this assessment requires a clearer definition of investability, and the framework that Ofwat should deploy to assess whether the regulatory settlement is investable.

In particular, we recognise there is a question as to what analytical or evidential gaps there are in Ofwat's existing framework (including the financeability assessments that it undertakes as part of its price setting process), which need to be bridged in order to be assured that the outcome is investable.

In this section, we seek to develop thinking in this area by:

- providing **a conceptual definition of investability**, based on economic theory and first principles;
- explaining why **investability is a stricter test than debt financeability**; and,
- outlining **five specific questions for Ofwat to consider** when assessing whether its Draft Determinations are investable.

3.1 A conceptual definition of investability

As noted earlier, unprecedented amounts of equity capital will be needed to finance future RCV growth, both in AMP8 and beyond. The levels of investment and equity financing that will be required represent a paradigm shift for the sector. PR24 is different from previous price reviews in this respect, since the appetite of investors and the depth of the market for financing UK regulated water assets has never been tested on this scale.

Although the word 'investability' does not directly appear in Ofwat's 'aligning risk and return' documents, the regulator has referred to the concept in its investor communications.

'Investability. At any price review, it's vital that companies can access debt and equity markets, but more so at PR24 than perhaps any previous price review. And so we have given careful thought and changed our approach to setting the balance of risk and return.'[65]

[65] Ofwat (2024), 'PR24 Draft Determinations: City briefing—transcript', July, p. 4.

However, Ofwat has not at this stage set out its view on how investability should be defined, and the framework for assessing whether a price control is investable. Given the scale of the investment required over consecutive AMPs, a clear definition and framework for assessing investability is now needed.

Based on this context, we propose the following definition of investability:

For a price control to be 'investable', **it must be highly likely that the company can attract and retain the equity capital needed** to deliver desired investment.

In other words, for PR24 Ofwat must ask itself whether, based on the determination it sets, companies are able to access the capital markets to raise the equity in line with Ofwat's modelling, at the quantity required and in line with the assumed terms.

In high level terms, any price control settlement which meets this definition must:

1 provide **confidence that investors will be able to recover their capital**, plus a fair return, over the lifetime of the investment; and
2 provide **a profile of expected returns on equity** which investors are willing to accept.

While the second point may appear intuitive, it is important to recognise that traditionally, economic regulators have placed limited attention on the assumed profile of returns**.** This is because regulators usually assume that by setting an allowance for the cost of equity which reflects investors' exposure to systematic risk—usually via CAPM—equity investment will always be forthcoming.

This thinking by regulators is driven to a large extent by **Modigliani–Miller Dividend Irrelevance theory**. The theory—outlined in Box 3.1 below—postulates that the value of a firm is determined solely by its earning power and the risk of its underlying assets, not by how it distributes its earnings between dividends and retained earnings.

Box 3.1 Modigliani–Miller (MM) Dividend Irrelevance Theory

The MM dividend irrelevance theory posits that, in a perfect market without taxes, transaction costs, or asymmetric information, the value of a firm is unaffected by its dividend policy.

In other words, **whether a company pays dividends or retains earnings for reinvestment does not influence its overall value or the wealth of its shareholders**. The theory suggests that if a firm pays out a portion of its profits as dividends, its stock price will drop by the same amount, leaving shareholders in the same position as if no dividend had been paid. The theory further suggests that investors can mimic dividend payments or reinvestments according to their preferences, since:

- If an investor prefers dividends, they can create a 'dividend' by selling a portion of their shares to generate cash, essentially creating their own dividend.
- Conversely, if the firm pays a dividend but the investor prefers the firm to retain earnings, the investor can reinvest the dividend by purchasing more shares

Source: Oxera based on Miller, M. and Modigliani, F. (1961), 'Dividend policy, Growth, and the Valuation of Shares', *The Journal of Business*, **34**:4 (Oct. 1961), pp. 411–433.

In a PR24 context, the implication of this theory is that investors will always be forthcoming, as long as:

- the allowed cost of equity is set at the appropriate level; and,
- other price control parameters (e.g. TOTEX allowances) enable cost recovery.

It is for this reason that traditionally, after setting the parameters of their price controls—including performance commitment levels, TOTEX allowances and the allowance for the cost of capital—regulators tend to limit their checks to a debt financeability assessment.

3.2 Ofwat's financeability assessment is insufficient to conclude that the price control is investable

The Water Industry Act 1991 sets out a primary duty for Ofwat to regulate in the manner that it considers is best calculated to secure that companies 'are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of [their] functions'.[66]

In complying with this duty, Ofwat undertakes an explicit financeability test when setting companies' price controls. The purpose of this test is to assess the capacity of regulated water companies to finance their day-to-day operations and capital investments under the terms of the settlement.

Regulatory financeability assessments broadly follow six steps.[67]

1 **Define the notional company,** including the assumptions that are made about the financial structure and performance of the business.

2 **Establish target credit rating,** which is generally accepted by UK regulators (including the Competition and Markets Authority) to be a 'comfortable/solid' investment-grade credit rating (i.e. BBB+/Baa1).[68]

3 **Identify key credit metrics** (e.g. interest cover ratios, gearing, FFO/net debt and debt/EBITDA).[69]

4 **Define minimum thresholds**, in line with the guidance provided by credit ratings agencies on minimum thresholds for key ratios.

5 **Assess whether the notional company will meet these thresholds,** under the assumption that the company: (i) has the assumed notional capital structure and (ii) is able to deliver operational performance consistent with the regulator's view of what an efficient company can deliver.

[66] Water Industry Act 1991, Part 1, Section 2, para 2A(c).
[67] This is a stylised representation for clarity and simplicity: in practice, there are differences across sectors. We provide an overview of Ofwat's approach to assessing the financeability of its PR24 Draft Determinations in section 4.1.
[68] For example, Ofgem noted that for the RIIO-2 price review all networks assured their business plans on the basis of a target rating of at least BBB+/Baa1. Ofgem (2020), 'RIIO-2 Draft Determinations — Finance Annex', 9 July, p. 95, para. 5.6. Similarly for PR19, all water companies assessed notional company financeability in terms of BBB+/Baa1, and this was the basis of Ofwat's assessment. See Ofwat (2019), 'PR19 final determinations: Aligning risk and return technical appendix', December, p. 67.
[69] 'FFO' here stands for 'Funds From Operations', while 'EBITDA' represents 'Earnings Before Interest, Taxes, Depreciation and Amortisation'.

6 **Conduct sensitivity analysis using plausible alternative scenarios** (e.g. shocks to income or expenditure, or penalties from regulatory incentive mechanisms).

Debt financeability assessments can help to inform the regulator as to whether—under the terms of the proposed price settlement—the notionally efficient company would be able to meet its target financial metrics, and therefore retain an investment grade credit rating.

However, in practice, there are increasingly apparent limitations of these tests, which mean they do not effectively address the two components of investability outlined above.

- First, financeability tests are inherently sensitive to the assumptions that are made about the notional company, both in terms of optimal capital structure and notional company performance. In particular, a central assumption is that the notionally efficient company will always perform in line with the regulatory parameters contained in the price settlement (e.g. TOTEX, financing costs, performance commitment levels), such that there is no out-performance or under-performance that needs to be factored into the assessment. Consequently, while the financeability assessment can provide an indication of cash flow issues arising from differences in the timing of expenditure and cost recovery, it does not tell us whether the price control parameters have been calibrated correctly and/or whether it represents a 'fair bet' to investors. This is an issue if the price control is mis-calibrated, such that (on average) companies expect to underperform relative to the regulatory settlement.

- Second, the construction of these assessments means that they are, by design, more focused on debt financeability than equity financeability. Ofwat's modelling does include inputs/assumptions on dividend yield and capital (RCV) growth, but these are used as levers (alongside assumed equity injections) that are flexed within the modelling in order to strengthen debt ratios, with limited assessment of whether this is reasonable. For example, in its PR24 Draft Determinations, in order to maintain gearing close to the notional value, Ofwat has assumed that the dividend yield for all companies can be reduced to 2% (which we later show is unsupported by market evidence on dividend yields and Ofwat's own decisions with respect to Tideway), and in cases where gearing levels breach

57.5% new equity is injected. While equity is assumed to be the bridge, there is no market testing of whether this is realistic.

- Third, the metrics are notional (i.e. set by regulators themselves in relation to the entity they regulate) and most of the time credit rating agencies rate different entities from the ones that are being regulated. As a result, there is limited external validation of the regulator's findings.

- Fourth, the length of the financeability assessment matches the price control cycle (i.e. five years). This does not reflect the longer-term horizon for investment decisions and does not take account of future trends, with particular implications for dividend payouts. An understanding of the long-term is particularly important where a sector is not in a steady state scenario and future investment requirements will be significantly higher.

- Finally, while financeability assessments were initially intended to provide a cross-check of whether the overall price settlement generated sufficient short-term cash flow, they have now become a means for regulators to calibrate the regulatory parameters to achieve certain financial ratios. For example, there are examples of regulators adjusting parameters such as RCV run off rates, gearing, the proportion of index linked debt, inflation (etc) until the ratios meet their own view of appropriate thresholds. A clear example of this from the PR24 Draft Determinations is Ofwat setting RCV run off rates to reduce revenues to the exact level needed to deliver FFO/net debt of 10.00% (to two decimal places) within Ofwat's financial modelling of the notional company.[70]

Consequently, the financeability assessment conducted by Ofwat has severe limitations in the context of the question now facing the sector—i.e. how to finance a prolonged increase in investment relative to historical levels. To ensure it is meeting its financing duty going forward Ofwat needs to explicitly consider investability, which deals with broader questions and longer time horizons than a five-year debt financeability assessment.

[70] This is discussed in greater detail in section 8.1.

This point is recognised in principle by Ofgem in its RIIO-3 Sector Specific Methodology Decision (SSMD), in which it says:

'While there may be no explicit in-year cash costs that would threaten equity financeability, **investability considers whether the allowed return on equity is sufficient to retain and attract the equity capital that the sector requires… this issue is likely to be increasingly important in the coming years as the need to invest in infrastructure rises significantly** (for energy networks across the UK and globally) and companies are required to seek 'fresh' equity from their investors over and above what they would be able to fund via retained earnings.'[71]

This is an important distinction. What Ofgem has acknowledged is that even if the terms of the price control would enable an efficient company to recover its costs—including their allowance for the cost of capital—investors may still refuse to commit equity based on the profile of returns they expect to earn.

3.3 Five key questions for investability

In order to properly consider whether Ofwat's Draft Determinations are investable, in the sense that they will attract sufficient levels of debt and equity finance to the sector to deliver the RCV growth, it is necessary to address five key questions. These questions are ultimately intended to provide insight on i) the extent to which investors can expect to recover their capital plus a fair return on investment, and ii) the market's willingness to accept the investment proposition that is on offer.

The five questions we pose in the remainder of the report are as follows:

1 **are Ofwat's assumptions around how equity financing is delivered realistic**, including assumed dividend reductions and/or equity injections?

2 **is the base return set at an appropriate level**, such that the marginal investor is incentivised to commit equity capital?

3 **does the calibration of the regulatory settlement provide a 'fair bet'** for investors, with a symmetric distribution of returns, such that the expected return equals the allowed return?

[71] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, p. 100 [emphasis added].

4 is the **overall risk exposure** reasonable?

5 **what is the equity being used to finance/fund** (e.g. creation of assets versus bill subsidies for current consumers)?

We now consider each of these questions in turn.

4 Are Ofwat's assumptions around how equity financing is delivered realistic?

4.1 The equity financing assumptions in Ofwat's financeability assessment

Ofwat's PR24 financeability test assesses whether, under its Draft Determinations, companies can achieve a target credit rating of Baa1/BBB+ in line with the assumption adopted by all companies (with one exception).[72] In its test, Ofwat makes the following assumptions about the notional company:[73]

- **Capital structure**—opening gearing of 55%.
- **Index linked debt**—opening index linked debt of 33%.
- **Dividend yield**—4%.
- **RCV growth.** Ofwat's approach is to first assume that RCV growth is funded by debt, and subsequently by equity when the notional gearing increases to more than 57.5%. Ofwat allows a 2% equity issuance cost on the new equity.

Ofwat's assessment reveals that given assumed levels of RCV growth, **'equity solutions' are needed to ensure companies are financeable.** Specifically:

Our modelling approach is to first assume that RCV growth is funded by debt, and we applied a starting dividend yield of 4% per year. For all companies, this resulted in increased levels of gearing and declining cash interest and debt coverage financial ratios over the price control period. We then **applied equity solutions, firstly in the form of higher retained earnings, and subsequently, where necessary, with new equity**.

It is natural for gearing to fluctuate between periods as companies raise debt and equity to fund investment. However, to provide sufficient headroom to maintain financial resilience and to ensure companies can access debt funding on efficient terms, we have sought to maintain gearing close to the notional gearing level of 55%. We therefore applied a threshold of 57.5% for the level of regulatory gearing before implementation of equity solutions.

[72] Portsmouth Water assessed its plan as being consistent with a Baa2 credit rating.
[73] Ofwat's assessment tests companies' financeability based on a notionally structured firm, on the basis that actual financing decisions are the responsibility of company management and any potential inefficiencies in companies' actual financing decisions should not influence the assessment. Ofwat (2024), 'PR24 draft determinations, Aligning risk and return', July, section 2.6.

Consistent with the PR24 methodology, **our first step was to restrict the dividend yield to a minimum of 2%** (being 50% of the starting dividend yield), across the price control period. **This is consistent with our view that investors in a company undergoing large scale investment may expect to receive more of their return as growth of its equity value**, and that a resilient, notionally structured, company that is performing in line with our determinations should not necessarily forego all dividends. In addition, in any period where gearing would still be above the threshold, we have assumed sufficient new equity to return gearing to the notional level of 55%.[74]

Importantly however, Ofwat provides no evidence to suggest investors—particularly existing investors or those most likely to consider investing—would be content to invest on these terms.[75] In particular, Ofwat refers to 'equity solutions', which are stated to include 'higher retained earnings' and 'new equity'. Ofwat does not address who these investors are, what investment criteria they apply, whether there are trade-offs between the equity solutions given this investor base, and hence the extent to which these solutions can be delivered in practice.

4.2 Why investor preferences matter—the 'clientele effect'

In assessing this question of equity delivery risk, it is necessary to look at the investor base in more detail. In reality, investors are heterogeneous, and may have different views on the relationship between perceived risk and expected return, as well as potentially taking other investment factors into account, particularly expected dividends and other cash distributions.

We look here to explain why it is important for regulators to not treat investors in the abstract, but rather to understand the types of investors likely and best placed to invest in the water sector.

In particular, this requires an acknowledgement of **the 'clientele effect'**, whereby—as longstanding economic research demonstrates—investors prefer specific sectors based on the sectors' returns, risk and economic

[74] Ofwat (2024), 'PR24 draft determinations, Aligning risk and return appendix ', July, pp. 51–52 [emphasis added]

[75] Ofwat states that 'Our financeability assessment and suite of financial metrics that we consider also includes dividend yield, dividend cover and return on capital employed for the notional company.' However, in practice it is unclear from its published documentation how—or where—this has been considered in Ofwat's assessment. See Ofwat (2024), 'PR24 draft determinations, Aligning risk and return appendix ', July, p. 51.

characteristics, and the objectives of heterogeneous groups of investors.

As noted in section 3.1, according to Dividend Irrelevance theory, the value of a firm is determined solely by its earning power and the risk of its underlying assets, not by how it distributes its earnings between dividends and retained earnings. Where Dividend Irrelevance theory holds, investors will be indifferent to a corporate decision to increase retained earnings—via lower dividends—to finance investment.

Dividend Irrelevance theory implicitly underpins the equity solutions implemented in Ofwat's financeability assessment. Indeed—if the theory holds—companies would have no issues raising equity finance after cutting dividends in half.[76] Under these circumstances, the expected shift of water companies from a 'dividend stock' to a form of 'growth stock' should pose no concerns for regulators.

Importantly however, as acknowledged by the author themselves, Dividend Irrelevance theory is unlikely to hold in practice because of market imperfections.[77] This is due to the presence of 'clientele effects'.

[76] Subject to the price control otherwise enabling cost recovery, including via the cost of equity allowance compensating investors for exposure to systematic risk.
[77] Miller, M. and Modigliani, F. (1961), 'Dividend policy, Growth, and the Valuation of Shares', *The Journal of Business*, **34**:4 (Oct. 1961), pp. 411–433, section 5.

Box 4.1 Clientele effect

The clientele effect refers to the tendency of different groups of investors to prefer different dividend policies based on their tax situations and income preferences, e.g. some investors prefer high dividends while others prefer capital gains.

The term was first discussed by Modigliani and Miller (1961), where the authors explain that, in a frictionless world, investors would be indifferent between dividend payments or reinvestments (the 'Dividend Irrelevance Theory' set out in Box 3.1) and hence there would be no clientele effect. However, as the authors acknowledge, this hypothesis does not hold in the real-world because of market imperfections such as the heterogeneity of investors (e.g. differences in income requirements and risk tolerances) and other market frictions.

Subsequent research in topic showed that the clientele effect is not only present, but it also plays a significant role in a firm's decision to issue dividends. For instance,

- Fischer Black (1976) explores why firms pay dividends despite Dividend Irrelevance Theory and finds investors who need or prefer dividends will gravitate towards dividend-paying stocks, creating stable demand for such stocks and explains why firms might cater to these preferences by maintaining a consistent dividend policy.
- Brennan and Schwartz (1984) build on the notion of clientele effect by examining how different dividend policies can attract different types of investors based on their tax situations. They argue this makes the clientele effect significant, as firms with policies that align with the tax preferences of their investors see changes in stock prices as investor demand shifts.

Source: Oxera based on Miller, M. and Modigliani, F. (1961), 'Dividend policy, Growth, and the Valuation of Shares', *The Journal of Business*, **34**:4 (Oct. 1961), pp. 411–433. Black, F. (1976), 'The Dividend Puzzle', *Journal of Portfolio Management*, **2**, pp. 5–8. Brennan, M. J. and Schwartz, E. S. (1984), 'Optimal Dividend Policy and the Value of the Firm', *Journal of Finance*, **39**, pp. 1037–1051.

Where clientele effects are present, changes to the assumed profile of investor returns can affect the value of the firm, and hamper its ability to raise equity finance. This is important in a PR24 context, since it raises questions about Ofwat's assumption that investors would be indifferent to a 50% cut in dividends.

We now explore how the clientele effect has influenced the composition of investors currently exposed to regulated water companies, and the nature of historical returns. We then explain why these investors are likely to be attracted to the sector based on its dividend policy, before discussing implications for the investability of Ofwat's PR24 Draft Determinations.

4.3 An overview of water sector investors and returns

4.3.1 Shareholder structure

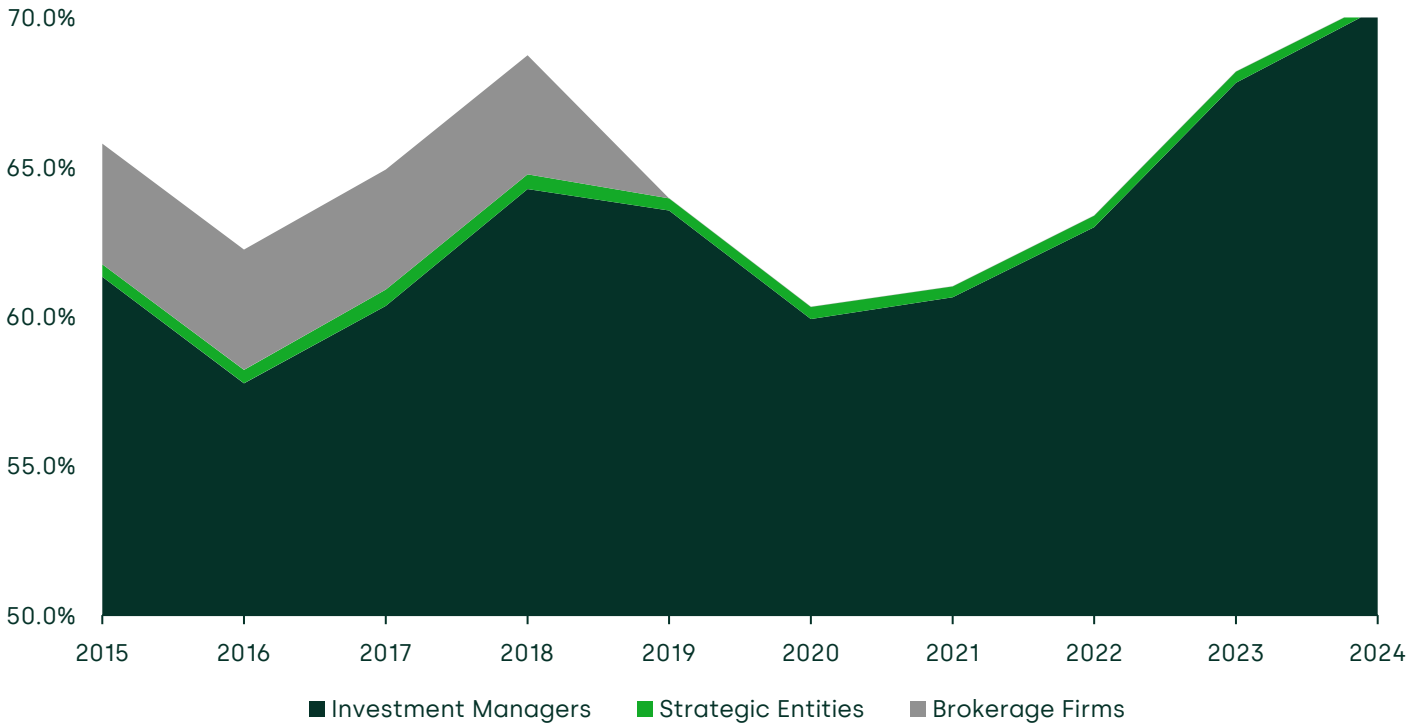
We begin by analysing the shareholding structure of the companies, since the nature of these owners may provide an indication of their investment objectives.

Our analysis focuses on sixteen companies, including the three listed firms (South West Water[78], Seven Trent PLC, United Utilities Group PLC) and thirteen unlisted companies. We have excluded Welsh Water from the analysis due to the nature of its mutual ownership structure. We have categorized the institutional investors according to their investor classifications on Bloomberg (e.g. investment managers, strategic firms, brokage firms, etc).

The figure below shows the participation stake held by groups of investors in the three public England and Wales water companies over the period 2015–24.

[78] More specifically, our analysis examines the ownership of Pennon Group PLC (which derives the majority of its revenues from South West Water).

Figure 4.1 Average participation stake of investors in UK public water companies



Note: Strategic investors refer to companies, individual investors, and family offices. Investment managers (or asset managers) are defined as organizations who handle activities related to managing a portfolio for their clients. The difference in categorization relates to the size and composition of the client base, which is larger for investment managers. Example of investment managers include BlackRock, Vanguard Group, and Fidelity Investments.
Source: Oxera analysis based on Refinitiv data.

As this analysis shows, Investment Managers hold the largest portion of shares in each of the three listed companies, with an average holding of 63% in the last 10 years.[79] Investment Managers also represent the top 25 investors in the listed companies. We outline the value of these firms' holdings below:

Table 4.1 Holdings of top 25 investors in SVT, UU and PNN (£m)

Amount held by investor (£m)	2022	2023	2024
Qatar Investment Authority	852	800	1663
Lazard Asset Management, L.L.C.	1351	1436	1421

[79] Oxera analysis based on Refinitiv data.

Amount held by investor (£m)	2022	2023	2024
BlackRock Advisors (UK) Limited	1937	2043	1131
The Vanguard Group, Inc.	850	875	682
Impax Asset Management Ltd.	539	644	601
Legal & General Investment Management Ltd.	778	633	556
ClearBridge Investments Limited	136	328	405
BlackRock Institutional Trust Company, N.A.	467	463	379
Magellan Asset Management Limited	248	302	374
Norges Bank Investment Management (NBIM)	478	496	316
Lazard Asset Management Pacific Company	165	191	232
BlackRock Investment Management (UK) Ltd.	413	306	202
ATLAS Infrastructure Partners (UK) Ltd	0	256	199
KBI Global Investors Ltd.	91	156	171
Maple-Brown Abbott Ltd.	180	187	165
Northern Trust Investments, Inc.	185	223	140
First Sentier Investors	23	24	115
Invesco Capital Management LLC	156	173	103
Duff & Phelps Investment Management Company	91	124	98
Nuance Investments, LLC	0	0	95
Amundi Asset Management, SAS	59	4	91
Geode Capital Management, L.L.C.	108	108	86
INVESCO Asset Management Limited	281	102	77
State Street Global Advisors (US)	96	78	75
Pictet Asset Management Ltd.	828	804	73

Source: Oxera analysis based on Refinitiv data.
Note: the table is ordered with reference to the 2024 numbers.

The listed company investors include funds dedicated to—or with a particular focus—on the utilities sector, such as Atlas, ClearBridge, Impact, Magellan, Pictet and QIA. These funds are attracted to the water sector due to its regulated economic characteristics. For example, Magellan's characterisation of their listed infrastructure approach illustrates the clientele effect:

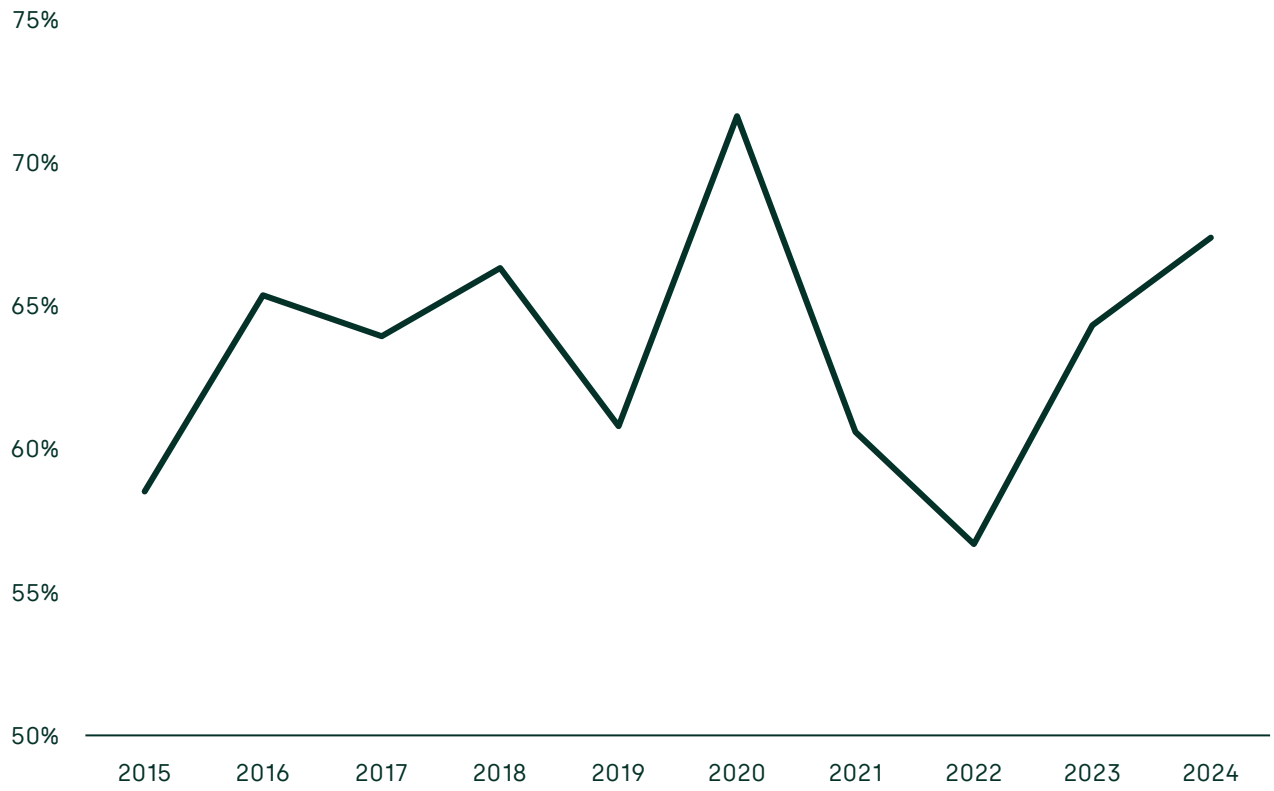
'Driven by reliable demand and predictable cashflows, investing in infrastructure offers investors reliable earnings growth and stable income streams in times of market declines.'[80]

There are naturally listed company investors that do not exhibit clientele effects, such as formal or informal tracker funds (e.g. Vanguard or Norges), whose positions are driven by a desire to have exposure to all sectors. However, as these are effectively not discretionary investors, it is reasonable to assume that the clientele effect is particularly strong where the case for discretionary new investment has to be made by companies (as was the case with Severn Trent's 2023 market placing).[81]

Our analysis of unlisted company ownership reveals that the shareholder group with the largest stake in private water companies is Infrastructure Funds.[82] This is shown in the figure below, which reveals how over the period 2015–24, Infrastructure Funds had an average aggregated holding of 64%:[83]

[80] Magellan Asset Management (2024), 'Why invest in infrastructure?', August.
[81] London Stock Exchange (2024), 'Retail Offer via Primary Bid: SEVERN TRENT PLC', September.
[82] Our analysis of unlisted companies is less detailed than for listed companies, due to the lack of equivalently granular time series data.
[83] Oxera analysis based on Orbis data.

Figure 4.2 Infrastructure funds' participation stake evolution



Source: Oxera analysis based on Orbis data.

Even more than for the listed sector, unlisted company investors tend to be funds specialising in long-term infrastructure investment. The discussion in section 4.4 below reviews examples of the specific investment characteristics that such funds look for, which provides further evidence of the presence of clientele effects.

In summary, the largest investors in the England and Wales water sector are:

- **Asset managers** in the context of publicly listed companies, often with a specific focus on infrastructure and utilities sectors.
- **Infrastructure funds** in the context of private companies.

We now examine the composition of returns that shareholders in the sector have earned over time and the dividend yield in the utilities sector, including how dividends fluctuate when new equity injections are required.

4.3.2 The importance of dividend returns in the context of infrastructure investment

The total returns on equity investments can be split into two major components:[84]

- **Capital gains,** which can be defined as the appreciation over time of the original investment. For listed companies, this can be computed as the difference between the price of a security at a specific point in the time in the future P_t, minus the original purchase price P_0. This concept is equally applicable to private companies, with the difference that the capital gain is not readily observable until divestment occurs.
- **Dividends.** Dividends are cash flows deriving from the distribution of profits by a company to its shareholders at any specific point in time.

Therefore, the expected return on an equity investment can be defined as a function of its price appreciation (also defined as growth expectancy) and the stream of dividends.

As documented by Dimson, Marsh and Staunton (DMS) in the Credit Suisse Global Investment Returns Yearbook,[85] over the long run, dividends have been a crucial component of the returns that investors earn from the stock market. The authors emphasize that while capital gains fluctuate with market conditions, dividends have provided a more stable source of income, contributing substantially to total returns, especially when reinvested over time.

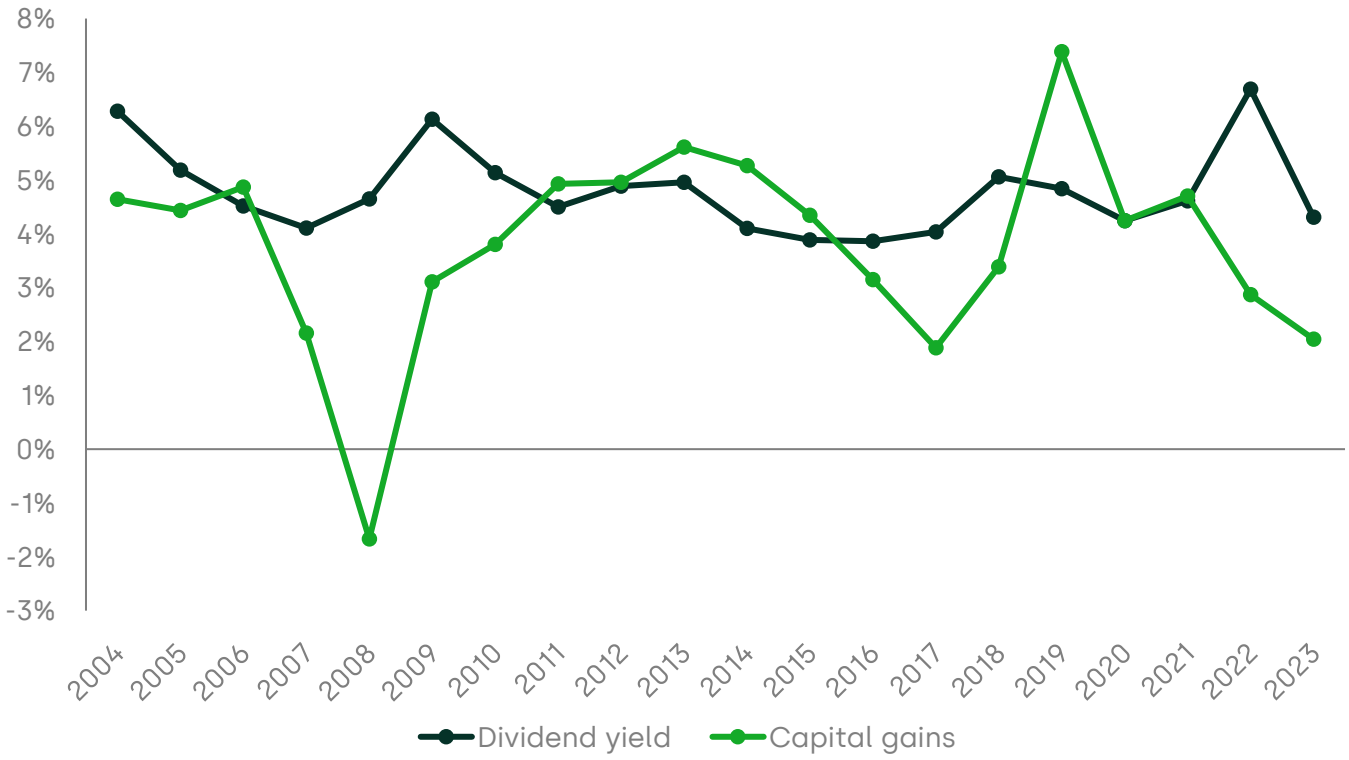
We refer to this phenomenon as **'dividend persistence'**.

Dividend persistence in the England and Wales water sector

We now analyse the composition of returns earned by shareholders in the three public listed water companies in the UK.[86] The results of this analysis for the period 2004–23 are shown in the figure below.

[84] Note that share buybacks can be classified either as dividends or as capital gains. A share buyback, also known as a stock repurchase, is a corporate action where a company buys back its own shares from the marketplace. This reduces the number of outstanding shares in the market, effectively increasing the ownership stake of remaining shareholders and often leading to an increase in the share price. Therefore, for selected shareholders a share buyback is analogous to a dividend, while for the remaining shareholders the effect is similar to a capital gain.
[85] Dimson, E., Marsh, P. and Staunton, M. (2021), 'Credit Suisse Global Investment Returns Yearbook', Credit Suisse Research Institute, pp. 1–32.
[86] Measuring capital gains for unlisted companies depends on the existence of transactions to establish the change in valuation between two dates. This exercise is out of scope.

Figure 4.3 Average historical nominal returns of SVT, UU and PNN—split between dividend yield and capital gains



Source: Oxera analysis based on Bloomberg data. Share buybacks are treated as capital gains. The annualised capital gains are calculated assuming a ten-year holding period.

This analysis shows that dividend yield has been persistent over time, ranging between 4% and 6%, and that dividends have traditionally formed a large proportion of these water companies' total returns. In addition, the table below shows how dividend yield has been the primary source of total returns for these three listed companies over the same period.

Table 4.2 Proportion of dividend yield relative to total returns

	SVT	UU	PNN
2023	48%	48%	227%
2022	41%	51%	105%
2021	36%	41%	86%
2020	47%	52%	50%
2019	33%	43%	44%

	SVT	UU	PNN
2018	49%	74%	59%
2017	52%	83%	74%
2016	46%	74%	51%
2015	56%	53%	37%
2014	57%	53%	30%
2013	58%	61%	30%
2012	58%	85%	27%
2011	58%	102%	24%
2010	65%	121%	29%
2009	79%	148%	31%
2008	237%	207%	80%
2007	90%	105%	32%
2006	61%	68%	28%
2005	59%	86%	33%
2004	55%	81%	44%
Average	**64%**	**82%**	**56%**
Median	**57%**	**74%**	**44%**

Note: Share buybacks are treated as capital gains. The annualized capital gains are calculated assuming a ten-year holding period. The figures above 100% indicate that the capital gains were negative for the period and that dividend yield exceeded the total return on the stock.
Source: Oxera analysis based on Bloomberg data.

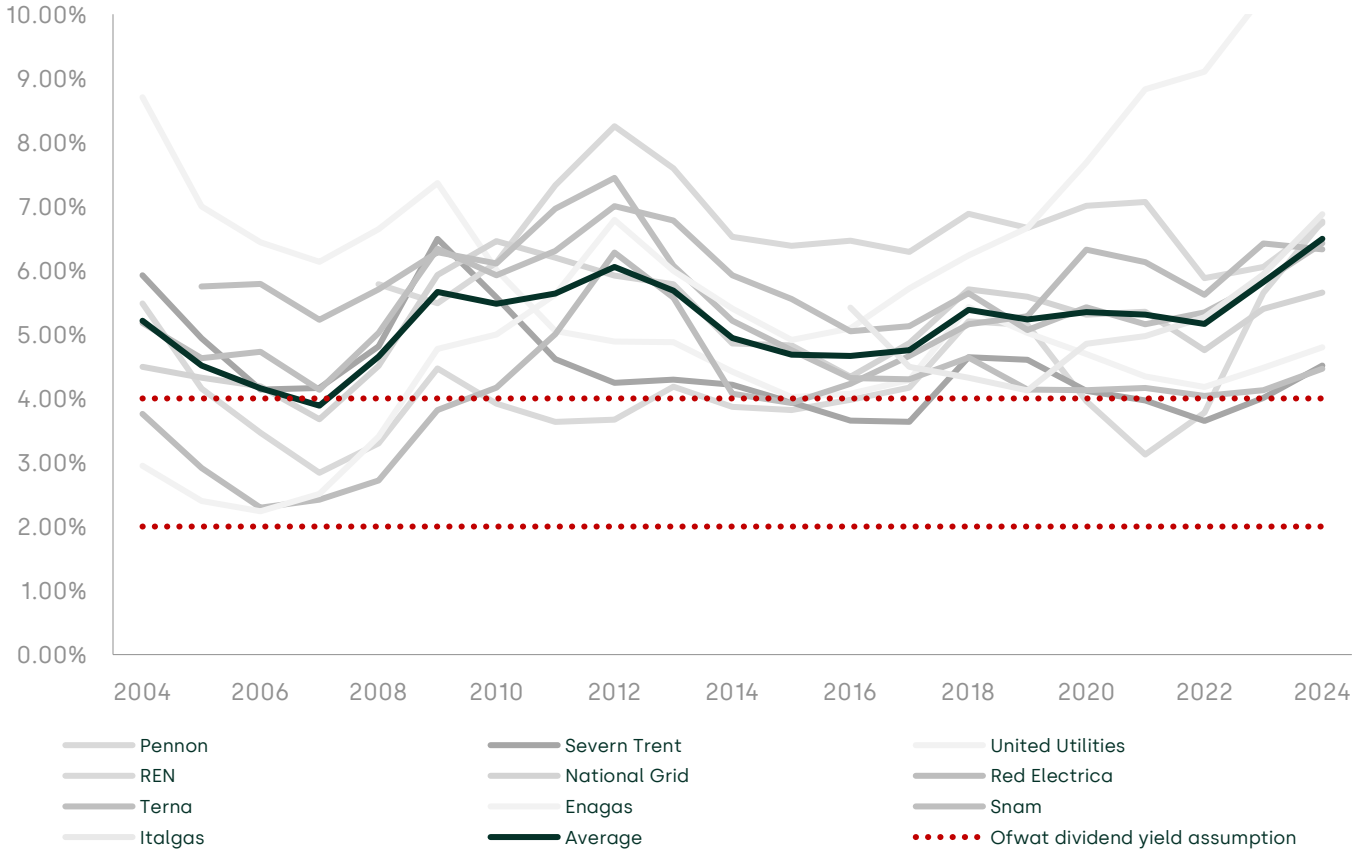
For unlisted companies, there is less publicly available information, but one interesting example is Thames Tideway Tunnel referred to above. Ofwat approved arrangements for Tideway's £1.3bn of equity capital to be provided in the form of ordinary shares (40%) and shareholder loans (60%), with an 8% interest rate.[87] In combination, this resulted in a potential annual cash distribution of 4.8% for total equity, albeit with potential distribution restrictions agreed with debt providers to apply under certain circumstances. 4.8% is broadly in line with the listed water companies and other utilities.

[87] Tideway (2023), 'Annual report 2022/23', pp. 22 and 65.

Dividend persistence in European utilities

We now examine whether dividend persistence exists in European utilities more generally. Specifically, we consider the yields of ten listed European energy, water and gas companies over the last 20 years. This analysis, in the figure below, shows how dividend yield has persistently ranged between 4% and 7% for the majority of companies in our sample.

Figure 4.4 Utilities dividend yield

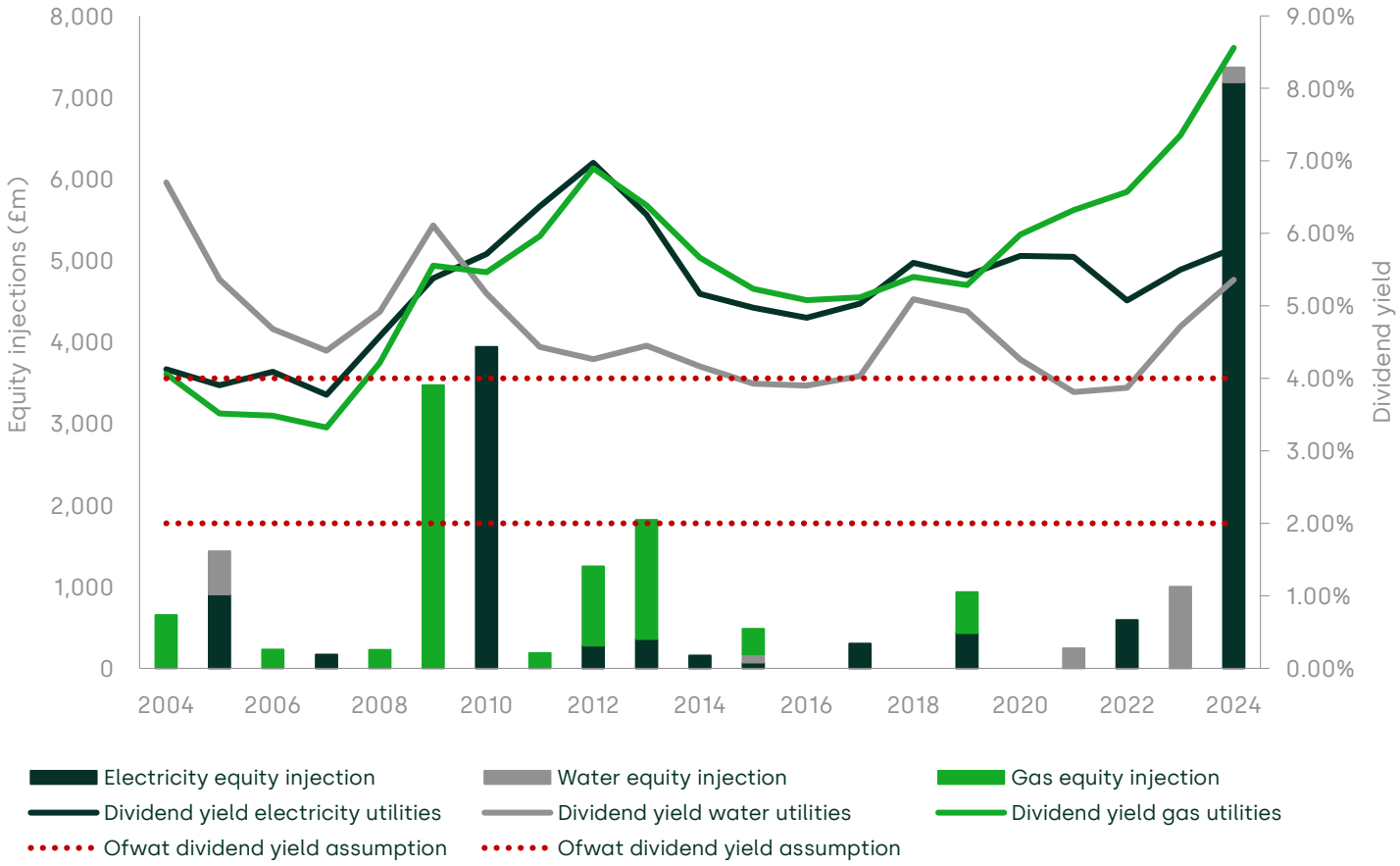


Note: The averages per sector are calculated as the average of all yearly average dividend yields of the companies in that sector. The aggregate average, as represented by the full dark green line, is calculated as the average of the yearly average dividend yields across all companies in our sample in each year. The two green dotted lines correspond to a dividend yield of 2% and 4%.
Source: Oxera analysis based on Refinitiv data.

Another interesting finding from this analysis is that gas networks, which have significantly lower future CAPEX requirements, appear to provide a similar level of consistent dividend yields to energy and water companies, which have much higher expected CAPEX requirements in the coming decades.

The presence of dividend persistence is further confirmed once equity injections are analysed. This is shown in the figure below, which plots the average dividend yield of companies in the water, energy and gas sectors against cumulative equity injections for these same companies in each of the last 20 years.

Figure 4.5 Utilities dividend yield and equity injections



Note: Dividend yields for each sector are calculated as the yearly average dividend yield, based on daily observations of dividend yields for the companies in that sector.
Source: Oxera analysis based on Bloomberg and Refinitiv data. The sample of water companies includes SVT, UU and PNN. The sample of gas companies includes Enagas, Italgas and Snam. The sample of electricity companies includes REN, Terna and NG.

This analysis shows that dividend yield persists even at times of significant equity injections. In fact, dividend yields in the electricity sector actually increased in 2010 and 2024, at the same time as the sector raised large amounts of new equity.

That companies have maintained dividends even when new equity injections are required suggests Ofwat's equity financing assumptions

are unlikely to hold in practice. More specifically, Ofwat's assumption that water companies can attract large amounts of new equity finance whilst simultaneously halving dividends is unlikely to be credible.

4.4 Why do water sector investors prefer dividends?

As our analysis in section 4.3.2 demonstrates, historically the majority of investors' returns in the water sector have come from dividends. A similar persistence of dividends is observed across the wider European utilities sector, even when companies are raising significant amounts of new equity. A question therefore arises as to whether this make-up of returns is coincidental, or whether it is a function of investor preferences.

There is strong evidence to suggest the persistence of dividends in the water sector is driven by clientele effects.

To begin with, there is extensive academic literature pointing to the presence of clientele effects in the utilities sector. Relevant studies include:

- **Baker and Wurgler (2004)**,[88] who suggest that the demand for dividends has been persistent over time and that the size of dividends matters in terms of attracting specific investors.
- **Armitage (2011)**[89] explains that the proportionally large dividend yield in the industry is to be ascribable to the demand from investors, and that this demand is underpinned by institutional or behavioural reasons.
- **Aspara, Pajunen, and Tainio (2014)**[90] investigate how investor preferences for dividends influence corporate financial policies in the context of regulated industries like water utilities. The authors find that companies in these sectors are under continuous pressure to maintain or increase dividend payouts, as this is a primary factor in attracting and retaining investors, especially those with a low-risk profile.

This research emphasises how, as the clientele effect suggests, investors' preferences segment the investor base across specific sectors. In the case of the England and Wales water sector, there is a

[88] Baker, M. and Wurgler, J. (2004), 'A catering theory of dividends', *Journal of Finance*, 59, pp. 1125–65.
[89] Armitage, S. (2011), 'Demand for dividends; the case of UK water companies', *Journal of Business Finance and Accounting*.
[90] Aspara, J., Pajunen, K. and Tainio, R. (2014), 'Dividend Preferences and Corporate Financial Policies in Regulated Industries: Evidence from the UK Water Sector', *Financial Management*, 43, pp. 459–492.

clear preference amongst investors for the dividends offered by regulated companies.

The presence of clientele effects is also confirmed by the requirements and expectations of the infrastructure funds investing in unlisted water companies. For example:

- **DWS Global Infrastructure LD**, a major infrastructure fund in the water industry, states that it expects companies to 'generate solid cashflows even in difficult economic phases which often translates into attractive [...] dividends payouts'.[91]
- **HICL Infrastructure PLC,** which owns approximately one third of Affinity Water Limited,[92] sets cashflow quality as one of the three key tenets to consider when investing in a regulated infrastructure asset. Cashflow quality is defined as 'stable, predictable revenues and costs and hence returns to equity are protected by lower operational complexity'.[93]
- **IFM Investors**, which has significant stakes in England and Wales water companies, emphasizes the importance of 'long-term, stable income streams' in its investment criteria. It particularly looks for assets that can provide 'consistent dividend distributions' to meet the income needs of its pension fund clients.[94]
- **Arjun Infrastructure Partners**, another key player in the sector, notes that its investment strategy focuses on 'assets with strong regulatory frameworks,' which help to 'ensure predictable and inflation-linked cash flows,' a critical factor in maintaining attractive dividend yields.[95]
- **Macquarie Infrastructure and Real Assets (MIRA),** which manages investments in UK water utilities, explicitly seeks out 'infrastructure assets that deliver reliable and secure dividends,' and highlights the importance of regulatory protection in sustaining these income streams.[96]

[91] DWS Global Infrastructure LD (2024), 'Infrastructure equity funds – A decade of solid returns'.
[92] See Affinity Water Limited website, 'Our owners', https://www.affinitywater.co.uk/corporate/about/owners#:~:text=Affinity%20Water%20Limited%20is%20ultimately,the%20Allianz%20Group%20and%20DIF (last accessed 12 August 2024).
[93] See HICL Infrastructure website, 'How does HICL define Core Infrastructure?', https://www.hicl.com/about-us/strategy-investment-policy/how-does-hicl-define-core-infrastructure/ (last accessed 12 August 2024).
[94] IFM Investors (2023), 'Long-term, Stable Income: Infrastructure Investment in the Water Sector', IFM Investors Report.
[95] Arjun Infrastructure Partners (2022), 'Investment Approach: Regulatory Frameworks and Predictable Cash Flows', Arjun Infrastructure Partners Strategy Document.
[96] Macquarie Infrastructure and Real Assets (MIRA) (2023), 'Reliable Dividends from Infrastructure Assets: An Investor's Perspective', MIRA Investment Insight.

- **JP Morgan Asset Management**, through its infrastructure investment arm, looks for 'stable and resilient cash-generating assets' that can 'provide long-term, sustainable dividend income' to meet the requirements of its institutional clients.[97]

Further evidence of the need for stable dividends even when raising new equity is seen in the actual capital raising undertaken by UK utilities. Severn Trent raised £1bn in September 2023 through a market placing (which included infrastructure investor QIA), and National Grid raised £6.8bn via a rights issue in June 2024. In both cases, the absolute value of the cash dividends was at least maintained, even though by reducing dividends it would have reduced the required size of the equity issue, and hence equity issuance costs. Assuming rational decision making by the companies, there is a trade-off between cutting dividends and raising new equity in an efficient manner, which is not sufficiently taken into account by Ofwat.[98]

In addition, although capital raisings by (both listed and unlisted) water companies have occurred, there is no guarantee that the market for new equity will remain open for all or even most companies. Our investor engagement has identified significant concerns amongst listed and unlisted investors, with notable reluctance to support further investment into a sector based on the Draft Determinations approach to dividends, along with gearing and the calibration of risk and returns.[99]

In conclusion, infrastructure and utility sectors have a clear and persistent preference for significant and predictable returns, in the form of cash distributions and dividends. We show this persists across time and geographies, and that companies' behaviours reflect this when raising capital (as indeed Ofwat has done in the case of Tideway).

These findings emphasise the importance investors place on an expectation of a steady stream of dividends, and the need to consider this preference in any assessment of investability.

[97] JP Morgan Asset Management (2023), 'Sustainable Dividend Income through Infrastructure Investments', JP Morgan Infrastructure Fund Overview.
[98] Reuters, 'UK's Severn Trent to raise $1.2 billion to partly fund clean-up of rivers', https://www.reuters.com/business/uks-severn-trent-raise-1-billion-pounds-equity-2023-09-29/ (last accessed 26 August 2024). Severn Trent website, 'Our dividend', https://www.severntrent.com/shareholder-centre/our-dividend (last accessed 26 August 2024). Lawson, A. (2024), 'National Grid taps shareholders to help fund £60bn low-carbon energy switch', *The Guardian*, 24 May, https://www.theguardian.com/business/article/2024/may/23/national-grid-taps-shareholders-to-help-fund-60bn-low-carbon-energy-switch (last accessed 26 August 2024). National Grid website, 'Dividend calculator', https://www.nationalgrid.com/investors/share-price-and-returns-centre/dividend-calculator (last accessed 26 August 2024).
[99] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

4.5 This evidence suggests Ofwat's equity assumptions are not credible

The presence of clientele effects in the water sector suggests the 'equity solutions' assumed by Ofwat may not be credible in practice. In particular, there are serious questions as to whether the owners currently invested in the sector would be happy to inject the new equity needed to finance RCV growth if dividends are sharply reduced.

Of course, the pool of capital available for investment is not limited to the existing shareholder base or categories of investors. The fact that existing owners have a preference for dividends does not preclude the possibility that other classes of investors with more appetite for 'growth stocks' could be attracted to the water sector in future. However—as confirmed through our investor engagement—it is important to recognise that the current set of investors accept below market average returns in exchange for more cash-flow and payout certainty.[100] Hence, other classes of investors with more appetite for 'growth' are likely to demand a higher return on equity due to the uncertainties on the payout timings.

It is also important to consider that Ofwat's 2% equity issuance cost allowance is unlikely to be sufficient to cover the issuance costs, both in terms of the direct costs of administration and underwriting, as well as the indirect costs of pricing new shares at a discount to induce investors to subscribe. This point was highlighted as a concern by investors, who point to dilution of existing investors in both listed and unlisted capital raisings. Primary research recently undertaken by Oxera for the European Commission found direct costs of issuing equity range from 5-12% of the value of new equity raised. Oxera has also undertaken primary research on the indirect costs of equity raises by FTSE 100 firms over the last 20 years and by utilities in particular. We found average under-pricing of 2.9% by FTSE 100 firms, with larger under-pricing of 7.7% for utilities and 9.5% for regulated utilities. Therefore, we recommend a direct cost allowance of at least 5%, plus an additional indirect cost allowance in the range of 2.6% to 9.7% (with a mid-point of 5.1%), which is significantly higher than Ofwat's allowance.

Given this context, a material reduction in dividends in the water sector is likely to risk one of two potential outcomes occurring:

[100] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

1 **an increase in the allowed return on capital**, since this would be required to attract the equity finance needed for investment; or,

2 **investment not being delivered**. If the cost of equity allowance were not increased to attract the new class of investors, the sector would struggle to raise the equity finance needed for investment.

This means providing a stable cash return for investors is critical to financing infrastructure at a low cost of capital.

4.6 Summary

The evidence presented in this section demonstrates that the weighting of total returns to dividends in the water sector is not coincidental, but represents underlying demand from investors in the sector (i.e. there is a 'clientele effect').

This suggests the assumed 'equity solutions' in Ofwat's financeability analysis are not credible. In particular, it raises questions as to whether the sector will be able to raise the levels of equity financing needed for RCV growth in the coming years if companies seek to finance this investment via lower dividends.

The implication is that an expectation of a steady stream of dividends is critical to financing infrastructure investment at a low cost of capital. This is because while there may be 'growth stock' investors that would be willing to provide equity finance to water companies, attracting these investors to the sector would likely necessitate a higher cost of capital allowance.

5 Is the base return set at the appropriate level?

This section considers Ofwat's approach to setting the allowance for the cost of equity, and the adverse impact its approach may have on the investability of its Draft Determinations.

Note that this section does **not** provide an exhaustive assessment of Ofwat's approach to setting this allowance, nor seek to provide an 'Oxera view' of what the allowance for PR24 should be.[101] Rather, we focus on specific issues which are likely to pose particular challenges to setting an appropriate allowance for AMP8 in light of investability. In particular, these include issues arising from the use of what has been described as a 'through the cycle' approach to setting allowed returns, and the resulting need to use market data to provide Ofwat assurance on the adequacy of returns.

5.1 Ofwat's approach to setting the base return

In line with other regulators, Ofwat has traditionally made use of the capital asset pricing model—or 'CAPM'—to set the allowance for the cost of equity.

In the CAPM, the calculation of the cost of equity is based on four building blocks:

- **the risk-free rate (RFR)**—which captures the required return on a riskless asset;
- **the equity beta**—which measures the company's exposure to systematic risk;
- **total market return (TMR)**—which measures the return expected by the marginal investor from holding a diversified portfolio of securities; and,
- **the equity risk premium (ERP)**—defined as the difference between the total market return (TMR) and the RfR.

Using these parameters, CAPM calculates the allowance for the **cost of equity (CoE)** as follows:

$$CoE = RFR + \ equity\ beta * ERP = RFR + equity\ beta * (TMR - RFR)$$

[101] Such an exercise is out of scope of this report.

The table below provides a high-level summary of how Ofwat has estimated each of these parameters for its PR24 Draft Determinations.

Table 5.1 Ofwat's methodology to estimate the cost of equity

Parameter	Methodology
Risk-free rate	Ofwat estimates the RFR as the one-month average of 20-years index-linked gilt yields
Total market return	Ofwat uses two methodologies to determine the TMR: • Ex post. This methodology consists of calculating the average historical returns in the UK. Ofwat uses the DMS dataset and deflates the historical nominal returns using the Office for National Statistics' revised CPIH backcast series. It assumes a 10–20-year holding period and calculates the average return as the arithmetic average of overlapping observations. It uses the adjusted geometric average as a cross-check to the ex-post estimation. • Ex ante. Ofwat has also produced estimates of 'historical ex ante' returns, which consists of estimating the average of adjusted historical returns. Ofwat mentions two approaches to derive the ex-ante estimation: Fama & French dividend growth model and the DMS decomposition model. In addition, Ofwat presents a derivation of the DMS decomposition method focusing on the UK data.
Beta	Ofwat estimates the beta by placing most weight on the 2 year, 5 year and 10 year betas of Severn Trent and United Utilities. Ofwat uses daily frequency to calculate spot and trailing averages, assuming a debt beta of 0.05–0.15. In forming its beta range Ofwat states that it will place particular weight on betas with longer estimation periods and longer averaging periods.

Source: Ofwat (2022), 'Creating tomorrow, together: Our final methodology for PR24. Appendix 11, Allowed Return on Capital', 6 December. Ofwat (2024), 'PR24 draft determinations, Aligning risk and return – Allowed return appendix ', 11 July.

Using this approach, **Ofwat estimates a CAPM-derived range for the CoE allowance of 4.19–4.88%**.

Ofwat then outlines its views on selecting a point estimate within this range. First, it argues there are a number of reasons for selecting an allowed return at the midpoint (4.53%) of the range, including that: this approach is aligned with peer-reviewed UKRN guidance; Ofwat has intervened to increase levels of protection relative to its final methodology; information asymmetry in a large investment programme; record levels of equity raised by the sector since 2021, and; its own

advisors not choosing to pick a point estimate towards the upper end of their cost of equity range. [102]

However, Ofwat then suggests there may be arguments for selecting an estimate above the mid-point of its range, including:

- **Valuations of listed water companies are currently below the long-term historical average, and investor sentiment towards the water sector is currently low**. For instance, debt and equity investors in an April 2024 Barclays survey rated water the riskiest utility sector and the U.K. the riskiest European country. It is important that our determinations are seen to support investment and investor confidence at a time when all companies (whether good or poor performers) are expected to continue to raise record levels of debt and equity finance, while competing with other sectors and internationally for the allocation of that capital.

- Companies and their consultants have argued that a large capital programme increases risks associated with capital intensity. While CEPA's advice and past regulatory decisions, alongside the other protections we have introduced, suggests that an adjustment for capital intensity is not necessary for PR24, **an allowed return on equity that is in the upper-end of our range should support companies to secure external financing required to deliver the PR24 investment programme over 2025-30**. [103]

Ofwat then concludes by stating that:

On balance, taking account in particular of negative investor sentiment and the desirability of the sector being able to successfully raise the significant amounts of external equity and debt required for 2025-30, **we propose a rounded allowed return on equity of 4.80%. This is towards the upper end of our CAPM cost of equity range of 4.19% to 4.88%**. [104]

[102] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', pp. 73–74, 11 July.
[103] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', p. 74, 11 July [emphasis added].
[104] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', pp. 74–75, 11 July [emphasis added].

Ofwat's approach to address investability in this way is problematic for a number of reasons, as we now explain.

5.2 Why relying on a 'through the cycle' estimate of TMR at PR24 is problematic

5.2.1 Two approaches to setting the cost of equity allowance

As noted in section 5.15.1, setting the cost of equity allowance using CAPM requires that regulators estimate a series of parameters. There are many differences in the specific approaches used by different regulators. However, a key decision for regulators is whether to estimate the CoE by:

1 **Estimating TMR, and then calculating ERP** based on the difference between the estimated TMR and the RFR; or,
2 **Estimating the ERP directly**.

In recent price reviews, UK regulators have opted for the first approach, on the basis that the TMR is a more stable component of the cost of equity than the ERP. This is consistent with UKRN guidance on the cost of capital, which notes that:

this approach is informed by long-run empirical evidence which suggests that equity returns are more stable over time than the ERP. Hence regulators have typically focused on estimating the TMR directly, often relying on long-run historical data.[105]

As noted in Table 5.1, Ofwat estimates the CoE using long-term historical data to estimate the TMR. It justifies this approach on the basis that it helps to mitigate the impact of outliers and to capture a wider range of risk events.[106]

We refer to this as a **'through the cycle'** approach.

5.2.2 Why a 'through the cycle' approach may be problematic

One reason why regulators value this 'through the cycle' approach is that it helps promote regulatory consistency over time. Assuming a

[105] UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, p. 19.
[106] Ofwat (2022), 'Creating tomorrow, together: Our final methodology for PR24. Appendix 11, Allowed Return on Capital', 6 December, p. 38, https://www.ofwat.gov.uk/wp-content/uploads/2022/12/PR24_final_methodology_Appendix_11_Allowed_return.pdf (last accessed 13 August 2024).

more stable TMR[107] may also be more conducive to fairer longer-term outcomes for investors and customers over time.

However, while use of a 'through the cycle' approach may mean investors are fairly compensated over the long-run, **this approach risks either under or over-compensating investors at any one point in time**. As the same UKRN guidance notes:

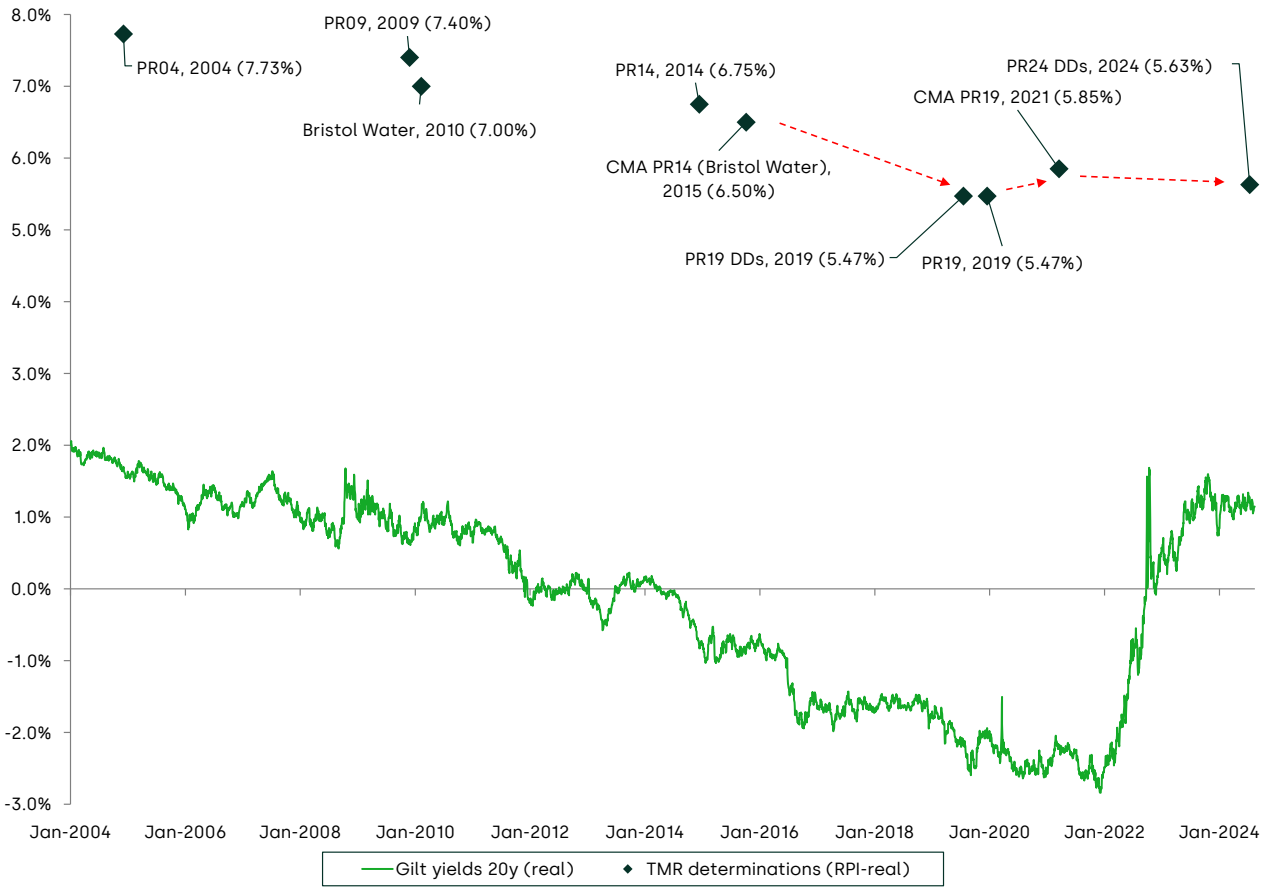
However, it is important to recognise that depending on the macroeconomic environment, **this largely 'through-the cycle' approach could either overstate or understate returns required by investors in a specific price determination**. In the low interest rate environment following the 2008 Financial Crisis, such an approach likely overestimated the TMR expected by the market. This is in part because there is empirical evidence of a positive relationship between real interest rates and real returns on equity…[108]

The implication is that during a period of high real interest rates, a 'through the cycle' approach is likely to understate returns required by investors in a price determination. This is exacerbated if a regulator switches approach from setting returns that trend in the same direction as interest rates, to a 'constant through the cycle' approach at a low point in the cycle.

The evidence suggests that this is what Ofwat has done in its PR24 Draft Determinations. Figure 5.1 plots Ofwat's TMR decisions against the evolution of gilt yields over time.

[107] It should be noted however that using a 'through the cycle' estimate of TMR does not mean that regulators should simply pick the same fixed value for the TMR in each decision for all time, but that the TMR would be relatively less variable than the underlying RFR. This would support greater stability in the cost of equity allowances over time. See UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, p. 19.
[108] UKRN (2023), 'UKRN guidance for regulators on the methodology for setting the cost of capital', 22 March, pp. 19–20.

Figure 5.1 TMR determinations and gilt yields (RPI-real)



Note: Where a TMR allowance is not specified in the determinations, it is based on the sum of the RFR and ERP allowances. For comparability, we use the CMA's PR19 redeterminations RPI–CPIH wedge of 0.90% to convert the PR24 DD figure to RPI-real. See Competition and Markets Authority (2021), 'Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations', https://assets.publishing.service.gov.uk/media/60702370e90e076f5589bb8f/Final_Report_---_web_version_-_CMA.pdf (last accessed 27 August 2024)
Source: Oxera analysis based on regulatory precedents and Refinitiv data.

As this analysis demonstrates, there is a general downward trend in the TMR allowance, which pre-dates the UKRN (2018) cost of capital report.[109] This shows that customers did benefit from a lower cost of equity capital due both to the lower risk-free rate assumption and due to a proportion of the reduction in the risk-free rate also being reflected in a lower TMR.

[109] Wright, S., Burns, P., Mason, R. and Pickford, D. (2018), 'Estimating the cost of capital for implementation of price controls by UK Regulators', June.

Since early 2022, the long-term gilt yields have sharply increased, reaching levels last seen during 2004–10 and significantly reducing the gap between Ofwat's allowed TMR and gilt yields. Given that the TMR was between 7.0% and 7.73% (RPI-real) for the period 2005-11, a consistent regulatory approach over time implies an increase in the TMR assumption in PR24, to take account of the higher interest rates.[110]

As this analysis demonstrates, not adjusting the proposed approach presents a material risk that the PR24 cost of equity is underestimated. This is likely to adversely affect the investability of Ofwat's Draft Determinations, since an investor not yet invested or an existing investor looking to commit more capital would decide not to invest, as they would expect their investment to be undercompensated. In turn, this would compromise the sector's ability to finance the investment needed to deliver improvements over AMP8 and beyond.

It is worth noting that Ofgem has explicitly noted this issue in its recent RIIO-3 methodology decision, having stated that:

ensuring that we treat both consumers and investors fairly when setting allowed returns... is a particularly difficult challenge in RIIO-3, as any new investors into the sector will require current returns to match the market cost of equity. **While we normally consider likely returns on a 'through cycle' basis, this may cause issues if there is a disconnect with our 'through cycle' estimate and current market required rates of return**.[111]

5.3 How material is this issue likely to be in practice?

In the current macroeconomic context, where UK gilts are trading at similar levels to the ones observed in the period 2005–2011, the impact of using a 'through the cycle' estimate of TMR is likely to be material.

Using Ofwat's Draft Determination cost of capital figures, we calculate the impact that an adjustment on the TMR would have on the overall allowance. As discussed in the section above, taking into consideration Ofwat's allowances in the period 2005–11 and adjusting for the RPI-CPIH wedge, a more appropriate TMR range might be approximately between 7.5% and 8.3% in CPIH-real terms, although higher ranges could also be estimated.[112] The table below summarises the results of adjusting the

[110] The RPI-real TMR estimates can be expressed in CPIH-real terms by adding the RPI-CPIH wedge forecast as of the dates of those price controls.
[111] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, p. 107 [emphasis added].
[112] The RPI–CPIH inflation wedge is assumed to be 50bps.

TMR range—note that these parameters do **not** represent an 'Oxera view' of the appropriate WACC or CoE parameters for PR24, but are presented for expositional purposes only.[113]

Table 5.2 The effect of adjusting the TMR estimate on the CoE and WACC

	Ofwat PR24 DD - mid point	Ofwat PR24 DD - point estimate	Assuming lower bound TMR estimate	Assuming upper bound TMR estimate
TMR	6.58%	6.58%	7.54%	8.27%
CAPM CoE	4.52%	4.80%	5.10%	5.53%
WACC	3.46%	3.59%	3.72%	3.92%

Source: Oxera analysis based on regulatory precedents data.
Note: The RPI-CPIH inflation wedge is assumed to be 50bps.

The table shows that the adjusted CoE allowance would be approximately 60–100bps higher compared to Ofwat's mid estimate, and 30–70bps higher than Ofwat's point estimate. This would result in an approximate 10–30bps increase on the WACC allowance. Hence, the consequence of adopting a 'constant through the cycle approach' at what appears to be a low point in the cycle (i.e. high interest rates) is a CoE that is 60–100bps lower than if Ofwat continued adjusting its TMR estimate in line with changes in gilt yields.

As noted in section 5.1, Ofwat selects a point estimate for the CoE allowance above the mid-point of the range, citing negative investor sentiment and the need for the sector to successfully raise the external equity and debt needed for AMP8. However, as demonstrated in Table 5.2, the uplift appears to be insufficient to correct the 'through the cycle' issue. As explained below, this may still understate the impact of the issue when compared with the opportunity cost of capital for other investment opportunities or other market-based measures. Furthermore, as we explain in section 6, the uplift appears to be offset by other issues with the regulatory package, and hence represents effectively a lower allowance than reported.

[113] As noted earlier, providing an 'Oxera view' for these allowances is beyond the scope of this report.

5.4 Market-based estimates of required equity returns

We have shown the issues with Ofwat's through the cycle approach to applying CAPM, and the need for the water sector to offer competitive allowed returns to investors, who face a wide and growing range of alternative investment options. This is consistent with findings from our investor engagement, which has highlighted that investors consider market benchmarks when making investment decisions, including:

- a comparison on a risk-adjusted basis with alternative core infrastructure equity investment opportunities; and
- appropriate risk premia to returns available from England and Wales water senior and subordinated debt investments.[114]

In this context, we consider that **there is a need for Ofwat to go beyond setting a CAPM-based cost of equity in assessing investability**, and to use other approaches. We consider those alternative approaches in this sub-section.

5.4.1 Ofwat's market-based cross-checks: Market-to-Asset Ratios

In PR24, Ofwat acknowledges the potential need to cross-check their cost of equity, but with the exception of Market-to-Asset Ratios (MAR) essentially dismisses the other multiple cross-checks proposed by companies and does not offer alternative solutions. This approach raises methodological issues without accepting the key insights from traded market benchmarks and comparable (and typically lower perceived risk) regimes.[115]

Ofwat does place some weight on MAR evidence, and has acknowledged that traded MAR values for listed water companies have declined recently.[116] Oxera has written extensively on this topic, and explained how many factors affect market valuations and may explain an observed level of MARs above 1x. Hence, adjustments are required before inferences can be drawn from any MARs evidence.[117]

We do however acknowledge that with appropriate adjustments, MARs evidence can be used to inform investors' sentiment in the sector. In

[114] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[115] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', 11 July, pp. 73–74, section 2.4.
[116] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', 11 July, pp. 73–74.
[117] See, for example, Oxera (2022), 'A review of the methodology used to estimate the allowed cost of equity for regulated companies—Response to the UKRN consultation', November, https://www.oxera.com/wp-content/uploads/2023/07/A-review-of-the-methodology-used-to-estimate.pdf (last accessed 26 August 2024).

particular, we consider that there is merit in looking in detail at recent capital raises across the sector.

We now outline evidence from three recent transactions. This evidence raises significant questions as to investors' willingness to provide new capital to fund future RCV growth. We note that full information on transactions is not always publicly available: however, we consider Ofwat can—and should—gather further information to assess this form of evidence in greater detail:

- **Severn Trent**: in last year's market placing, a strategic investment was made by global infrastructure investor QIA, which took a 7% stake through acquiring 50% of the £1 billion in new share issues. Prior to the capital raise, Severn Trent's shares traded at £2,314p and new shares were issued at £2,150p, which represented a 7.1% discount.[118] Taking into account published statements by Severn Trent about expected outperformance could result in an underlying valuation below 1x RCV.

- **Yorkshire Water**: in June 2023, Yorkshire Water raised £500m from its shareholders, in a transaction where all but one shareholder injected new capital through a convertible loan. Reportedly, the economic effect of this transaction was that the investing shareholders provided new capital at below 1x RCV.[119]

- **Southern Water**: new owner Macquarie acquired an additional £375m stake in Southern Water Services in October 2023. Investors report their understanding that this transaction was at a deep discount to RCV, and that this may have been referenced at a recent Ofwat investor engagement event.[120]

Based on statements made during our engagement with investors, recent sector transactions appear to have occurred at depressed valuations, as demonstrated by the three case studies above.[121] These valuations could imply MARs of less than one, adjusted for expected out-performance in AMP7, which suggest an insufficient level of

[118] Severn Trent website, 'Results of the Equity Issue', https://otp.tools.investis.com/clients/uk/severn_trent_plc/rns/regulatory-story.aspx?cid=1487&newsid=1718638 (last accessed 26 August 2024). RCV discounts were estimated using the 2022/2023 average RCV, the actual gearing ratio of approximately 55% and the market cap on 28 September 2023 (Middle market price when placing price was agreed).
[119] Plimmer, G., Ruehl, M. and Storbeck, O. (2023), 'Yorkshire Water raises £500mn from shareholders to shore up finances', 29 June, https://www.ft.com/content/84f3b655-8650-41cb-a7b2-9ea825a6eef6 (last accessed 26 August 2024).
[120] Southern Water (2024), 'Annual Report and Financial Statements', 31 March, pp. 100 and 108.
[121] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

investability—as they imply that investors are not willing to invest £1 today for an increase in RCV of £1, the assumption which underpins investment in RAB-based regulation.

Nevertheless, while we consider this evidence relevant, as noted earlier we recognise there are multiple factors affecting market valuations. Because of this, we recommend exercising caution when using MARs evidence to make inferences about investors' required returns.

5.4.2 Alternative core infrastructure investments

As discussed in section 2.42.4 there is increasing competition for infrastructure capital, both in the UK and internationally. Infrastructure investment is expected to increase substantially to keep up with demand and to achieve carbon emission targets.

Our investor survey suggests that the majority of infrastructure investors are active across regulated sectors and geographies. Investors were clear that further investment into the water sector will need to compete with other infrastructure opportunities, which was less of an issue for Ofwat in the past because of the lower need for external funding.[122]

In this context, we consider it appropriate to benchmark Ofwat's allowance with the allowances provided by other regulators in the UK and internationally. We recognise the methodological issues and the need to make appropriate adjustments to account for relative risks and other factors (e.g. foreign currency considerations). Nevertheless, to illustrate the issue that investors have identified, we briefly describe a few examples of alternative investments and how they compare to the England and Wales water sector:

- **GB energy sector.** Ofgem has recently published the RIIO-3 Sector Specific Methodology Decision, [123] which indicates the methodology and the range of the WACC allowance for the next control period. Ofgem uses a 60% notional gearing and has indicated a CoE range of 4.57–6.35%. This compares to a 4.85% (midpoint) allowance for the water sector at 60% gearing,[124] 61bp lower than Ofgem's midpoint estimate.

[122] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[123] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July.
[124] The notional gearing adjustment was made to render the figures comparable. The adjustment was made by re-levering the asset beta at 60% gearing and holding all other parameters constant.

- **US water**. Investors in UK listed water include dedicated water and environmental funds, which have typically focused on two core markets, the UK and US. The largest US listed water company American Water Works (AWW) saw a recent regulatory determination that allowed a regulatory return on equity of 9.4% in nominal terms, approximately 300bps higher than that proposed by Ofwat. AWW's implied market cost of equity (combining its dividend yield with target long-term dividend growth rate) is 9.2–10.2%, in line with US regulatory returns.

- **German electricity networks**. There is significant required investment in German electricity networks, across transmission, distribution and offshore. The German energy regulator applied a revised approach to funding new CAPEX in early 2024, with a fixed 3% 'mark-up' to an 'annually variable base rate (of the yield on debt securities outstanding)'.[125] The value of the allowance, including tax effects, was 7.7% in nominal terms.

5.4.3 Water sector debt benchmarks

Finance theory explains that as a senior claim on the assets, the cost of debt should be lower than the cost of equity—in other words, the debt risk premium should be lower than the risk premium on unlevered equity at any level of gearing.

The return that investors anticipate when they commit equity capital to a company cannot be directly observed. In contrast, the return required by providers of debt finance is contractually agreed upon. When estimating the cost of equity for a company, it is therefore logical to consider what insights can be derived from the cost of debt of that company. A range of methodologies could be employed to estimate the CoE with reference to the cost of debt: we consider two of them to be straight-forward and worthwhile exercises:

1 **Direct benchmarking against the yield on senior and subordinated debt**. Because equity is riskier than any form of debt, the expected return on equity should be higher than the returns on debt instruments. Therefore, the latest market data on debt can be used to estimate a minimum threshold for the CoE. In the context of the England and Wales water sector, South West Water recently issued 17 year bonds at a cost of

[125] Bundesnetzagentur (2024), 'Determination on equity return for new assets in the electricity and gas sectors', 24 January.

6.4% for senior debt[126]. Likewise, we understand that midco subordinated debt trades at around 8-8.5% nominal yields. Based on our investor engagement, investors indicate they see a minimum cost of equity of approximately 9-9.5% in nominal terms, 250-300bps above senior debt costs and 50-100bps above subordinated debt, as equity risks are higher than both classes of debt.[127]

2 **The ARP–DRP framework**. This framework involves estimating the difference between asset and debt risk premiums with reference to market data and regulatory allowances. The differential can then be compared with those implied by regulatory precedents as well as contemporary market evidence, to inform the appropriateness of the CoE estimation. Ofwat has in its Draft Determinations expressed reservations about the precision of this approach, without recognising that similar concerns about measurement error also apply to the CAPM. We agree that measurement error exists in all methods for estimating the cost of capital, which is why drawing on multiple sources of evidence is important.

5.5 Summary

In this section, we explain why Ofwat's decision to estimate the CoE allowance using what is described as a 'through the cycle' estimate of the TMR may lead to a CoE allowance which is below investors' current required return. This is likely to be problematic as the sector enters AMP8, given the need for companies to raise significant amounts of new debt and equity to finance RCV growth.

We have sought to estimate how material this issue might be, using an adjustment of 1.0–1.7% in the TMR. Our analysis shows that if Ofwat continued past practice of adjusting TMR in the direction of changes in gilt yields the TMR range would be approximately 7.5% and 8.3% in CPIH-real terms, which translates into a CoE allowance 60–100bps higher than Ofwat's estimate, and 30–70bps higher than Ofwat's point estimate (which includes a 27bps uplift). While we acknowledge Ofwat's decision to 'aim up' on its CoE allowance by 27bps, we show that this uplift appears to be insufficient to correct the 'through the cycle' issue alone (excluding further considerations relating to the opportunity cost of capital for other investment opportunities). Specifically, we show

[126] Global Capital (2024), 'South West Water joins flow of peers into market', 23 July.
[127] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.

that the uplift results in a CoE allowance 30bps lower than the low end of the allowance estimated with a corrected TMR.

Finally, we note that many of the cross-checks, taken individually, are imperfect estimates of the cost of equity for the water sector in England and Wales. This creates questions for Ofwat as to which cross-checks to use and how to interpret them. However, in a context where any shortfall between true required returns and the PR24 allowed returns is so consequential, it is inappropriate for Ofwat to argue that all (or virtually all) non-CAPM measures should be ignored, when most point to an inadequacy of the CAPM based estimates.

Instead, Ofwat should carefully scrutinise each metric in detail, understand the value provided by each measure (based on economic logic), and take a balanced assessment of what this means for the CoE allowance in the round. Taken together—and notwithstanding the methodological issues associated with any specific measure—the evidence provided in this section demonstrates a clear need for significantly higher allowed returns for the sector in AMP8.

Given the paradigm shift in need for new equity investment in AMP8—and the potential issues with CAPM as applied in PR24 Draft Determinations—Ofwat's current CoE approach is incompatible with an appropriate assessment of investability, which requires forming a high confidence view that the risk-adjusted returns offered in PR24 will deliver the required equity investment.

6 Is the package as a whole a 'fair bet'?

While setting an allowance which provides a fair rate of return on capital is essential to securing finance, it is also critical that investors consider there to be a reasonable prospect of achieving the base return (and potentially outperforming it, in the case of strong performance).

In this context, regulators—including the CMA—have often referred to the concept of a **'fair bet'**.[128] This principle recognises that regulators should aim to set regulatory parameters at a level that ensure there is an equal likelihood of an efficient firm outperforming as there is of it underperforming, such that, on average, the firm would be expected to earn a return that is in line with its cost of equity.

There are two elements to this in particular:

- Setting regulatory targets and allowances that are achievable for an efficient company;
- Ensuring the allocation of risk is not inappropriately asymmetrical.

Where these conditions do not hold, the expected return may be higher or lower than the base return. For example, if investors believe the price control has been calibrated in such a way that companies are likely to overspend their cost allowances, or receive net penalties on regulatory incentive mechanisms, then the expected return will be below the headline WACC allowance.

In this section, we consider whether the position set out in Ofwat's Draft Determinations represents a 'fair bet' for investors.

6.1 Ofwat's own analysis indicates a negative skew

Within its Draft Determinations, Ofwat sets out its view on the RoRE risk associated with its settlement. The RoRE risk ranges vary by company; however, Ofwat assumes that the median company has a symmetric RoRE risk range of -4.5% to +4.5%. Within this, it assumes:

[128] See, for example, Competition and Markets Authority (2017), 'SONI Limited v Northern Ireland Authority for Utility Regulation', November, p. 197, para. 7.237; Civil Aviation Authority (2023), 'Economic regulation of Heathrow Airport Limited: H7 Final Decision, Section 3: Financial issues and implementation', CAP2524D, March, p. 60, para. 11.3; Competition and Markets Authority (2023), 'H7 Heathrow Airport Licence Modification Appeals: Final Determinations', 17 October, p. 259, para. 7.163.

- the **operational risk range** (i.e. the risk related to TOTEX and outcomes delivery) has negative skew at -4.0% to +3.6%
- the **finance risk range** has a positive skew of -0.5% to +0.9%.

Ofwat's analysis indicates a mid-point of operational RoRE under-performance performance (of -0.2%), and that this is only offset by an expectation that companies will outperform its financing assumptions (by 0.2%).

Table 6.1 Ofwat's RoRE risk range for the median company

	P10	P90	Mid-point
Operational	-4.0%	+3.6%	-0.2%
Financial	-0.5%	+0.9%	+0.2%
Overall	**-4.5%**	**+4.5%**	**0.0%**

Source: Ofwat (2024), 'Aligning risk and return appendix', July, p. 21, Table 1.

One interpretation of this is that the first 20bps of Ofwat's 27bp 'aiming up' on the cost of equity is needed to cover expected under-performance on TOTEX and ODIs, such that—in practice—Ofwat is 'aiming up' by only 7bps for investability.

We consider it is an atypical regulatory assumption for companies to have to outperform financing assumptions in order to achieve the base return. Ofwat is effectively assuming that operational underperformance can be funded out of financing outperformance. This suggests that Ofwat believes the 'true' cost of capital for water networks to be below the 3.66% allowance.[129]

In contrast, Ofgem is clear in its RIIO-3 methodology decision that:

'if we consider it to be in the consumer interest to have 'skew' in the overall regulatory package (eg, via the calibration of incentive mechanisms in aggregate), we retain the discretion to use a Step-3

[129] We consider this to be a particularly strange assumption, given Ofwat has previously suggested that companies should voluntarily share financing outperformance with customers. See Ofwat (2022), 'Creating tomorrow, together: Our final methodology for PR24 Appendix 10 – Aligning risk and return', December, p. 70.

process to ensure that expected returns to investors again match our best estimate of the cost of capital.'[130]

Moreover, recent evidence suggests that there is limited support for an assumption that companies will be able to outperform the cost of debt. Indeed, at the current point in the regulatory cycle, even the highest rated companies have been raising debt at yields that exceed the Ofwat allowance (for example, the recent South West Water bond issue referred to in section 5.4).

6.2 In practice, the downward skew is considered to be larger than modelled by Ofwat

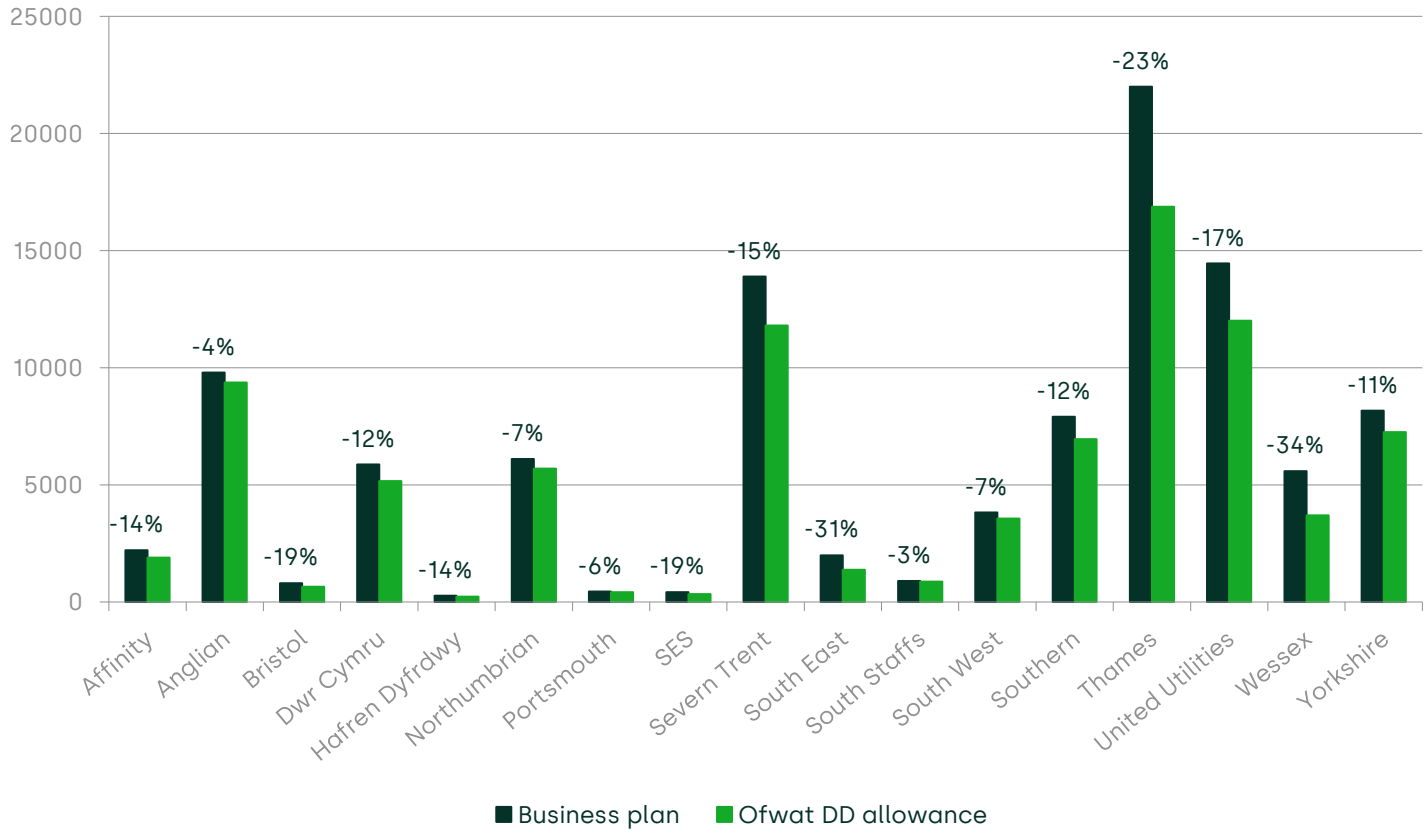
Ofwat's RoRE modelling is based on its view of what is achievable for the notionally efficient company. There are large gaps between what companies believe is deliverable and Ofwat's view of efficient TOTEX, achievable performance commitment levels and the level of renewals activity that can be funded from base expenditure. Consequently, there is a strong view among industry and investors that the expected drag to RoRE from TOTEX overspend and ODI underperformance will be greater than the -20bp mid-point assumed by Ofwat.

TOTEX risk—the DD leaves £16bn of TOTEX unfunded relative to company plans, while increasing expectations of what can be delivered from this funding

Ofwat has disallowed c. £16bn of TOTEX relative to company plans. The level of challenge varies across the companies, with cuts ranging from 3% to 34% (after accounting for frontier shift and real price effects).

[130] Ofgem (2024), 'RIIO3 SSMD Finance Annex', para. 3.349.

Figure 6.1 Comparison of TOTEX allowances to business plan 'asks' (£'000, post frontier shift and RPEs)



Source: Ofwat (2024), 'PR24 draft determinations: expenditure allowances', 11 July, p. 205.

This represents an overall 'haircut' to company business plans of 16% (versus an 11% challenge at PR19 DDs). However, the size of TOTEX has grown such that—in absolute terms (i.e. £m)—the amount of equity that is needed to cover shortfalls is much higher than in the past (notwithstanding the partial protection companies receive via cost sharing).

It is, of course, part of the job of an economic regulator to provide external scrutiny and challenge to companies' submitted plans, and Ofwat has duties to:

- further the consumer objective to protect the interests of consumers, wherever appropriate by promoting effective competition; and,

- promote economy and efficiency by water companies in their work.[131]

However, as was shown in section 2.32.3, in the first four years of the current AMP, the vast majority of companies have overspent their TOTEX allowances while also receiving ODI penalties. The size of the DD cost challenge, combined with the stretching expectations of what can be delivered in terms of service levels and renewals activity (discussed below) and extensive clawback provisions, result in considerable risk of RoRE under-performance, which is not balanced by the potential for RoRE out-performance.

The combination of more stretching PCLs and higher-powered ODI rates mean that companies expect to be in penalty on the ODIs framework

In its PR24 final methodology, Ofwat stated that it would undertake a more robust assessment of 'what base buys' with respect to service performance. However, it did not propose a concrete approach for doing so. In its Draft Determinations, Ofwat has still not undertaken a thorough assessment of the level of service that could reasonably be delivered through base expenditure. Instead, it has largely set PCLs independently of its assessment of expenditure, as at PR19.

The resulting draft determination represents an excessive degree of challenge in terms of ODIs. In particular, there are concerns around:

- **Starting position in AMP8**. In calibrating the performance regime, Ofwat's starting assumption is that companies will meet their PR19 PCLs by the end of AMP7 (unless there is compelling evidence to indicate otherwise). Ofwat states that this approach is needed to ensure that customers are 'not paying twice' for improvements that have already been funded. However, as the latest APR data (for 2023/24) shows that all but two companies are in a net penalty position on ODIs, it appears more likely that companies were never funded to deliver this level of performance in practice.

- **Additional stretch**. A number of Ofwat's PCLs exhibit high levels of stretch relative to current industry performance levels, and compared to what companies set out in business plans. Examples include per capita consumption; business demand;

[131] See Ofwat website, 'Our duties', https://www.ofwat.gov.uk/about-us/our-duties/ (last accessed 21 August 2024).

GHG emissions; pollution incidents; storm overflows; and biodiversity.

- **ODI rates**. Higher-powered ODI rates mean that penalties for under-performance could be significant. While the increase in ODI rates also increases the size of any potential rewards for outperformance, given companies' expectations around performance relative to Ofwat's PCLs, the increase in rates further increases the downside risk position.

We have sought to estimate the net rewards / penalties companies can expect over AMP8, based on Ofwat's Draft Determinations. Our analysis focuses on the 20 PCs common across all WaSCs and WoCs, and assumes companies perform in line with the targets put forward in their business plans (while PCLs are set in line with Ofwat's Draft Determinations).

Our approach involves calculating the differential between Ofwat's Draft Determination PCLs and those put forward by the companies in their BP tables, and inputting these differentials into Ofwat's RoRE payments model, which applies relevant protections (e.g, caps and collars) before calculating the rewards / penalties.

The results of this analysis are shown in the tableTable 6.2 below.[132] This shows how companies are highly exposed to penalty risk over AMP8, with a total industry penalty of £2.98bn expected if companies perform in line with their business plans (pre-ASM). £1.59bn of this penalty is attributable to Thames Water. Once the ASM is considered, the total industry penalty is reduced to £2.40bn—or an annual reduction in % RoRE terms of -1.0%. This mainly reflects a reduction of the total penalty for Thames Water to £1.01bn. It should be noted that this analysis is conservative, since it assumes companies receive the TOTEX allowances requested in their business plans.

[132] Note: zeroes indicate either that Ofwat has set the PCL in line with the company's plan, or that the PCL is not applicable to the company in question.

Table 6.2 Total rewards / penalties across AMP8 for each PC and company, based on business plan forecasts (£m)

PC	ANH	WSH	HDD	NES	SVE	SWB	SRN	TMS	UUW	WSX	YKY	AFW	BRL	SSC	PRT	SEW	SES	Total
Water Supply interruptions	-11.3	1.0	-0.4	2.5	-2.4	1.3	-11.6	-41.5	2.8	0.4	-3.2	2.8	0.5	2.4	1.0	-23.4	0.6	**-78.6**
Unplanned outages	9.1	13.2	1.0	-21.8	29.2	7.7	-18.6	22.5	52.5	12.5	13.7	-0.4	-2.3	-1.3	2.3	-1.9	2.6	**119.9**
Compliance Risk Index (CRI)	0.0	0.0	-0.1	-19.2	-12.7	0.0	-7.8	0.0	0.0	0.0	-13.1	0.0	0.0	0.0	-0.2	0.0	0.0	**-53.2**
Mains repairs	-12.1	0.0	-0.1	-4.8	-5.4	0.0	-20.7	-13.0	1.3	12.1	-41.7	0.0	-1.2	0.0	0.0	-9.8	0.0	**-95.3**
Leakage	-31.5	-79.0	0.0	0.9	-5.3	-0.5	-4.1	-11.4	2.2	0.0	-10.5	-0.8	-0.3	0.4	-0.3	0.0	0.1	**-140.0**
Per capita consumption (PCC)	-7.2	-12.0	-1.0	-8.3	6.3	-1.0	-18.5	-37.3	3.1	-5.2	-39.5	-9.4	-5.8	-3.6	-3.9	-11.6	0.4	**-154.5**
Business demand	-0.5	-0.1	-0.5	-33.4	-11.2	0.1	0.0	-21.7	-3.7	-1.3	-7.7	0.0	-0.9	-2.0	0.2	-9.5	0.3	**-91.9**
GHG emissions (water)	6.5	26.5	-0.6	-0.4	-19.6	-0.5	-13.9	-3.6	-5.7	10.0	-0.5	-1.0	-1.8	-2.0	-0.3	-1.3	-0.1	**-8.2**
GHG emissions (wastewater)	-26.4	32.0	-0.2	0.6	-85.2	-0.8	17.2	-4.1	-21.7	37.9	-31.0	0.0	0.0	0.0	0.0	0.0	0.0	**-81.6**
Water quality contacts	-56.3	-2.8	-1.4	-21.6	-11.0	-5.9	-21.0	21.2	13.9	-16.8	-11.9	0.0	-8.9	2.8	-0.2	-6.2	-2.5	**-128.4**
Pollution incidents	-81.1	-20.6	-0.3	-1.1	-0.2	-15.3	-93.6	-230.1	21.6	-19.8	30.0	0.0	0.0	0.0	0.0	0.0	0.0	**-410.6**
Internal sewer flooding	-5.4	3.2	-0.3	1.8	2.8	12.5	-11.9	-81.5	-97.6	2.8	-57.7	0.0	0.0	0.0	0.0	0.0	0.0	**-231.3**
External sewer flooding	-52.0	-12.5	-0.1	-1.2	15.7	4.4	8.3	-1,130.1	37.8	-72.7	32.6	0.0	0.0	0.0	0.0	0.0	0.0	**-1,169.8**
Sewer collapses	0.0	0.7	0.1	0.2	-17.8	10.0	-1.6	1.0	0.1	-15.3	40.4	0.0	0.0	0.0	0.0	0.0	0.0	**18.0**
Storm overflows	-0.9	-57.6	-0.1	-3.0	0.0	-1.9	-16.2	-6.2	-3.1	-39.1	-66.7	0.0	0.0	0.0	0.0	0.0	0.0	**-194.7**
Bathing water quality	-6.6	-21.9	0.0	-27.7	0.0	-3.4	-48.9	0.0	-35.5	15.2	-8.7	0.0	0.0	0.0	0.0	0.0	0.0	**-137.4**

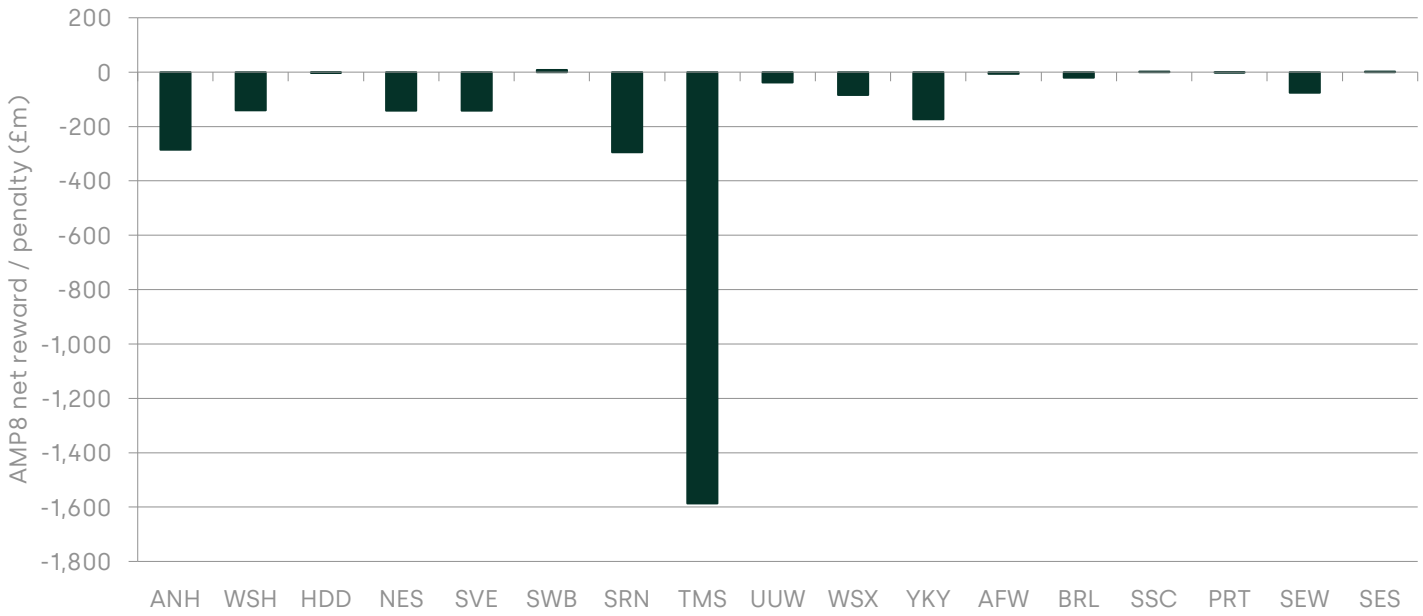
PC	ANH	WSH	HDD	NES	SVE	SWB	SRN	TMS	UUW	WSX	YKY	AFW	BRL	SSC	PRT	SEW	SES	Total
Discharge permit compliance	0.0	0.0	0.0	0.0	-31.2	0.0	-23.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-9.9	0.0	**-64.6**
Serious pollution	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-47.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**-47.2**
Biodiversity	-10.1	-10.6	1.3	-4.8	5.9	0.8	-8.9	-3.7	-6.1	-5.0	2.3	3.0	0.0	5.8	0.1	-2.4	0.5	**-31.8**
Total	**-285.6**	**-140.4**	**-2.8**	**-141.3**	**-141.9**	**7.6**	**-295.0**	**-1,586.8**	**-38.0**	**-84.1**	**-173.3**	**-5.8**	**-20.6**	**2.5**	**-1.4**	**-76.0**	**1.9**	**-2,981.2**
Total after ASM	**-285.6**	**-140.4**	**-2.8**	**-141.3**	**-141.9**	**7.6**	**-291.7**	**-1,011.4**	**-38.0**	**-84.1**	**-173.3**	**-5.8**	**-20.6**	**2.5**	**-1.4**	**-76.0**	**1.9**	**-2,402.4**
Total p.a. after ASM (RoRE%)	**-1.1%**	**-0.8%**	**-0.8%**	**-1.0%**	**-0.5%**	**0.1%**	**-1.6%**	**-2.1%**	**-0.1%**	**-0.8%**	**-0.8%**	**-0.1%**	**-1.3%**	**0.2%**	**-0.1%**	**-1.9%**	**0.2%**	**-1.0%**

Note: River water quality (RWQ) has £0 ODI rates and so has been excluded as companies face no rewards or penalties. The 'Total p.a. (RoRE%)' takes the average of the total rewards / penalties over the period for each company expressed in RoRE% terms. The 'Total p.a. after ASM (RoRE%)' shows the RoRE% impact after considering the ASM. The total impact of all companies takes the average of all companies weighted by their size of their regulated equity. Ofwat's ODI Payments Calculator model had omitted the SOF PCLs for HDD and WSH, these have been added based on data from Ofwat's Key Dataset 1: Outcomes data.
Source: Ofwat and company business plan data tables.

In Appendix A1, we present the findings from this same analysis under an alternative scenario, in which AMP8 performance is assumed to be in line with companies' performance over AMP7.

The asymmetric nature of the ODI risk is further illustrated in the chart below.

Figure 6.2 Total rewards / penalties in AMP8 under BP assumptions (£m)



Source: Ofwat and company business plan data tables.

Ofwat's expectation that base funding can deliver a high level of renewals activity

During the PR24 process, a number of companies have raised the issue of whether future asset replacement levels and funding need to be increased relative to historical levels. Ofwat's provisional decision is that companies will be expected to replace at least 0.3% of their water network each year through base allowances. For the vast majority of companies, Ofwat's view of the base renewal rate is significantly higher than companies' business plans, as shown in the table below.

Table 6.3 Ofwat and company views on mains replacements over 2025–26 to 2029–30 period

Company	Company view of base renewal rate	Ofwat view of base renewal rate
Anglian Water	0.13%	0.30%
Dŵr Cymru	0.02%	0.47%
Hafren Dyfrdwy	0.39%	0.39%
Northumbrian Water	0.20%	0.30%

Company	Company view of base renewal rate	Ofwat view of base renewal rate
Severn Trent Water	0.38%	0.38%
South West Water	0.05%	0.30%
Southern Water	0.17%	0.40%
Thames Water	0.17%	0.30%
United Utilities	0.10%	0.30%
Wessex Water	0.24%	0.48%
Yorkshire Water	0.21%	0.44%
Affinity Water	0.14%	0.30%
Portsmouth Water	0.24%	0.30%
Bristol Water	0.28%	0.33%
South East Water	0.19%	0.30%
South Staffs Water	0.56%	0.56%
SES Water	0.30%	0.30%
Sector average/total	**0.22%**	**0.36%**

Source: Ofwat (2024), 'PR24 draft determinations: Expenditure allowances', July, p. 36.

This is an example of an area in which Ofwat's assumptions about what can be achieved from base spend are much more stretching than what has been assumed by companies. The use of a price control deliverable creates a risk that some of the base funding provided to companies could be clawed back if it they do not meet the 0.30% rate of mains replacement assumed by Ofwat.

Increasing the proportion of delivery risk carried by investors, through the PCD framework and other proposed reconciliation mechanisms.

Ofwat has introduced a new price control deliverables (PCD) framework for PR24, which includes penalties for non-delivery and/or late delivery of outputs. The PCD framework includes scheme level deliverables with time incentives in some areas, such as storm overflows, phosphorus removal, and sewage treatment works growth. Ofwat has indicated that c.90% of enhancement spend is subject to a PCD or a gated process.

The proposed PCD framework and other reconciliation mechanisms introduce a much tighter level of specification than previous controls and generate a high risk of clawback. The delivery profiles for timing

incentives are not aligned to companies' proposals or the delivery profiles set by other regulators, creating additional risk of penalties. Taken together, these mechanisms leave companies and their investors exposed to considerable delivery risk.

In other areas, Ofwat has introduced new mechanisms that are intended to reduce risk for investors. This includes true-ups for energy costs and (a high proportion of) business rates. Ofwat has also adjusted the sharing rates for enhancements such that companies will bear a reduced amount of any overspend (and also retain a smaller amount of any efficiency). While some of these mechanisms have in principle been welcomed by the sector, companies/investors have flagged that these mechanisms still pose additional financing risk as i) the reconciliations are applied at the end of the period and ii) in some cases, take the form of RCV adjustments despite the relevant expenditure being OPEX.

An example of this is business rates, where the gap between company plans and Ofwat's upfront funding is more than £1bn. Companies will be able to recover 90% of any increase, but the reconciliation will not be applied until the start of AMP9 (with companies also fully bearing 10% of any overspends, which would equate to c. £100m if their projections materialise).

6.3 Summary

Ofwat's own RoRE modelling shows that it expects that the median company will underperform on operational elements of the price settlement (i.e. TOTEX and ODIs) by 20bp RoRE. This means that Ofwat only expects the median company to be able to earn the base return if it is able to outperform Ofwat's debt financing assumptions.

The prevailing view of the industry and investors is that, if more realistic assumptions are used, the price control is considerably more skewed to the downside. Ofwat's Draft Determinations combine significant TOTEX cuts with more stretching PCLs and higher ODI rates, increased expectations of what can be delivered from base, and a high degree of delivery risk with scheme-level PCDs. As an overall package, the downside risk is greater than the upside risk. This has been noted by Moody's:

Overall, Ofwat's DD presents significant challenges for companies, particularly in the context of enhancement cuts and the much larger penalty exposure. All companies would face a reduced RORE based on operational performance in line with their business plan assumptions, including spending the disallowed totex amounts. The average annual sector RORE would be reduced by almost three percentage points. This

is an overly conservative assumptions, but even half that exposure means a significant adjustment in the context of only 4.8% proposed base equity return. Based on our simplified analysis…only South Staffs Water could achieve a small RORE benefit from operational performance. However, the analysis is based on totex allowances before frontier shift and RPE adjustments. After considering these, we believe no company would be able to earn the allowed return if the DD is confirmed and companies perform in line with their business plans.[133]

Investors are cognisant of the recent struggles of the sector as a whole to meet Ofwat's regulatory targets. Evidence from AMP7 to date shows that companies have been unable to meet Ofwat's ODI targets within the funding envelopes provided at PR19. With the exception of Severn Trent and United Utilities, all companies are overspending TOTEX allowances, while also paying ODI penalties.

In light of this, **Ofwat's Draft Determinations are unlikely to represent a 'fair bet'**. This suggests the expected return is below the base return, with no credible compensation mechanism to address the resulting risk to investability.

[133] Moody's (2024), 'Ofwat's draft determination increases sector risk', 14 August, p. 9.

7 Is the overall level of risk exposure reasonable?

In addition to the distribution of risk (i.e. whether it is symmetric or asymmetric), investors will also be concerned about the overall level of risk exposure. In this section we consider levels of risk exposure under Ofwat's Draft Determinations.

7.1 The overall level of risk associated with the water sector as a long-term investment proposition has increased

The water sector is facing a fundamentally different risk landscape at PR24 compared to previous price reviews. This is driven by:

- Risk associated with delivering a considerably larger and more complex enhancement programme than in any previous price control. The scale of intervention and the cost to comply with statutory requirements set by WINEP/DWMP/WRMP are subject to a high degree of uncertainty.[134]
- High levels of public scrutiny and changing consumer expectations over time—such as the current focus on river and bathing water quality—which can have sudden cost implications for water companies to address.[135]
- Increased levels of regulatory risk, in particular enforcement. Ofwat has signalled an increased willingness in recent years to take enforcement action against all companies, which is likely to influence investors' views of the financial risks associated with investing in the water sector.[136]
- Political risk—the new Labour government has yet to comprehensively set out its policies for the sector but, has signalled it will look to enhance regulatory measures aimed at blocking dividends and executive bonuses, introduce automatic

[134] By way of example, the storm overflows evidence project, undertaken on behalf of stakeholders including Defra, Ofwat and Water UK, identified that the cost of completely eliminating storm overflows ranged from £350bn to £600bn, while the range of costs of limiting storm overflows varied between £5bn and £280bn depending on frequency. Achieving a standard whereby no overflow discharges more than 10 times per annum could cost the industry between £27bn and £140bn. See Stantec (2021), 'Storm Overflow Evidence Project', November.
[135] For example, the push to tackle storm overflows resulted in £3.1bn of initial investment in storm overflows between 2020 and 2025, with Ofwat unlocking an additional £1.7bn investment in June 2023. See Defra (2023), 'Storm Overflows Discharge Reduction Plan', p. 18.
[136] See Ofwat (2024), 'Ofwat announces enforcement cases against four more companies in wastewater treatment investigation', 16 July.

fines for sewage discharges and impose criminal charges on water company executives.[137] A revised Strategic Policy Statement, possibly in the months following the Final Determinations, could also have cost implications for companies.

- High levels of macroeconomic and geopolitical risk that may create pressures in terms of input prices, affordability, and access to capital markets. The Bank of England's latest Financial Stability Report notes that 'Global vulnerabilities remain material. Households, businesses, governments and financial institutions across jurisdictions continue to adjust to higher interest rates. Policy uncertainty associated with upcoming elections globally has increased. This could increase existing sovereign debt pressures, geopolitical risks…[and] could also make the global economic outlook less certain and lead to financial market volatility.'[138]

- Supply chain risks at a time when there are, at a global level, large infrastructure investment programmes across a number of sectors.[139]

- Risks associated with climate change.[140] Water companies have a role to play in climate mitigation, but will also need to adapt to a changing climate. Future weather patterns are inherently uncertain but have a clear impact on company performance and investment requirements.

As a consequence of this uncertainty, investors need to understand their potential exposure under a range of future scenarios. They need a supportive, flexible regulatory regime that takes account of the high level of uncertainty in the market.

7.2 The complexity of the Draft Determinations makes it more difficult for investors to understand their risk exposure

During our discussions with investors during the preparation of this report, we have frequently heard that investors are struggling to get to grips with the complexity of the regulatory framework that Ofwat is proposing to adopt in AMP8.

[137] Labour Party (2024), 'Here's how Labour will tackle sewage spills in UK rivers and seas', 31 March.
[138] Bank of England (2024), 'Financial Stability Report', June, p. 17.
[139] Stantec (2023), 'Report for Water UK on AMP8 Deliverability'.
[140] See, for example, Ofwat (2022), 'Ofwat's 3rd Climate Change Adaptation Report', February.

In particular, investors noted the large number of documents and models, as well as a number of new mechanisms that have been introduced at Draft Determination (and hence were not subject to consultation during the development of the PR24 Final Methodology). Examples of these new mechanisms include:

- An aggregate sharing mechanism for TOTEX.
- Multiple sets of cost sharing rates (including separate cost sharing rates for base and enhancements).
- A highly detailed set of price control deliverables for each company.
- A large scheme gated process.
- An asset improvement gated allowance.
- A delivery mechanism (only applicable to Thames and Southern).
- A delayed delivery cash flow mechanism.
- The energy true-up mechanism.

It is worth noting that there are already between 15 and 18 reconciliation models for each company to calculate the RCV 'midnight adjustment' for 2025.[141] Each additional mechanism that is added provides an additional layer of complexity for investors to understand.

While levels of complexity do not directly affect actual underlying risk exposure, they do make it more challenging for investors to assess the level of risk to which they will be exposed.[142]

7.3 The Draft Determinations have created concerns over the stability and supportiveness of Ofwat's regulatory framework

In order to invest in long-lived assets, with long pay-back periods, investors must have trust and confidence in the regulatory systems that are in place.[143] The concept of a regulatory capital value was introduced as a 'commitment device' to investors that they would be able to recover their capital investments plus a fair return.[144]

[141] Ofwat website, 'Draft determinations models', https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/draft-determinations-models/ (last accessed 27 August 2024).
[142] Oxera (2024), 'PR24 Investor Engagement', undertaken for Water UK.
[143] 'Investors, industry and sector experts have told the government that a clearer plan for utilities investment for the energy and water sectors is needed. The government regards a robust assessment of infrastructure requirements as necessary for investor assurance.' See Department for Business and Trade (2024), 'Smarter Regulation: Delivering a regulatory environment or innovation, investment and growth', May.
[144] Stern, J. (2014), 'The Role of the Regulatory Asset Base as an Instrument of Regulatory Commitment', *European Networks Law and Regulation Quarterly*, **2**:1, pp. 15–27.

Historically, UK economic regulators have scored highly within credit rating agencies' assessments in terms of the stability, predictability and supportiveness of their regulatory frameworks. However, Moody's revised its view on the stability and predictability of Ofwat's framework from Aaa to Aa in May 2018, resulting in higher guideline financial ratios for water companies at each rating.

In light of the Draft Determinations, Moody's has signalled that it is considering revising this further downwards to reflect the less supportive framework for investment.

The draft determinations create a less supportive framework for the water companies and constrain their ability to earn the allowed return. The regulatory regime's stability and supportiveness, as well as companies' ability to earn a fair return, are key factors under our rating methodology for regulated water utilities. If the draft framework is confirmed at FD, business risk would increase for the sector and we would consider revising our score for either or both of these factors when assessing companies' credit quality. Against this background, companies would need to strengthen their credit ratios to maintain their current credit quality.[145]

The National Infrastructure Commission has more generally questioned the extent to which current systems of incentive regulation, focused on making marginal efficiency improvements, are supportive of the level of investment required in the sector. We note that this statement preceded the Draft Determinations and refers to a general problem with the UK regulatory model, as opposed to a direct critique of Ofwat's framework or determinations.

The UK's system of independent economic regulation has attracted significant investment and improved some outcomes for the public. However, it was designed over 30 years ago when the focus was on making marginal efficiency improvements and addressing issues with major and unavoidable monopoly power. Overall investment plateaued in the 2010s and significant problems have since emerged including unacceptable levels of water pollution and slow electricity grid connections. Regulation has become more complex, with regulators required to balance a longer list of duties and priorities in a more complex environment. The system now requires urgent reform to keep

[145] Moody's (2024), 'Regulated Water Utilities—UK: Ofwat's draft determination increases sector risk', 14 August.

pace with the rapid and transformational investment needed in many infrastructure sectors.[146]

7.4 The regulatory mechanisms leave investors open to a high level of risk in AMP8

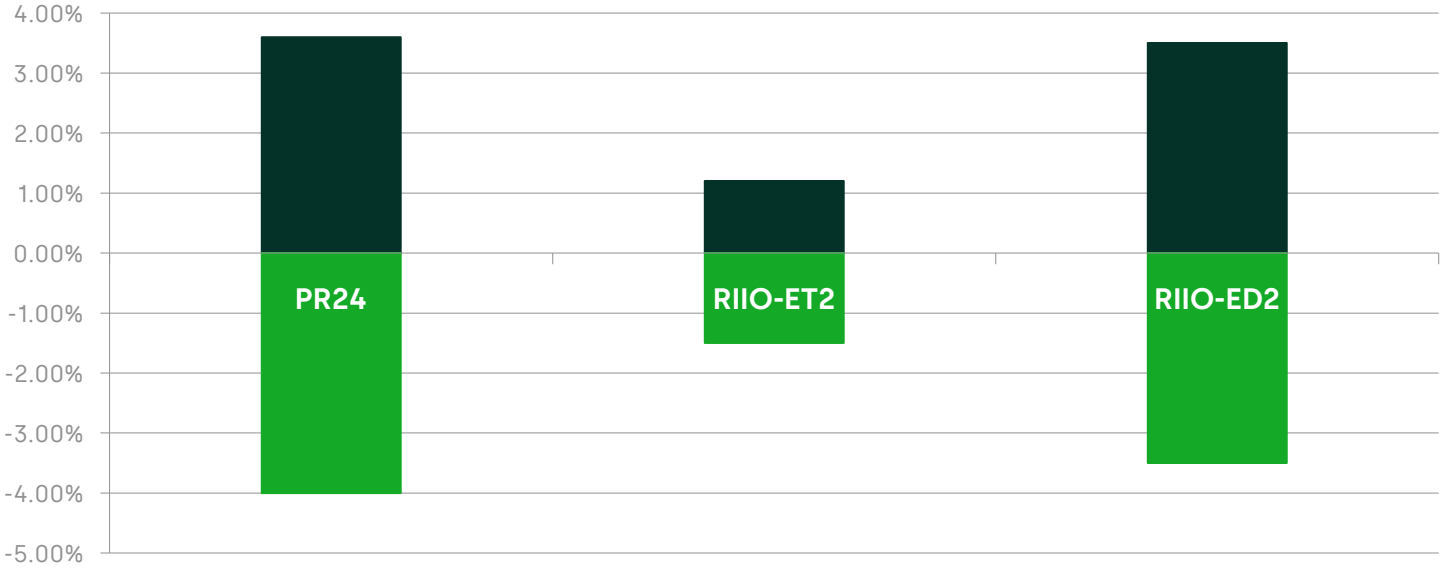
As discussed in section 6, Ofwat's ex ante assessment of risk is that the median company faces a symmetric RoRE risk range of -4.5% to +4.5% (some individual companies have wider ranges than this).

A comparison of the intended level of RoRE risk exposure under Ofwat and Ofgem's recent decisions highlights that Ofwat's regulatory regime explicitly seeks to expose water companies to greater risk exposure around the base equity return, relative to Ofgem's intended risk exposure for electricity transmission companies.[147] RoRE risk exposure is expressed for both PR24 and RIIO-2 against a common notional gearing assumption of 55%. In its assessment of the risk associated with the PR24 Draft Determinations, Ofwat has calibrated regulatory mechanisms to expose water companies to a greater level of downside risk than Ofgem intended to under its RIIO-T2 and RIIO-ED2 controls, despite the RIIO-ED2 RoRE analysis being conducted for a higher notional gearing assumption of 60%.

Note that to be more comparable with Ofgem's numbers, this focuses on each regulator's assessment of ex ante operational risk exposure (i.e. TOTEX and ODIs) and does not include financing risk. Therefore, the PR24 range is shown to be +3.6% to -4.0% (rather than +4.5% to -4.5%), which more accurately reflects Ofwat's own assessment of operational risks (themselves likely an underestimate as discussed above).

[146] National Infrastructure Commission (2024), 'Infrastructure Progress Review 2024', May, p. 94.
[147] This assessment focuses on the ex-ante RoRE range that regulators (Ofwat and Ofgem) aim to expose companies to. Outturn risk exposure can differ substantially, for example where regulators do not account for changing operational circumstances or omit significant risk drivers. Our analysis here focuses only on the level of risk the regulator intends to/sets out to expose companies to, but necessarily omits any drivers that could lead to ex-post returns deviating from the ex-ante expectation.

Figure 7.1 Ex ante RoRE ranges (% at risk relative to base return)



Source: Oxera based on Ofwat PR24 DDs and Ofgem (2021), 'RIIO-2 Final Determinations – Finance Annex (Revised),' February; and Ofgem (2022), 'RIIO-ED2 Final Determinations Finance Annex', 30 November.

Ofwat's own assessment of operational risk is far higher than RIIO-2 for electricity transmission companies, and similar to that for electricity distribution. Given:

- Ofwat's likely underestimate of risks and the asymmetry; and that,
- inadequate profitability creates risk to dividends—the importance of which was demonstrated earlier—while also reducing retained earnings to support investment,

Ofwat needs to satisfy itself that the overall risk to which investors will be exposed under its determinations is one which the existing investor base would be willing to accept.

Ofwat has sought to implement a mechanism to mitigate risk to a certain degree. Specifically, Ofwat proposes an Aggregate Sharing Mechanism (ASM) to protect customers against extreme outperformance and to support ongoing investment during material underperformance periods.

The aggregate sharing mechanism shares similar features with the return adjustment mechanism (RAM) applied by Ofgem for GB energy companies. However, there are key differences in terms of how the mechanisms are calibrated.

The ASM has two components:

- Under the ODI mechanism, companies can earn (or incur) up to ±300bps return (penalties) on regulatory equity (RoRE) without triggering payment sharing. Once the RoRE exceeds ±300bps, payments are shared, with reductions of 50%. If the RoRE exceeds ±500bps, the reduction in payments increases to 90%.[148]

- Ofwat also proposes an ASM for wholesale cost allowances in its draft determinations. The cost mechanism will involve sharing 50% of excess returns or penalties that surpass a ± 200 bps threshold of regulated equity over five years between companies and customers. Ofwat states that the ± 200 bps threshold is equivalent to approximately 15% over/under-spend against sector-level cost allowances.

The result is that, in extremis, a company could be at -5% RoRE (i.e. -300bp RoRE on the ODI mechanism and -200bp on TOTEX) before the ASM had any effect. By comparison, Ofgem's mechanism kicks in once total RoRE deviates from the baseline RoRE by 3%, and has a second threshold at 4% beyond which there is an even stronger sharing of risk.

This means that the ASM is only likely to apply if elements of the price control have been fundamentally mis-calibrated ex ante. This is a major difference in the context of low allowed base returns: **with an assumed cost of equity of 4.8%, the ASM might not take effect until the entire equity return has been wiped out**, potentially putting strain on a company's ability to meet its debt obligations.

We further note that risk has increased in cash terms compared to AMP7 since:

- the notional value of equity risk has increased by an eighth compared to PR19, solely due to reducing the notional gearing assumption from 60% to 55%;
- the higher average RCV in AMP8 means that in cash terms a percentage point of RoRE risk is far higher in AMP8 than AMP7.

[148] These thresholds may be adjusted going forward based on the latest performance data, companies' business plans, and feedback on draft determinations, ensuring the overall balance of risk is appropriate.

Investors' articulation of their concerns about excessive overall levels of risk have centred on two distinct points:

1 **investor exits from sector**. Once risk exceeds a level compatible with core infrastructure investing, investors may exit and be replaced with other classes of investors (as per clientele effect discussed in section 44); and,
2 **link to the 'fair bet'**. If Ofwat does not adequately address the 'fair bet' issue (as investors fear), higher overall risk levels will magnify the effects of negative skew, exacerbating the unattractiveness of forecast returns.[149]

7.5 Summary

The nature of infrastructure capital is that it has a low tolerance for risk. This is why it is prepared to accept relatively low returns.

The water sector faces a considerably higher level of risk and uncertainty than in the past. At the same time, Ofwat has constructed PR24 with high downside risk exposure (performance targets with a high probability of under-performance, strong incentives that magnify downside risk, and weak protection from RoRE downside floors), such that it risks deterring low-cost infrastructure capital (potentially to be replaced by other types of private capital which target higher expected returns).

The PR24 Draft Determinations introduce numerous regulatory mechanisms that layer on complexity for investors, making it more challenging to assess the overall risk position. However, the RoRE exposure presented by Ofwat within the PR24 Draft Determinations is greater than the reported RoRE risk ranges within Ofgem's RIIO-2 determinations for energy networks. At the same time, the ASM thresholds (effectively ±5% when the mechanisms are combined), provide companies with substantially less protection than the comparable RAM in energy (±3%).

The high level of risk exposure under Ofwat's DD is reflected in a recent Moody's report, which notes the potential for a downwards revision to the rating agency's assessment of the stability and supportiveness of the regulatory framework (from Aa to A).

[149] Oxera (2024), 'PR24 Investor Interviews', undertaken for Water UK.

Taken together, these raise further investability issues that need to be addressed by Ofwat through lowering overall risk levels, as well as making them more balanced.

8 What is the new investment financing?

We now consider the fifth and final question in our investability assessment. This relates to the specific ends which new equity and debt financing are expected to pay for. This in an important consideration for investors, since the specific uses of finance will inform their view of:

- the likely risk to future returns; and,
- the expected profile of returns.

Note that this section does not consider every activity or output which this finance is expected to deliver. Instead, we focus on a specific issue which is likely to materially impact the investability of the Draft Determinations: Ofwat's decision to use financing to subsidise customer bills in AMP8, which it proposes to achieve via lower RCV runoff rates.

8.1 How Ofwat has adjusted RCV run-off rates to manage perceived affordability pressures

In its Draft Determinations, Ofwat explains how its overarching aim for RCV run-off allowances is to ensure that investment that is included in the RCV is recovered from customers over a time period that broadly aligns with the benefits that customers receive from that investment. It also explains how its takes into account other factors—such as financeability—when considering appropriate run-off rates.[150]

Ofwat explains that affordability pressures also inform its assessment of appropriate run-off rates, given these allowances represent a significant element of allowed revenue and therefore customer bills. Specifically, the regulator notes that:

RCV run-off represents a significant component of the customer bill. For example, it represented 32% of the average customer bill for 2021-22. Given the upward pressure on customer bills across 2025-30 and the impact this has on affordability, it is important that we consider carefully the speed at which companies recoup investments they have made.

We recognise that the framework set out for the assessment of RCV run-off at PR24 is different to the approach taken at previous price reviews. However, small changes to the length of time over which costs are

[150] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 32.

recovered can have a real impact in helping to mitigate large customer bill increases associated with a step increase to the investment programme at PR24 and so it is important to consider to the scope for such adjustments at PR24.[151]

Ofwat later explains how it proposes to reduce run-off rates to address perceived affordability concerns, while acknowledging that there is a trade-off with the financeability of its Draft Determinations:

For our draft determinations, we consider there is scope to reduce RCV run-off rates in instances where companies adopted relatively higher rates in their business plans, whilst maintaining the principal that RCV is recovered from customers over a time period that broadly aligns with the benefits they receive from that investment. This would reduce bills for customers during 2025-30 and may help to moderate large bill increases in any one year.

Balanced against reducing RCV run-off rates is the fact that run-off provides cash flow to support financial metrics and the financeability of the notional company. **We have made reductions to RCV run-off rates in our draft determinations where we consider there is sufficient headroom for key financial metrics to the target credit rating**.[152]

Ofwat does not clarify in its Draft Determinations exactly how it assesses whether headroom to reduce RCV run-off rates is available. However, in response to queries from stakeholders regarding its approach, Ofwat clarified that its assessment was based on companies' FFO/net debt ratios.[153]

Table 8.1 below shows Ofwat's view of FFO/net debt over AMP8 under its Draft Determinations. As this table shows, 7 out of 16 companies have an expected FFO/net debt equal to 10.00%. This is exactly the threshold assumed in Ofwat's assessment for a company to achieve a credit rating of two notches above the minimum investment grade.[154]

[151] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 41.
[152] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 44 [emphasis added].
[153] Ofwat (2024), 'Ofwat webinar: PR24 draft determinations - Risk and return policy decisions', 15 July, p. 1.
[154] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 52.

Table 8.1 Average AMP8 FFO/net debt ratios in Ofwat's financeability assessment (notional company)

Company	FFO/net debt
Anglian Water	10.00%
Dwr Cymru	10.00%
Hafren Dyfrdwy	9.78%
Northumbrian Water	9.77%
Severn Trent Water	9.73%
South West Water	10.00%
Southern Water	10.00%
Thames Water	9.70%
United Utilities	9.75%
Wessex Water	9.49%
Yorkshire Water	10.00%
Affinity Water	10.06%
Portsmouth Water	6.97%
SES Water	10.47%
South East Water	10.00%
South Staffs Water	10.00%

Source: Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 54.

Despite its clarifications, it is impossible to know for certain exactly how Ofwat calibrated its reductions in companies' RCV run-off rates. However, given that:

- almost half the companies achieve an FFO/net debt ratio of 10.00% in Ofwat's financeability assessment; and that,
- Ofwat uses this same metric as the basis for determining whether headroom to adjust RCV run-off rates is available;

it appears that Ofwat has likely targeted RCV run-off rates for these companies consistent with achieving a credit rating two notches above the minimum investment grade. In doing so, **Ofwat is increasing the size of required equity injections to subsidise customer bills in AMP8**, which—all else being equal—will result in higher bills in future periods.

8.2 Why Ofwat's decision to adjust run-off rates in this manner further hampers investability

As noted in section 22, PR24 represents a paradigm shift for the water sector, given companies expect to enter a long period of negative net cash flow to equity.

There is inevitable uncertainty as to how companies might seek to finance new equity investment. However, if—as Ofwat assumes—existing investors are expected to accept reduced dividends for a prolonged period, this is likely to increase the weight these investors place on expected distributions in future AMPs.

To encourage new equity investment in these circumstances, investors must have confidence that the regulatory framework is stable, predictable and will allow them to recover their costs in future periods. In contrast, by reducing run-off rates to address short term affordability concerns, Ofwat is sending an adverse signal to investors that the regulator is willing to use financial levers in an unpredictable manner to delay cost recovery.

Investors' concerns are likely to be further amplified by Ofwat's assertion that while the policy will lead to higher bills in future:

> Any increase to customer bills beyond 2030 will be spread over a number of years, and **there are options to similarly mitigate bills at the PR29 price review**.[155]

This suggests that Ofwat has given limited consideration to the impact which delaying cost recovery in AMP8 is likely to have in future, in the form of higher customer bills and/or reduced shareholder distributions. From an investor perspective, this creates a risk of perpetual under-recovery of the RCV relative to the 'natural' rate, entirely at the regulator's discretion. Indeed, the future investment profile set out in companies' LTDSs suggests that it will be challenging for Ofwat to reverse this policy in subsequent AMPs, and there is likely to be pressure for similar reductions to RCV run off in future.

8.3 Summary

In its Draft Determinations, Ofwat proposes to reduce RCV run-off rates for certain companies in an effort to address perceived affordability concerns. While Ofwat is somewhat vague on the specific approach

[155] Ofwat (2024), 'PR24 draft determinations: Aligning risk and return appendix', July, p. 44 [emphasis added].

used to calibrate the reductions in run-off rates, evidence suggests it has reduced rates for select companies to a level which is commensurate with a 10.00% FFO/net debt ratio.

Ofwat's decision to adjust run-off rates in this manner is likely to adversely impact the investability of its Draft Determinations. This is because while the sector is entering a phase in which it is likely to place higher weight on the expectation of future distributions, Ofwat is signalling a willingness to use financial levers to delay cost recovery in an unpredictable manner. Investors' concerns are likely to be further amplified by Ofwat's indication that it can mitigate the affordability impacts this decision will have in AMP9 by implementing similar adjustments at PR29.

9 How might these problems be addressed at Final Determinations?

The earlier sections of this report demonstrate why, if implemented as proposed, Ofwat's Draft Determinations would likely result in significant investability issues for the sector as a whole. If these issues continue to be unaddressed at Final Determinations, there is a material risk the sector will be unable to raise the equity needed to finance investment over AMP8 and increased levels of expenditure expected over the coming decades, at significant detriment to consumers.

In this section, we outline specific steps Ofwat could implement to help ensure the Final Determinations are investable. We segment our recommendations in line with the five questions used to assess investability in the earlier sections of this report.

9.1 Steps to ensure Ofwat's equity financing assumptions are credible

9.1.1 Recap—issues with Ofwat's approach

As explained in section 44, Ofwat places insufficient emphasis on the importance of stable dividend yields to water sector investors. The implication of this approach—if true—is that the sector can raise new equity via reduced dividends, without increasing companies' financing costs.

In practice however, we find clear evidence of clientele effects amongst the groups of shareholders best placed to invest in the water sector. This is confirmed by our empirical analysis showing the persistence of dividends in the utilities sector in different European countries over time, and findings from investor feedback on the importance of dividend policy, avoiding unduly restrictive gearing arrangements and preventing substitution of existing investors by those requiring higher returns. The implication is that financing equity investment via reduced dividends would either require an increase in the allowed return on capital (to attract investors with higher risk tolerance), or could simply result in investment not being delivered.

9.1.2 How Ofwat should address this issue in its Final Determinations

Given the level of investment anticipated at PR24 and beyond, it is critical that Ofwat's assessment of its proposed price controls be underpinned by credible assumptions around equity financing. Addressing this at Final Determinations will require a number of adjustments.

To begin with, **Ofwat should assume that equity finance is predominantly secured via new equity issuance**, rather than via a reduction in dividends. Whilst this change on its own will not directly impact the Final Determinations (since Ofwat's notional financeability assessment will simply assume a correspondingly higher new equity requirement), this adjustment will make more transparent the quantum of new equity the sector needs to issue to finance its future investment programme.[156]

Secondly, once the scale of these new equity requirements are understood, **Ofwat should ensure its equity issuance cost allowance is sufficient**, and enables companies to cover both the direct costs of administration and underwriting, as well as the indirect costs of pricing new shares at a discount to induce investors to subscribe. Past Oxera analysis suggests a direct cost allowance of at least 5%, plus an additional indirect cost allowance in the range of 2.6% to 9.7% (with a mid-point of 5.1%) would be appropriate. We note this is significantly higher than Ofwat's proposed allowance of 2%.

Finally, **Ofwat's analysis of the sector's equity financing requirements should extend beyond AMP8**. This would provide greater clarity to market participants of the potential profile of future returns, based on expected future investment. The information provided in companies' Long Term Delivery Strategies enables Ofwat to undertake this assessment to 2050. We appreciate this assessment is necessarily uncertain, given the timeframe involved and since companies' expenditure projections for AMPs 9–12 have not been subject to the same degree of scrutiny as those for AMP8.[157] However, despite this uncertainty, this analysis is likely to be of value to investors, given the paradigm shift from a regime predominantly reliant on debt finance to one requiring significant amounts of new equity and expected future RCV growth.

9.2 Steps to ensure the allowed base return is adequate

9.2.1 Recap—issues with Ofwat's approach

Our report does not seek to comprehensively scrutinise Ofwat's approach to setting the allowance for the cost of equity, nor provide an 'Oxera view' on what an appropriate allowance for PR24 should be.

[156] Note, however, that this will still not reveal the scale of the equity challenge, since the equity required in practice will be higher (once the companies' actual capital structures are taken into account).

[157] One way of addressing this uncertainty would be to do sensitivity tests based on assuming a higher and/or lower profile of investment over the 2030–50 period. This could be informed in part by experience in previous price reviews, including PR24 (e.g. by reducing the enhancement TOTEX forecast allowance based on the average haircut Ofwat has applied at previous price reviews).

Instead, our focus is limited to Ofwat's decision to estimate the CoE allowance using what has been described as a 'through the cycle' estimate of the TMR.

To recap: while a CoE allowance calculated using a 'through the cycle' approach may mean investors are fairly compensated over the long-run, this approach risks either under or over-compensating investors at any one point in time. In particular, during a period of high real interest rates, a 'through the cycle' approach is likely to understate returns required by investors in a price determination. This is likely to be problematic as the sector enters AMP8, given the need for companies to raise significant amounts of new debt and equity to finance RCV growth.

Investor feedback has been clear that investors see the water sector as being in competition with other demands on their capital, and that many alternatives offer better risk-adjusted returns. In addition, appropriate equity returns will be benchmarked by investors against available debt returns in the sector, reinforcing the need for a more comprehensive use of potential CoE cross-checks and market-based measures.

9.2.2 How Ofwat should address this issue in its Final Determinations

We understand regulators may prefer the 'through the cycle' approach on the basis that it promotes regulatory consistency, and may be more conducive to more stable long-term outcomes for investors and customers.

In light of this—rather than dropping the 'through the cycle' approach entirely—options to address investability risks include an **explicit adjustment to TMR** (as discussed in section 5), and **cross-checking the 'through the cycle' TMR estimates against relevant market evidence**. Undertaking these checks—and adjusting parameters as needed—will ensure that the marginal investor is incentivised to commit new equity capital, rather than holding back until such time as interest rates have declined (or until Ofwat adjusts the allowance).

We consider relevant cross-checks here include:

- Comparing the CoE allowance relative to the return on new debt, while controlling for levels of gearing;
- Checking risk-adjusted returns from comparable regulated regimes, in the UK and internationally (with Ofgem's approach the most frequently cited comparator by investors);

- Other market-based measures, such as infrastructure fund returns, being considered by Ofgem in RIIO-3.[158]

We understand Ofwat plans to recalculate allowed returns for its Final Determinations, by adjusting its data cut-off from 31 March 2024 to 30 September 2024.[159] This is to ensure Ofwat's allowances reflect contemporaneous market evidence at the time that it sets its Final Determinations. Ofwat should use this opportunity to ensure it has appropriately cross-checked its proposed CoE allowance against market evidence.

9.3 Steps to ensure the price control offers a 'fair bet'

9.3.1 Recap—issues with Ofwat's approach

The distribution of risk in Ofwat's Draft Determinations is skewed to the downside. This is driven by a number of factors, including: funding cuts relative to companies' plans; a combination of more stretching PCLs and higher-powered ODI rates; an expectation that base funding can deliver a high level of renewals activity; and an increasing proportion of delivery risk due to PCDs and other proposed reconciliation mechanisms.

The presence of downside skew means investors' expected return lies below Ofwat's allowance for the base return, such that the Draft Determinations do not represent a 'fair bet'.

9.3.2 How Ofwat should address this issue in its Final Determinations

Making the Final Determinations a 'fair bet' requires that adjustments be made to Ofwat's proposed price controls such that investors' expected return is equal to the base return. At a basic level, there are two ways of achieving this.

The first intervention Ofwat could make would be to **address these issues at source**. More specifically: Ofwat could, where appropriate, make changes to aspects of its proposed controls which remove the asymmetry in the risk distribution. This could include, for example:

- Adjusting PCLs to more achievable levels, in line with a more realistic view of sector performance over AMP8 (based on experience in AMP7); or,

[158] Ofgem (2024), 'RIIO-3 Sector Specific Methodology Decision – Finance Annex', 18 July, p. 108, para. 3.269.
[159] Ofwat (2024), 'PR24 Draft determinations: Aligning risk and return: Allowed return appendix', 11 July, p. 5.

- Increasing TOTEX allowances to a level commensurate with Ofwat's proposed PCLs and assumed mains replacement rates.

Consideration should also be given to whether adjustments are needed to delivery penalties and clawback mechanisms under Ofwat's PCD framework.[160]

Ofwat may determine however that it cannot—or should not—seek to address every single source of asymmetry in its price controls.[161] Where this is the case, **setting price controls consistent with a 'fair bet' requires that investors be compensated for exposure to asymmetric risk**. There are a number of options for how this can be achieved.

One option is to 'aim up' on the allowance for the cost of capital. This would involve setting a higher allowance than would otherwise be set, absent the presence of asymmetric risk. The allowance would need to be increased to a level which offsets the downside skew in the risk distribution, such that investors' expected return is once again equal to the base return.

It should be noted that Ofwat's decision to select a CoE allowance above the midpoint in its estimated CAPM range does not address this issue, given the other issues identified in this report.

As an alternative, **Ofwat could also consider making use of asymmetric risk allowances**. This is similar to the approach adopted by the CAA for the recent Heathrow Airport Limited ('HAL') control—we provide more details on this in Box 9.1 below.

[160] We note, for example, that Ofwat is proposing an outperformance rate for early delivery equal to one quarter of the size of the penalty for late delivery. See Ofwat (2024), 'PR24 Draft Determinations: Price control deliverables appendix', July, p. 9.
[161] For example, Ofwat may decide that not delivering a particular output or level of performance should be subject to a penalty or clawback mechanism, but with no corresponding reward applied in the case of outperforming (e.g. via early delivery or performance in excess of the target).

Box 9.1 The asymmetric revenue allowance for H7

For the H7 control, the CAA determined that a stand alone revenue allowance should be made available for HAL to protect against low probability, high impact "pandemic risks". It justified this on the basis that:

Our objective in setting the price control is to arrive at a position in which opportunities for HAL to out-perform the incentives set in the price control are broadly matched against the risk that HAL could under perform. This is consistent with our approach to setting HAL's cost of capital and allowed returns.

In the case of passenger forecasts, historical experience suggests that the risks that HAL could encounter sudden downside shocks to passenger traffic are not likely to be accompanied by an equal and offsetting set of possible upside events.

The CAA set this additional allowance based on an estimate of the annual losses that HAL might incur if another pandemic were to occur, evaluating the frequency of such an event and weighting the estimated losses by the probability of such a shock occurring during H7.

Source: Civil Aviation Authority (2022), 'Economic regulation of Heathrow Airport: H7 Final Proposals – Summary', 28 June, p. 23.

9.4 Steps to ensure the overall level of risk exposure is reasonable

9.4.1 Recap—issues with Ofwat's approach

The investors best placed to invest in the water sector have low tolerance for risk, which is why they are prepared to accept relatively low returns.

However, despite these preferences, Ofwat's Draft Determinations expose companies to high downside risk exposure. This is both due to the increase in intrinsic risk facing the sector (e.g. due to climate change and population growth), as well as specific incentive

mechanisms embedded within Ofwat's proposed price controls. This exposure risks deterring low-cost infrastructure capital.

Investors' articulation of this concern about excessive overall level of risk centred on two distinct points:

- **forced exit from sector**: once risk exceeds a level compatible with core infrastructure investing, they may be incentivised to exit and be replaced with other classes of investor (as per clientele effect discussed in section 4 above); and
- **link with 'fair bet'**: if Ofwat does not adequately address the 'fair bet' issue, as investors fear, higher overall risk levels magnify remaining negative skew, exacerbating the unattractiveness of forecast returns.

9.4.2 How Ofwat should address this issue in its Final Determinations

To avoid the need to seek new equity capital from investors with higher risk appetites and—by extension—higher return requirements, steps are needed to reduce the degree of risk exposure in Ofwat's determinations. There are several steps Ofwat could take to address this.

To begin with, Ofwat could **reduce the magnitude of rewards and penalties** applied to individual parts of its controls. Options include:

- using lower-powered cost sharing rates;
- reducing the absolute value of ODI payments; and/or,
- applying other mechanisms to reduce exposure on individual aspects of the performance package, for example through more narrow caps and collars for PCs.

Alternatively, **Ofwat could reduce companies' risk exposure at an aggregate level, by amending its ASM mechanism**. Options here include:

- tightening the ASM thresholds;
- increasing the degree of risk sharing once the thresholds are exceeded; and/or,
- combining TOTEX and performance risk sharing into a single mechanism.

We understand that when making such adjustments, Ofwat will want to ensure companies retain incentives to deliver high quality services efficiently. However, this needs to be balanced against the risk of failing to re-calibrate the risk/reward proposition in in a manner consistent with securing new equity investment at the lowest possible cost.

9.5 Steps to ensure an appropriate use of funds

9.5.1 Recap—issues with Ofwat's approach

In its Draft Determinations, Ofwat reduces RCV run-off rates for certain companies to help address perceived affordability concerns.

Ofwat's decision is likely to have adverse impacts on investability. This is because just as the sector enters a phase in which it is likely to place greater weight on the expectation of future distributions, the regulator is signalling a willingness to use financial levers to delay cost recovery in an unpredictable manner. These concerns are likely to be further amplified by Ofwat's indication that it can mitigate the affordability impacts this decision will have in AMP9 by implementing similar adjustments at PR29.

9.5.2 How Ofwat should address this issue in its Final Determinations

To minimise risks to investability, **Ofwat should unwind the affordability adjustments it has made to RCV run-off rates**. This is likely to be viewed favourably by market participants, as it should help reduce expected negative net cash flow to equity over AMP8.

In addition, **Ofwat could improve investability further by credibly committing to not making similar adjustments in future price reviews**. This would provide greater clarity to market participants regarding the requirements for new equity issuance in future AMPs, as well as the scope for future shareholder distributions.

It should be noted that there are precedents of UK regulators making commitments which span beyond a single control period. One example is Ofcom's commitment to provide BT Openreach pricing flexibility for specific full-fibre services beyond a single five year regulatory period, with the aim of encouraging FTTH rollout. This is summarised in Box 9.2 below.

Box 9.2 Ofcom's commitment to not introduce cost-based regulation for full-fibre services to 2031

In its 2021 Wholesale Fixed Telecoms Market Review, Ofcom considered its approach to regulating BT Openreach's wholesale full-fibre services. Ofcom recognised that even if it did not apply cost-oriented pricing regulation over the next five year period (i.e. 2021–26), the threat of price regulation being introduced in subsequent control periods left Openreach exposed to downside risk, and—by extension—could hamper both Openreach and its competitors' incentives to invest:

> We recognise that building a gigabit-capable network is a major investment with long payback periods, and that Openreach and other operators face risks when investing. Because of this, we recognise that the question of how we would approach regulation in the future matters for investment decisions in this review period.

To help ensure the threat of future regulatory action did not compromise investment incentives, Ofcom explicitly signalled to the market that it did not expect to apply cost-oriented pricing regulation on these services for a period of ten years:

> We cannot prejudge what actions we will take in the future, as any pricing decisions in future reviews will be made in light of the circumstances and legal framework applicable at that time. However, while investment plays out, we would not expect to intervene in a way that hampers this investment. Specifically, we do not expect to introduce cost-based prices for full-fibre services until at least 2031 (provided there is sufficient ongoing investment).

Source: Ofcom (2024), 'Promoting competition and investment in fibre networks: Wholesale Fixed Telecoms Market Review 2021-26—Volume 4: Pricing remedies', 18 March, p. 21.

As this example demonstrates, regulators can influence investors' decisions today by making statements about the intended direction of regulation in future. Ofwat should consider whether similar signals might usefully be sent to investors in relation to its approach to cost recovery

in future periods, in an effort to improve the investability of its Final Determinations.

A1 ODI risk analysis under alternative scenario

Water UK has requested that we replicate our analysis ODI penalty risk for companies over AMP8, under an alternative scenario in which future performance is assumed to be in line with AMP7 outturn performance. We present this analysis here, to complement the analysis presented in section 6.2.

Our analysis focuses on the same 20 PCs that are common to all WaSCs and WoCs, and we once again set the PCLs in line with Ofwat's Draft Determination. However, in this alternative scenario we assume companies' outturn performance is in line with their average performance over the first four years of AMP7.

The results of this analysis are shown below.[162] Under this scenario companies would face significantly larger penalties, with a total industry penalty of £9.99bn (pre-ASM). £1.99bn of this penalty is attributable to TMS. The total penalty is reduced to £8.06bn when the impact of the ASM is accounted for, which amounts to -3.2% of annual RoRE.

Table A1.1 Total rewards / penalties across AMP8 for each PC and company, based on average AMP7 performance (£m)

PC	ANH	WSH	HDD	NES	SVE	SWB	SRN	TMS	UUW	WSX	YKY	AFW	BRL	SSC	PRT	SEW	SES	Total
Water Supply interruptions	-23	-59	-3	-11	-41	-10	-50	-90	-76	1	-23	-4	-6	1	1	-79	0	**-471**
Unplanned outages	14	27	1	-26	39	18	-25	-6	43	15	-28	10	-6	6	3	-4	2	**82**
Compliance Risk Index (CRI)	0	-28	0	-35	-37	-5	-16	-48	-28	0	-34	-9	-4	-4	-2	-1	0	**-252**
Mains repairs	-14	-21	0	-7	3	-3	-11	-7	4	-1	-35	3	-3	-3	0	1	-2	**-97**
Leakage	-135	-182	-5	-97	-434	-105	-128	-600	-259	-22	-160	-91	-28	-50	-15	-88	-11	**-2,407**

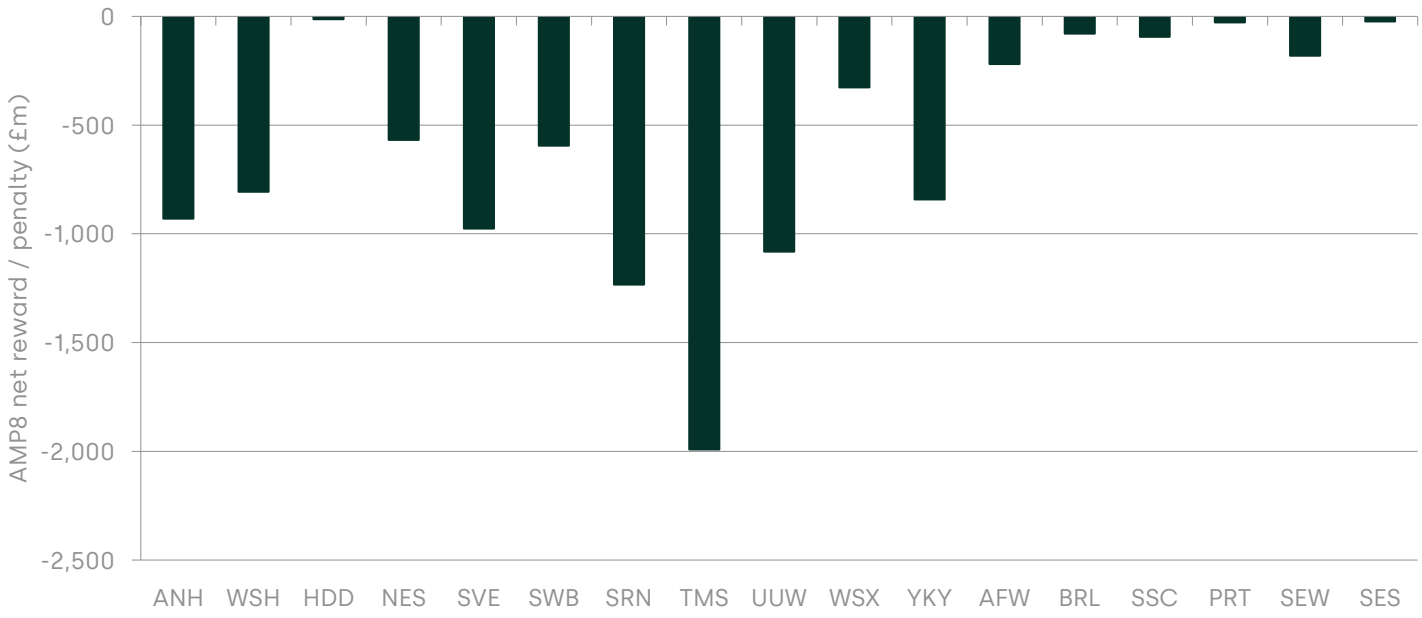
[162] Note: zeroes indicate either that Ofwat has set the PCL in line with the company's plan, or that the PCL is not applicable to the company in question.

PC	ANH	WSH	HDD	NES	SVE	SWB	SRN	TMS	UUW	WSX	YKY	AFW	BRL	SSC	PRT	SEW	SES	Total
Per capita consumption (PCC)	-51	-75	-3	-77	-53	-18	-41	-88	-61	-13	-78	-102	-11	-7	-6	-44	-8	**-736**
Business demand	3	4	0	-8	42	0	6	10	-1	0	10	8	4	5	-1	2	1	**85**
GHG emissions (water)	-5	-17	-1	-4	-1	1	2	-5	-18	-1	-12	-9	0	-2	-1	-6	-4	**-83**
GHG emissions (wastewater)	-25	-24	0	-23	-43	2	8	-12	0	-4	-5	0	0	0	0	0	0	**-126**
Water quality contacts	-72	-122	-2	-45	-105	-42	-37	26	-145	-23	-76	-1	-23	-16	0	78	-2	**-609**
Pollution incidents	-248	-57	0	-36	-104	-259	-509	-250	-58	-78	-86	0	0	0	0	0	0	**-1,685**
Internal sewer flooding	-47	-11	0	-12	-61	9	-78	-222	-249	-8	-124	0	0	0	0	0	0	**-802**
External sewer flooding	-25	-120	0	-110	-42	-53	-94	-560	-107	-64	7	0	0	0	0	0	0	**-1,170**
Sewer collapses	-4	4	0	-19	3	14	-19	20	-39	4	-25	0	0	0	0	0	0	**-62**
Storm overflows	-77	-58	0	-38	-85	-30	-45	-30	-114	-39	-68	0	0	0	0	0	0	**-585**
Bathing water quality	-20	45	0	19	0	-30	-67	18	72	-39	-42	0	0	0	0	0	0	**-42**
Discharge permit compliance	-88	-63	-1	-21	-33	-47	-48	-19	-29	-15	-15	-17	0	-22	-5	-38	0	**-460**
Serious pollution	-103	-39	0	-11	-15	-33	-74	-122	-4	-33	-35	-5	0	-2	0	0	0	**-476**
Biodiversity	-11	-11	0	-6	-9	-5	-9	-6	-13	-5	-12	-2	-1	-1	0	-2	0	**-93**
Total	**-931**	**-807**	**-14**	**-568**	**-975**	**-595**	**-1,234**	**-1,992**	**-1,081**	**-326**	**-842**	**-219**	**-79**	**-94**	**-27**	**-181**	**-23**	**-9,988**
Total after ASM	**-853**	**-584**	**-12**	**-490**	**-892**	**-405**	**-768**	**-1,633**	**-938**	**-305**	**-701**	**-167**	**-62**	**-58**	**-22**	**-146**	**-22**	**-8,059**
Total p.a. after ASM (RoRE%)	**-3.3%**	**-3.3%**	**-3.4%**	**-3.4%**	**-2.8%**	**-3.7%**	**-4.2%**	**-3.3%**	**-2.8%**	**-2.8%**	**-3.2%**	**-3.9%**	**-3.9%**	**-4.1%**	**-1.8%**	**-3.7%**	**-2.6%**	**-3.2%**

Note: River water quality (RWQ) has £0 ODI rates and so has been excluded as companies face no rewards or penalties. The 'Total p.a. after ASM (RoRE%)' shows the RoRE% impact after considering the ASM. The total impact of all companies takes the average of all companies weighted by their size of their regulated equity. Ofwat's ODI Payments Calculator model had omitted the SOF PCLs for HDD and WSH, these have been added based on data from Ofwat's Key Dataset 1: Outcomes data.
Source: Ofwat and company business plan data tables.

The asymmetric nature of the ODI risk is illustrated in the chart below.

Figure A1.1 Total rewards / penalties in AMP8 under average AMP7 performance (£m)



Source: Ofwat and company business plan data tables.

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