KPMG

Estimating the Cost of New Debt and Additional Borrowing Costs for PR24

Prepared for Water UK

—

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Executive summary

Introduction and scope

On 11th July 2024, Ofwat published its Draft Determination for PR24 (PR24 DD), which includes proposed allowances for cost of new debt and additional borrowing costs. Water UK has commissioned KPMG to:

Cost of new debt (CoD_N)

- Analyse the performance of water company bond issuances up to June 2024
- Compare the findings to the PR24 DD and assess implications for the estimation of CoD_N allowance at PR24.

Basis risk

- Analyse the implications of the accelerated full transition to CPIH on the notional company's financing costs and risks.
- Engage with the leading banks to gather pricing evidence on swap charges and any incremental costs associated with CPIH issuance.
- Consider the implications of pricing and risk evidence for the estimation of the allowance for basis risk management costs at PR24.

Cost of carry

- Develop approaches to estimate the cost of carry that take into account the scale of pre-financing requirements expected at AMP8.
- Compare the cost of carry analysis to the PR24 DD and assess implications for the estimation of the cost of carry allowance at PR24.

The table below compares the estimates for the relevant components of the cost of debt allowance from the PR24 DDs to those proposed in this Report. The subsequent slides detail the derivation of each estimate.

CPIH-real	PR24 DD (March cut-off)	PR24 DD (June cut-off)	KPMG (June cut-off)
Cost of new debt	3.36%	3.63%	3.97%
Cost of carry	0.07%	0.07%	0.13%
Basis risk management costs	-	-	0.06%

The confidential information underpinning the analysis in this Report comprises of (1) sector-wide market information; and (2) company-specific information in relation to water company debt. The water companies for which company-specific information has been collected are Affinity Water, Anglian Water, Bristol Water, Hafren Dyfrdwy, Northumbrian Water, SES Water, Severn Trent Water, South East Water, South West Water, Southern Water, Welsh Water, Wessex Water and Yorkshire Water. The sector-wide market information is based on financial information platforms and publicly available sources. We draw reader's attention to the important notice set out on pages 50-51.

Key messages

Cost of new debt

New debt is the debt expected to be issued during the upcoming price control period to finance Regulatory Capital Value (RCV) growth and refinance existing debt as it matures.

The PR24 DD estimated a cost of new (CoD_N) debt of 3.36% CPIH-real based on a 1-month average of the yields on iBoxx A/BBB 10+ index (the benchmark index). This benchmark index serves as a proxy for the CoD_N, reflecting the creditworthiness of the notional company (Baa1/BBB+ credit rating). It is assumed to provide a reasonable and achievable allowance that incentivises efficient debt issuance without exposing customers to risks related to companies' financing decisions.

Ofwat assessed the ability of water companies to issue debt at the yields implied by the benchmark index. Based on an analysis of debt issuance up to March 2023, Ofwat concluded that no adjustment – either negative or positive – is necessary to the benchmark index.

However, the analysis in this Report indicates that the DD benchmark index is not achievable for the notional company. There is a marked deterioration in performance on a like-for-like basis after April 2023, which is not captured in Ofwat's DD assessment. The exclusion of issuances post-March 2023 means that the DDs do not reflect recent pricing of water company bonds. A positive adjustment of 34bps is required to ensure the allowance is achievable based on performance and market data up to June 2024.

Basis risk management costs

The accelerated transition to full CPIH indexation of the RCV, implemented ahead of the RPI Reform (2030), exposes companies to new risks and costs.

The mismatch between RPI-linked debt and CPIH-linked RCV creates basis risk exposure on embedded debt. Additionally, companies will need to issue CPIH-linked debt in AMP8 to match the RCV. CPIH-linked debt is less liquid and incurs incremental costs on new debt. The market's ability to absorb the additional supply needed to support management of basis risk remains uncertain.

The additional costs and risks associated with basis risk management are not priced in the PR24 DD. Exposing companies to unremunerated additional costs and risks would contravene Ofwat's principles for CPIH transition, particularly its commitment to ensuring that the impact on both company revenues and customer bills remains neutral in net present value terms.

In this Report, the cost of basis risk management is estimated at 6bps across new and embedded debt, based on pricing evidence from banks.

This approach aligns with Ofgem's RIIO-2 methodology, which introduced full CPIH indexation and provided a 5bps allowance to energy networks. The higher estimate for water companies reflects the greater proportion of index-linked debt (ILD) and associated basis risk in the water sector.

Cost of carry

Cost of carry reflects the cost of issuing debt ahead of need (for example, pre-financing maturing debt, capital expenditures, working capital requirements).

In the PR24 DD, Ofwat introduced a 7bps allowance for cost of carry. This estimate assumes companies only need to issue 6 months ahead of need and can issue at iBoxx A/BBB 10+. However, in practice, companies need to issue 18 months ahead to support going concern and rating agency requirements on liquidity. Additionally, they cannot issue at the yields on the benchmark index on an unadjusted basis.

Updating Ofwat's DD analysis for these two factors increases the PR24 DD cost of carry estimate to at least 13 basis points. This aligns with the findings of this Report (cost of carry of 12 – 14bps), which used a similar methodology and the same assumptions.

The estimate is slightly higher than the 10bps allowance provided by Ofgem at RIIO-2. This difference reflects the fact that the Ofwat and KPMG methodologies account for the impact of future financing requirements on the cost of carry.

Cost of new debt

The estimate for the cost of new debt in this Report is based on June 2024 average yields of the iBoxx A/BBB 10+ index.

A 34bps adjustment is applied to this index to ensure that the allowance is reasonable and achievable for the notional company. The adjustment has been estimated as follows:

- **Lower bound: 22bps.** This reflects under-performance of issuances post November 2022 when controlling for rating and tenor.
- **Upper bound: 46bps.** This reflects under-performance of Baa1/BBB+ rated issuances post November 2022 when controlling for tenor.

The midpoint of this range is 34bps, which is consistent with the secondary market spreads of Baa1 rated water company bonds relative to the A/BBB 10+ index during June 2024.

This Report adopts a cut-off date of June 2024, excluding subsequent events from the quantitative analysis. The recent downgrade of Thames Water to sub-investment grade has resulted in removal of its bonds from the benchmark index. This has in turn reduced the yield on the A/BBB index by 14bps. All else equal, this suggests that the adjustment required to ensure the allowance is achievable would increase to 48bps based on an August 2024 cut-off date.

Water company issuances post-November 2022 indicate that water companies are not able to issue debt at the benchmark index specified by Ofwat in the DDs (the iBoxx A/BBB 10+ index). This may be driven by (1) pricing in of higher perceived risk for the sector; and (2) a higher effective rating for the benchmark index (A/BBB) than assumed for the notional company (BBB+).

Positive = under-performance (bps)	Spread controlling for rating and tenor	Spread controlling for tenor	Spread to iBoxx A/BBB 10+
Average of issuances post 1 Nov. 2022	22.37	25.67	23.13
Average of issuances post 1 Nov. 2022, Baa1/BBB+ only		45.95	39.25

Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

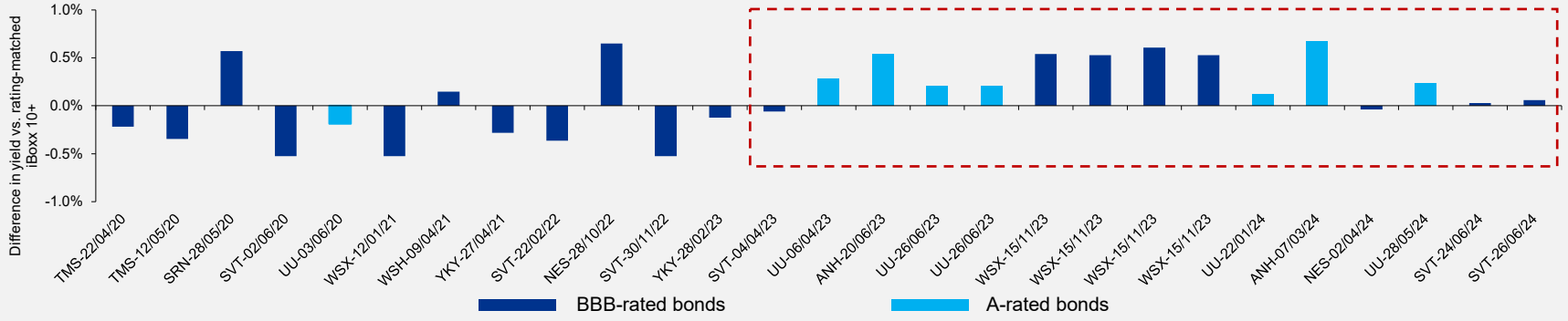
Cost of new debt (cont.)

Ofwat has removed the 15bps benchmark index adjustment in the PR24 DD. However, the analysis in this Report indicates that this measure alone does not ensure the allowance is reasonable and achievable for the notional company.

It is important to assess whether water companies can issue debt at the rates implied by the benchmark index when issuing at the target credit rating assumed for the notional company and at a comparable tenor. The chart illustrates that there is a marked deterioration in performance on a like-for-like basis after April 2023. The exclusion of issuances post-March 2023 in the PR24 DD analysis significantly understates the extent of underperformance of water company bonds.

	PR24 DD	KPMG
Timeframe of issuances included	November 2022 – March 2023	November 2022 – June 2024
Instrument type	Public bonds and private placements	Public bonds in line with iBoxx inclusion criteria
Tenor at issue	All	More than 10 years
Rating at issue	All issuances	1) All issuances, (2) Baa1/BBB+ rated issuances specifically
Metrics considered	Spread to iBoxx A/BBB 10+	Spread controlling for tenor and rating[(a)] (primary measure), spread to iBoxx A/BBB 10+, spread controlling for rating, spread controlling for tenor

Trend of AMP7 issuances (tenor 10+) yield difference to rating- and tenor-matched iBoxx



Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

Basis risk management costs

The cost of basis risk management is estimated at 6bps across new and embedded debt, based on pricing evidence from banks.

- For embedded debt, the range of 2 – 3bps reflects the cost of hedging this risk[(a)]. This evidence has been cross-checked by quantifying the additional volatility arising from basis risk, which translates into a 16bps adjustment. This significantly exceeds the cost of hedging through swaps. This cross-check, along with the potential market response to a significantly increased supply of ILD during AMP8, supports adopting 3bps as a conservative estimate for pricing basis risk management on embedded debt.
- For new debt, the range of 1 – 5bps reflects the cost of issuing new CPI(H)-linked debt[(b)]. 3bps is proposed as the point estimate.

The accelerated transition to full CPIH indexation of the RCV from AMP8 introduces additional costs and risks for the notional company that are not compensated in the PR24 DD.

Embedded index-linked debt (ILD) in the sector is predominantly RPI-linked. Historical data reveals significant variability in the RPI-CPIH wedge, resulting in higher variance in the total RoRE range for a notional company exposed to basis risk compared to one without it[(c)]. The optimal hedging strategy, given market demand, involves trading RPI-to-CPI basis swaps; however, this approach leaves companies exposed to risks related to the CPI-CPIH wedge.

Separately, with substantial capital programmes projected for AMP8, the sector is expected to raise new ILD, ideally on a CPIH-linked basis to maintain asset-liability matching. However, the market for CPIH-linked instruments is highly limited, with only direct issuance possible and even then, at a premium. As the CPI swap market has greater capacity, issuing nominal bonds and entering into CPI inflation swaps may be more effective, although the market's ability to absorb the additional supply needed for AMP8 remains uncertain.

Without an allowance, companies will face additional risks and costs due to the regulatory shift to CPIH, which is beyond their control. Such exposure would contravene Ofwat's principles for the transition, including its commitment to ensuring that "*the impact of this is neutral to both company (nominal) revenues and customer bills in net present value terms*"[(d)].

	Embedded debt	New debt
Overall range	7 – 12bps	11 – 60bps
Share of embedded/new debt	74%	26%
ILD proportion	33%	33%
Pricing of basis risk	2 – 3bps	1 – 5bps

Notes: (a), (b) The pricing of basis risk mitigation costs is based on a detailed questionnaire distributed to seven leading banks active in the water sector's debt and swap markets.
(c) The RoRE impact is estimated using the KPMG risk model, considering a Financing RoRE range both with and without the basis risk exposure, while holding all other risk factors constant. KPMG risk analysis assesses, based on the available empirical evidence and historical sector performance data. The stochastic risk model is constructed to simulate the notional company's risk exposure in RoRE terms by key risk drivers, accounting for risk mitigations purposed by Ofwat in PR24 DD.
(d) Ofwat (2015), Water 2020: Regulatory framework for wholesale markets and the 2019 price review

Cost of carry

The analysis in this Report implies a cost of carry of 12 – 14bps, assuming (1) an 18-month pre-financing period; and (2) a pre-financing cost based on iBoxx A/BBB 10+ plus 34bps. This is 5 – 7bps higher than the PR24 DD estimate.

The DD estimate assumes companies only need to issue 6 months ahead of need. However, in practice, companies need to issue 18 months ahead to support going concern and rating agency requirements on liquidity.

The DD estimate also assumes that companies can issue at iBoxx A/BBB 10+. However, the analysis in this Report finds that a 34bps upwards adjustment is required to accurately reflect financing costs experienced by water companies.

Updating the DD estimate for these two assumptions increases it to at least 13bps.

An estimate of 13bps is proposed in this Report based on the midpoint of the KPMG methodology range and the updated Ofwat methodology.

Cost of carry reflects the cost of issuing debt ahead of need (for example, pre-financing maturing debt, capital expenditures, working capital requirements).

This cost is calculated as the spread between CoD_N and the deposit rate earned on the cash proceeds from the debt issuance, over the duration of the pre-financing period.

The PR24 DD estimated cost of carry at 7bps. By comparison, Ofgem and the CMA both estimated a 10bps allowance for cost of carry at RIIO-2 and PR19, respectively.

Both the KPMG and PR24 DD methods capture the impact of pre-financing expected for AMP8 with the difference between estimates primarily driven by the assumed pre-financing period and assumed pre-financing rate. When the PR24 DD analysis is updated to incorporate a 18-month pre-financing period and incorporate a 34bps uplift to the yields on iBoxx A/BBB 10+, the results become broadly consistent.

These estimates reflect the debt issuance profile implied by the PR24 DD. This includes: (1) refinancing debt from the PR24 DD Balance Sheet model; and (2) RCV-financing debt from the PR24 DD financial models, calculated by multiplying the difference between the FY25 and FY30 closing values by the notional gearing of 55%. For the KPMG method, cost of carry based on the debt issuance profile submitted in company BPs is also presented.

	Pre-financing requirement based on:	
	PR24 DD	Company BPs
KPMG methodology	12	14
Updated Ofwat methodology	13	N/A

Note: The pricing is based on 2m average for iBoxx and SONIA as of 30 June 2024. 3m SONIA rates are adjusted downward by 58bps to account for expected rate cuts not priced in. See detailed discussions in Appendix 2.

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Cost of new debt

Ofwat's approach to CoD_N estimation

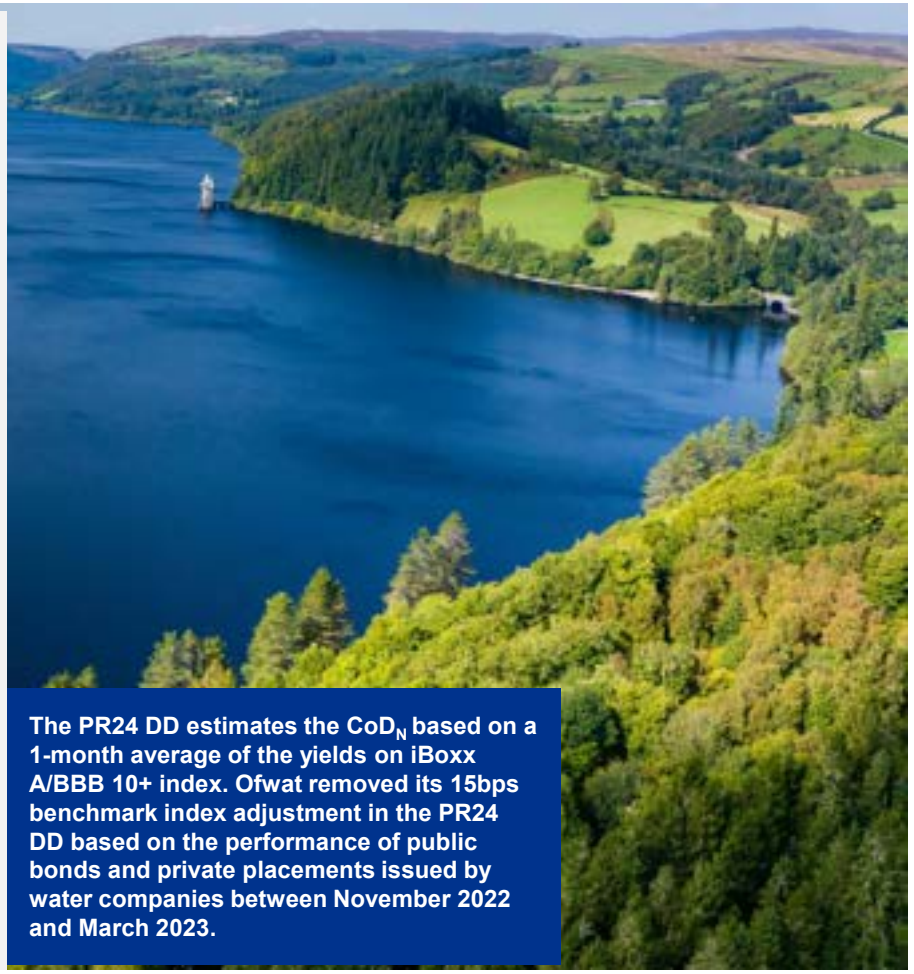
The benchmark index adjustment included in the PR24 FM reflected Ofwat's observation that during 2015 – 2022 companies had, on average, issued fixed-rate, GBP-denominated debt with a tenor of approximately 15 years, which was 5 years shorter than the A/BBB 10+ benchmark index.

This adjustment was removed in the PR24 DD based on the observation that issuances from companies with credit ratings in line with the notional company closely tracked the benchmark index from November 2022 to March 2023.

The updated analysis in the PR24 DD:

- Does not fully capture the evolution of the performance of water company issuances as it omits all issuances after March 2023.
- Is not on a like-for-like basis, i.e. it does not control for tenor and rating.
- Includes 16 debt instruments, 9 of which are private placements assumed to be issued at par. This is a departure from iBoxx index inclusion criteria[(a)] and private placements do not represent a like-for-like comparison to public issuance. It is unclear that it is appropriate to assume that these private placements are issued at par.
- Includes 2 bonds originally issued in EUR which is a departure from iBoxx inclusion criteria.
- Includes instruments with tenor at issue of less than 10 years which is not consistent with iBoxx index inclusion criteria and is a departure from the PR24 FM approach. Notably, in the FM Ofwat argued that by focusing on issuances with tenors longer than 10 years it was avoiding "*any impression that we are pushing water companies to issue at very short tenors*"[(b)].

Notes: (a) Markit (2024), Benchmark Index Guide.
(b) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 4.3.5.



The PR24 DD estimates the CoD_N based on a 1-month average of the yields on iBoxx A/BBB 10+ index. Ofwat removed its 15bps benchmark index adjustment in the PR24 DD based on the performance of public bonds and private placements issued by water companies between November 2022 and March 2023.

The approach to the cost of new debt adopted by the CMA at PR19

1. During the PR19 appeal, the CMA carefully examined the yield-at-issue performance of water company bonds and determined that there was insufficient evidence that water company debt consistently outperformed the benchmark indices (iBoxx A/BBB) post-2000.

2. It concluded that there was not evidence of systematic outperformance of the benchmark index, citing the challenge of making exact comparisons between a small sample of company bonds and a broad index based on bond, tenor, and credit rating. The CMA referred to the analyses from KPMG and Ofwat which found a spread of 1bps and 6bps, respectively, for bonds issued at 5 years either side of the benchmark, when controlling for rating[(a)].

3. The CMA observed little evidence of sustained like-for-like outperformance of utility companies compared to the broader market, except during times of significant market stress, such as the Global Financial Crisis.[(b)]

4. It noted that factors contributing to past embedded debt outperformance (high rating, European Investment Bank debt, floating debt) are unlikely to drive systematic outperformance in the future and could not be relied upon to underpin an adjustment[(c)].

5. The CMA identified the issuance of shorter tenors than the benchmark as a potential reason for applying an adjustment but concluded that there was no substantive evidence to support this in practice[(d)].

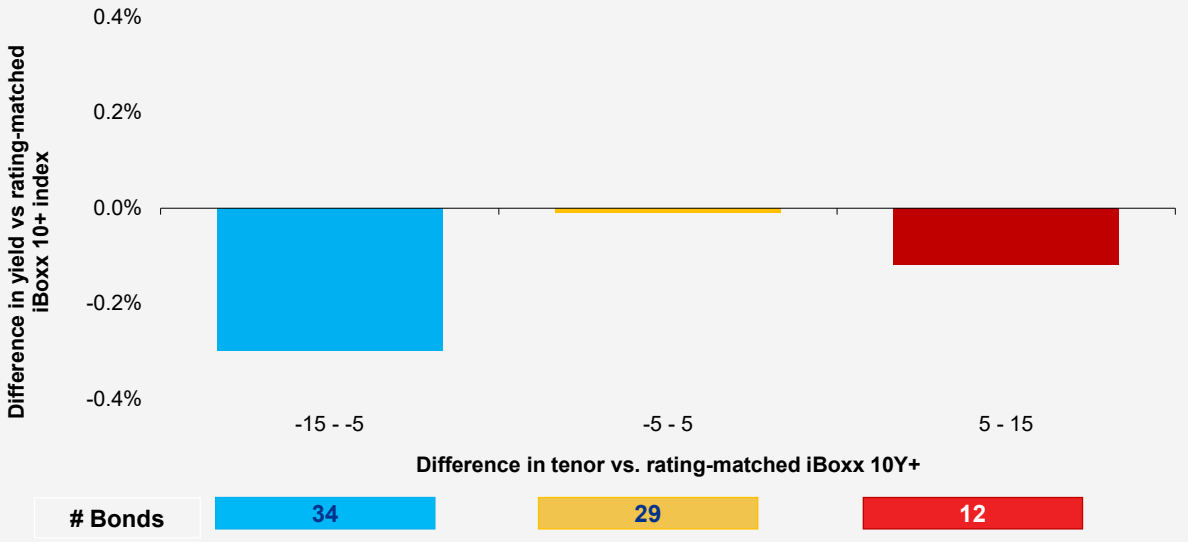
Notes: (a) CMA (2021), PR19 Final Determination, para. 9.750. (b) Ibid., para. 9.751. (c) Ibid., para. 9.824. (d) Ibid., para. 9.825.

Application of the CMA PR19 methodology to issuance up to 2024

- At PR19 the CMA cited KPMG analysis which found a spread of 1bps for bonds issued at 5 years either side of the benchmark, when controlling for rating[a].
- Extending this analysis to include issuances up to June 2024 yields comparable results, showing minimal outperformance for bonds issued within 5 years of the benchmark. As a result, the CMA's conclusion that there is insufficient evidence of consistent outperformance remains valid based on this analytical framework.

Note: (a) CMA (2021), PR19 Final Determination, para. 9.750.

Differences in water bond yields relative to the rating-matched iBoxx 10+ index by tenor bucket: Issuances since 2000



Note: (a) There are only two bonds in the 15 – 50 bucket and no bonds in the -15 – -5 bucket. As such these buckets have been excluded.

Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

Principles underpinning the estimation of the CoD_N allowance

From an economic perspective, financing costs are normal costs for a firm and are fully priced in an efficient market equilibrium. If prices do not reflect and allow the recovery of financing costs, the economic activity is not viable as investors would not be able to earn their required return.

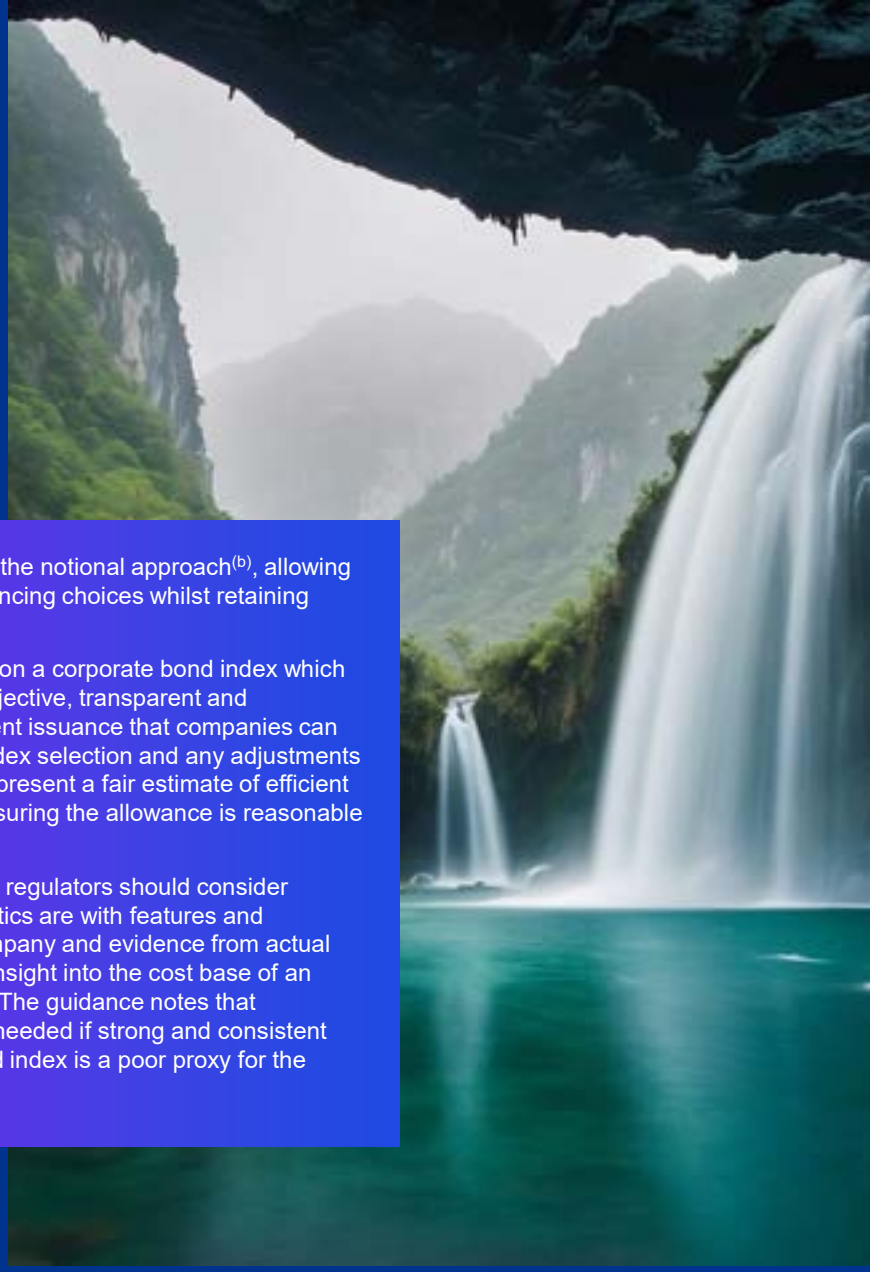
When financing infrastructure, investors are generally unwilling and unable to bear material market risk from any significant deviations between revenues and costs of financing over time. This is due to (1) the asset-heavy nature of the industry, which implies significant capital employed, (2) long-term asset lives and hence investment horizons, and (3) limited flexibility when investing in fixed assets.

In this context, the CoD_N allowance should be a fair and achievable estimate of the cost of debt likely to be incurred by a notionally geared, efficient company. Ofwat's objective for PR24 is to set ***"a reasonable return which also implies good incentives to issue new debt prudently and efficiently"***[(a)]***.***

The allowance is estimated using the notional approach[(b)], allowing companies to make their own financing choices whilst retaining incentives to issue debt efficiently.

The allowance for CoD_N is based on a corporate bond index which should, in principle, provide an objective, transparent and independent benchmark for efficient issuance that companies can target ex ante. The benchmark index selection and any adjustments to the benchmark index should represent a fair estimate of efficient borrowing costs for the sector, ensuring the allowance is reasonable and achievable.

According to the UKRN guidance, regulators should consider how aligned the index characteristics are with features and characteristics of the notional company and evidence from actual sector issuance (which provides insight into the cost base of an efficiently-run notional company). The guidance notes that adjustments to the index may be needed if strong and consistent evidence suggests the unadjusted index is a poor proxy for the notional company's debt cost[(c)].



Notes:
(a) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 11.3.3.
(b) Ofwat (2016), Water 2020: consultation on the approach to the cost of debt for PR19, p. 16.
(c) UKRN (2023), Guidance for regulators on the methodology for setting the cost of capital, p. 32.

Principles underpinning the estimation of the CoD_N allowance (cont.)

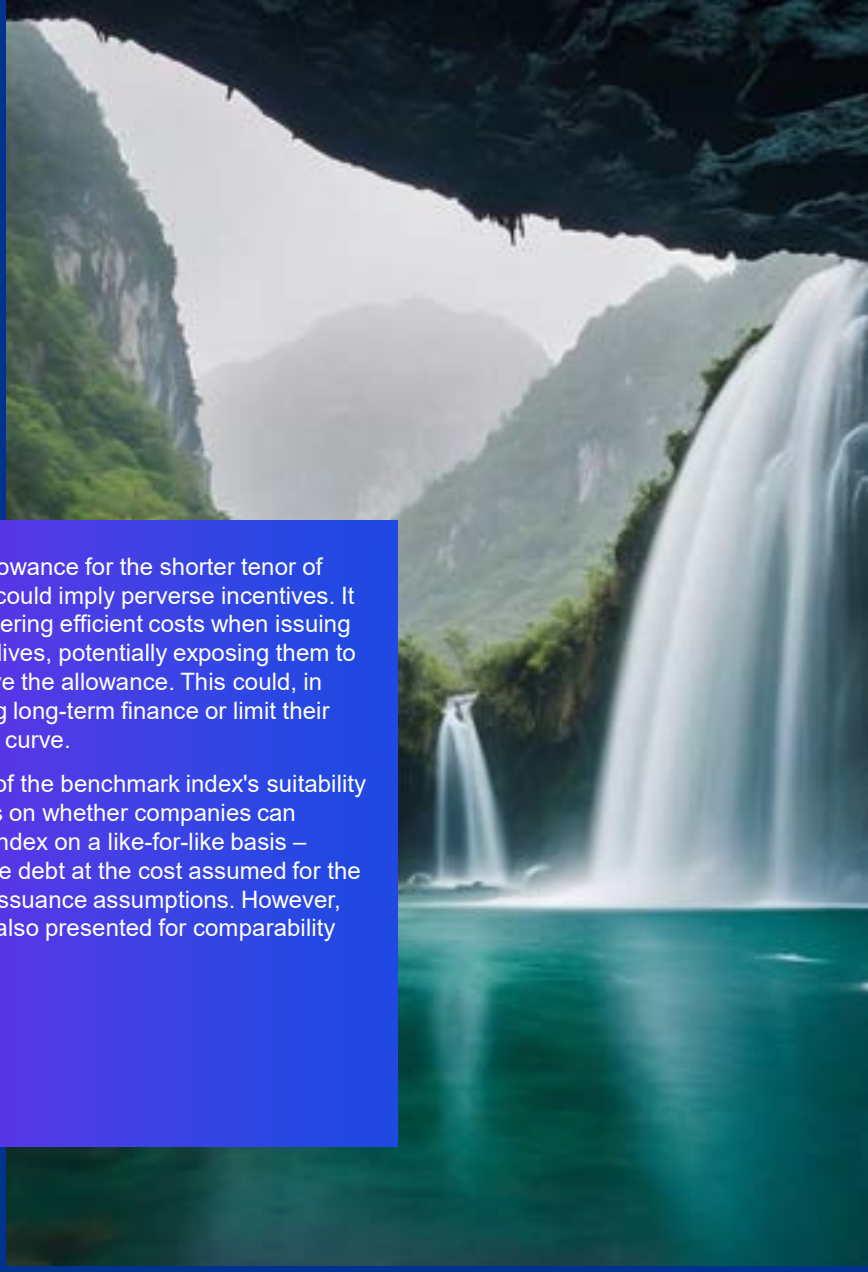
The assessment of whether the index is good proxy for the notional company's cost of debt should consider if water companies, on average, can issue debt at the rates implied by the benchmark index when issuing debt at the target credit rating assumed for the notional company and at a comparable tenor.

Evaluating performance on a like-for-like basis in terms of both tenor and rating ensures that the benchmark for the CoD_N is achievable in practice and does not expose customers to risks related to companies' financing decisions.

This is consistent with the approach adopted by the CMA which cited the finding of no like-for-like outperformance for water company debt relative to the benchmark index[(a)] as the basis for its decision to remove the outperformance wedge adjustment from CoD_N at PR19.

An approach which adjusts the allowance for the shorter tenor of recent water company issuances could imply perverse incentives. It may hinder companies from recovering efficient costs when issuing long-term debt aligned with asset lives, potentially exposing them to ex post losses if they fail to achieve the allowance. This could, in turn, deter companies from issuing long-term finance or limit their ability to issue across the maturity curve.

As a result, the Report's analysis of the benchmark index's suitability and achievability primarily focuses on whether companies can achieve the yields implied by the index on a like-for-like basis – specifically, whether they can issue debt at the cost assumed for the notional company under notional issuance assumptions. However, other performance measures are also presented for comparability with Ofwat's analysis.

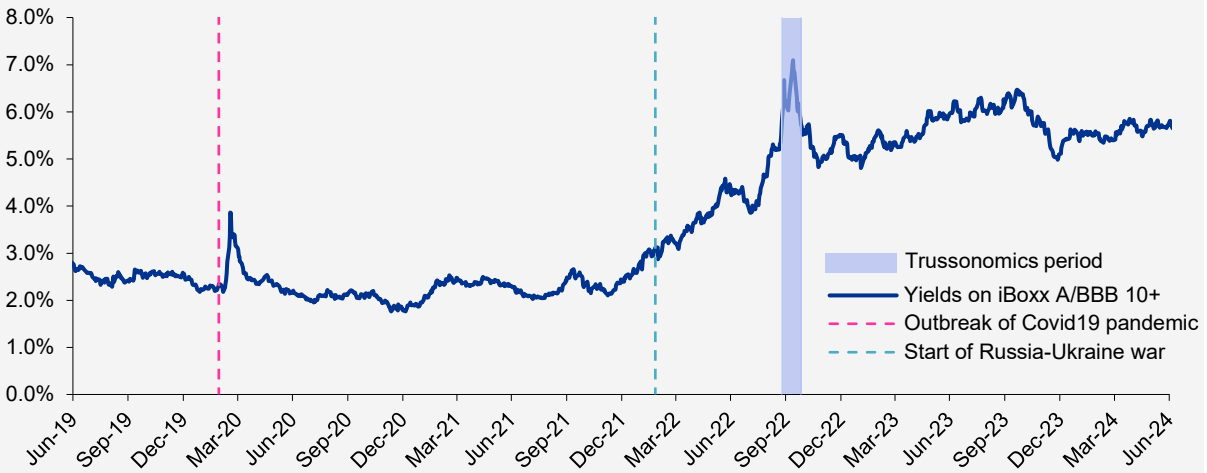


Note: (a) CMA (2021), PR19 Final Determination, para. 9.823.

Assessing achievability of the benchmark index in current market conditions

- The analysis of suitability and achievability of the cost of debt benchmark in the future relies on past issuance data. The relevance of historical performance to AMP8 depends on how well past drivers reflect expected future conditions. This assessment may be influenced by sector-specific factors, such as perceptions of sector risk and creditworthiness, alongside broader economic conditions. These factors are considered in turn below.
- AMP7 has seen a step change in the macroeconomic environment with a significant increase in interest rates from mid-2022 as well as significant market turbulence due to Covid-19, the Russia-Ukraine war, and Trussonomics. It will be important to assess whether the step change in market conditions has affected the performance of water company issuances.

Evolution of the yields on iBoxx A/BBB 10+



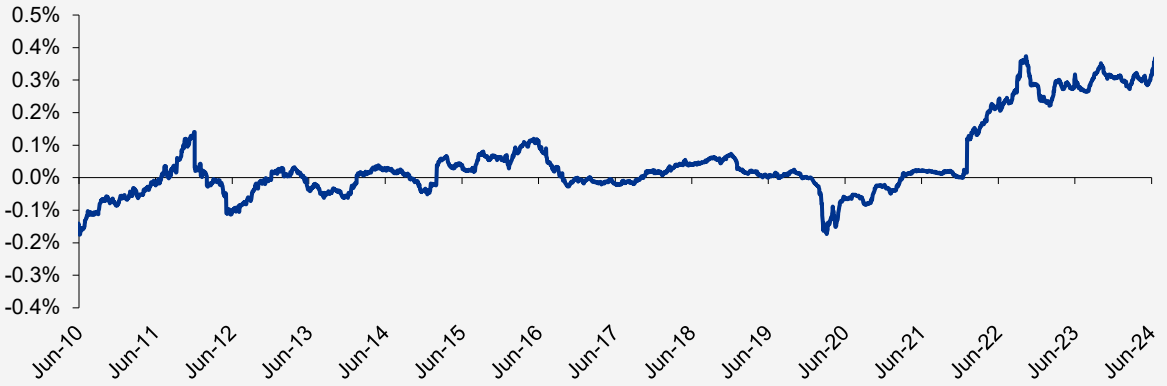
Source: KPMG analysis based on Refinitiv Datastream data

Assessing achievability of the benchmark index in current market conditions (cont.)

The CMA recognised[(a)] that utilities might temporarily outperform during periods of market turbulence due to the 'flight to safety' effect. As illustrated by the chart, the spread between iBoxx Utilities and A/BBB indices was negative during March 2020 – April 2021, at the height of the Covid-19 pandemic, likely due to flight to satefy effects.

Note: (a) CMA (2021), PR19 Final Determination, para. 9.751.

Evolution of the differential between iBoxx Utilities 10+ and iBoxx A/BBB



Source: KPMG analysis based on Refinitiv Datastream data

Flight to safety dynamics are typically temporary and cannot be assumed to persist for prolonged periods. Consistent with this, the negative spread observed during Covid has since reversed and is now significantly elevated relative to historical levels.

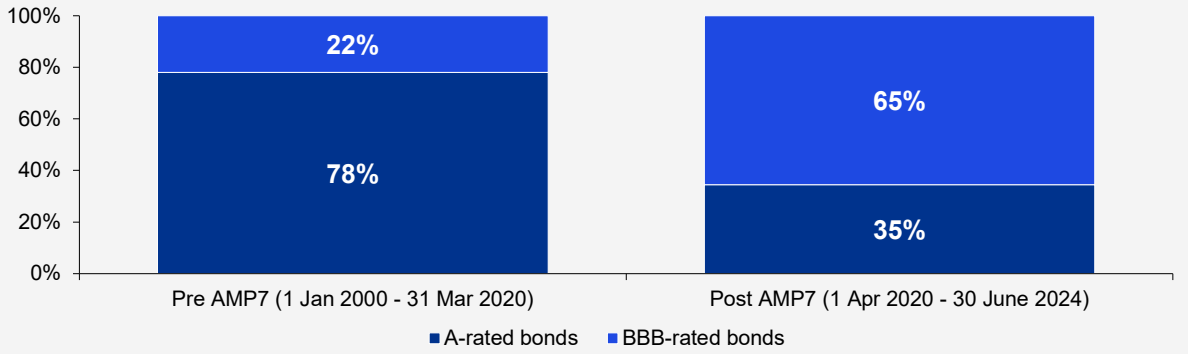
Higher levels of spread between the iBoxx Utilities and A/BBB post mid-2022 indices indicate that utilities are currently perceived to carry more credit risk relative to the broader market. The start of the analysis period for water company issuances in the PR24 DD (November 2022) broadly coincides with the onset of higher spreads for utilities and aligns with stabilisation of interest rates post Trussonomics.

Assessing achievability of the benchmark index in current market conditions (cont.)

The target rating for the notional company is Baa1/BBB+. Prior to AMP7, water companies issued a larger proportion of A-rated debt. However, over time, the average credit rating of water company debt has aligned more closely with the notional target. This trend is illustrated in the chart below, which shows the distribution of A-rated and BBB-rated water company bonds before and after AMP7 (proportions are based on the number of bonds).

As recognised by both Ofwat and the CMA at PR19, superior ratings (relative to the benchmark index) in previous price controls contributed to the performance of water sector issuances. However, the CMA considered it significantly less likely that future issuances would benefit from the same advantages. The average rating of AMP7 issuances indicates that (1) past outperformance driven by higher ratings is not relevant for assessing the suitability of the benchmark index at PR24 (2) the median company is issuing at Baa1 in AMP7, which should be taken into account through attaching weight to performance of Baa1 issuance in calibration of the benchmark index.

Percentage of A and BBB rated water company bonds pre and post AMP7



Source: KPMG analysis based on Bloomberg data

Overall, debt issuances post-November 2022 appear to be most reflective of the likely yield-at-issue performance in AMP8 and should be the primary focus in assessing the achievability of the benchmark index. This start date is consistent with the PR24 DD.

It will also be important to assess whether the rating of the benchmark index is achievable for the notional firm issuing in line with the target Baa1 rating.

Proposed approach and methodology

The Report assesses the performance of GBP-denominated, nominal, fixed-coupon, non-perpetual bonds against the yields on the benchmark index.

The following metrics are considered in the assessment of performance:

Metric	Description
Spread controlling for tenor and rating[(a)] (primary measure)	Represents the spread between the bond yield at issuance and the like-for-like yield on the interpolated iBoxx yield of the relevant rating.
Spread to iBoxx A/BBB 10+	Represents the spread between the bond yield at issuance and the yield on the PR24 DD benchmark index on the day of issuance, without controlling for tenor or rating.
Spread controlling for tenor	Represents the spread between the bond yield at issuance and the tenor-matched interpolated iBoxx A/BBB yield on the day of issuance.
Spread controlling for rating	Represents the spread between the bond yield at issuance and the rating-matched iBoxx 10+ yield on the day of issuance.

- The analysis focuses on bonds with tenor at issue of 10yrs+, which aligns with iBoxx 10+ inclusion criteria and the approach set out in PR24 FM.
- To enable performance assessment on a tenor-controlled basis, hypothetical iBoxx curves are constructed. These curves provide the yield that would prevail on hypothetical iBoxx indices, equivalent to the actual indices, had the actual iBoxx maintained a specific weighted average tenor.
- The proposed methodology is broadly consistent with the one adopted in the analysis developed by KPMG during the PR19 appeal, with some differences outlined below:
  - Callable bonds are included as they are also included in iBoxx indices
  - The threshold for the identification of outliers is set to +/- 1% to avoid distortions and maintain representativeness.
  - Debt held above the operating company level and unrated bonds are excluded, as they may not representative of debt issuance within the regulatory ringfence.

Notes: (a) The analysis controls for tenor based on Moody's rating for simplicity.
(b) To enable tenor-matched comparison debt tenor curves were constructed from all available iBoxx indices using a combination of Cubic-spline and Nelson-Siegel interpolation and extrapolation methods.

Empirical analysis of the performance of water company issuances

The table below sets out the performance of water company bonds relative to the iBoxx based on various metrics. Bonds issued after November 2022, consistent with the start date of the PR24 DD analysis, consistently underperform across all metrics. On a for-like basis and without controlling for either tenor or rating water company bonds underperformed the iBoxx index by 22 – 23bps.

Negative = outperformance (bps)	Median Tenor	Spread controlling for rating and tenor	Spread controlling for rating	Spread controlling for tenor	Spread to iBoxx A/BBB 10+
Average of issuances post 1 Nov. 2022	13.50	22.37	17.60	25.67	23.13

Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

An analysis of the effective rating of the iBoxx A/BBB 10+ index from 2016 to 2024, based on Markit's (i.e. the provider of iBoxx indices) index construction methodology, indicates that the effective rating of the A/BBB index is closer to A3 rather than Baa1[(a)].

This suggests that yields implied by the index are *lower* than those based on the target rating of the notional company (Baa1). This could partially explain the underperformance of water company issuances.

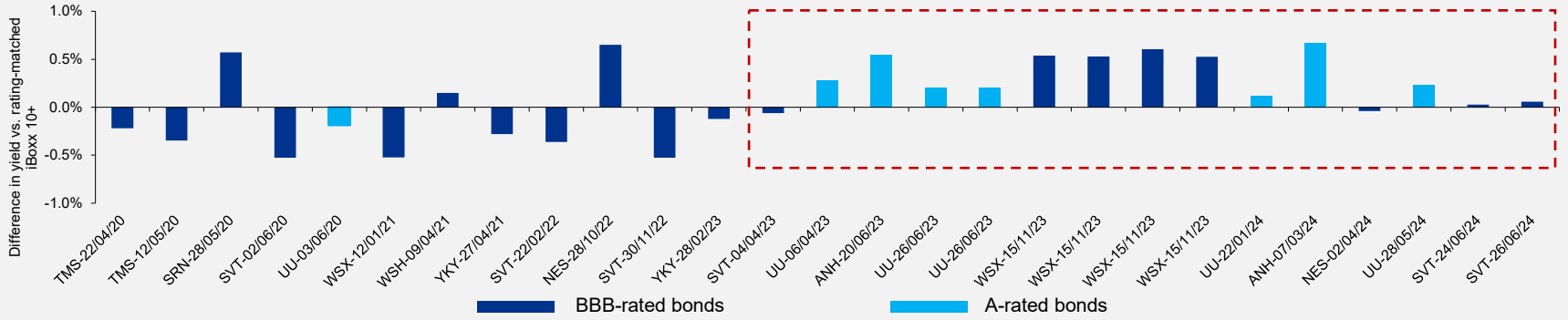
A-rated bonds issued by water companies were priced at a premium to the iBoxx A index and, in some instances, underperformed the iBoxx A/BBB index.

This is reflected in the chart on the next page, which shows a consistent trend of underperformance on a rating-controlled basis for both BBB and A-rated issuances, particularly from April 2023 onwards, as well as on average.

Notes: (a) The effective rating has been derived based on iBoxx Rating Methodology September 2022 as follows: (1) the list of constituents of the non-financials BBB index and their weightings in the index was downloaded on a semi-annual basis between 2016-2024 from Refinitiv Datastream (item LIBI4RRL), (2) bond ratings from Moody's, S&P and Fitch were downloaded from Bloomberg at each semi-annual date, (3) these ratings were assigned numerical values in accordance with the table on page 3 of iBoxx Rating Methodology September 2022, (4) the average numerical rating was calculated across the three agencies, (5) the effective rating was calculated based on the weighting and the numerical rating of each bond.

Empirical analysis of the performance of water company issuances (cont.)

Trend of AMP7 issuances (tenor 10+) yield difference to rating- and tenor-matched iBoxx



Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

The chart illustrates that there is a marked deterioration in performance on a like-for-like basis after April 2023. The same dynamic can be observed for all metrics, as set out in the table below. By excluding issuances post-March 2023, the analysis in the PR24 DD does not capture the significant decline in water bond performance, resulting in an overestimation of how achievable and reflective the iBoxx A/BBB 10+ index is of water company financing costs. To note the 2038 bond issued by SVT and the 2041 bond issued by SWL after the June 2024 cut-off date have like-for-like underperformance of 28bps and 71bps, respectively. These issuances imply a sustained and increasing deterioration in water bond performance and it will be important to capture this dynamic at the FD.

Negative = outperformance (bps)	Median Tenor	Spread controlling for rating and tenor	Spread controlling for rating	Spread controlling for tenor	Spread to iBoxx A/BBB 10+
Average of issuances post 1 April 2023	15.50	29.68	26.11	29.73	27.41

Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

Empirical analysis of the performance of water company issuances (cont.)

The sample of water company issuances considered thus far includes A-rated bonds, whereas the notional company is assumed to have a Baa1/BBB+ rating (consistent with sector issuance in AMP7 to date). As a result, when evaluating the reasonableness and achievability of the allowance, it is important to consider the performance of Baa1/BBB+ rated issuances relative to the benchmark index.

Negative = outperformance (bps)	Spread controlling for tenor	Spread to iBoxx A/BBB 10+
Average of issuances post 1 Nov. 2022, Baa1/BBB+ only	45.95	39.25

Source: KPMG analysis based on Refinitiv Datastream and Capital IQ data

Baa1/BBB+ rated issuances underperformed the benchmark index by approximately 46bps controlling for tenor and by 39bps when not controlling for tenor.

This indicates that water companies are not able to match the benchmark index under current market conditions when issuing at the target rating of Baa1.

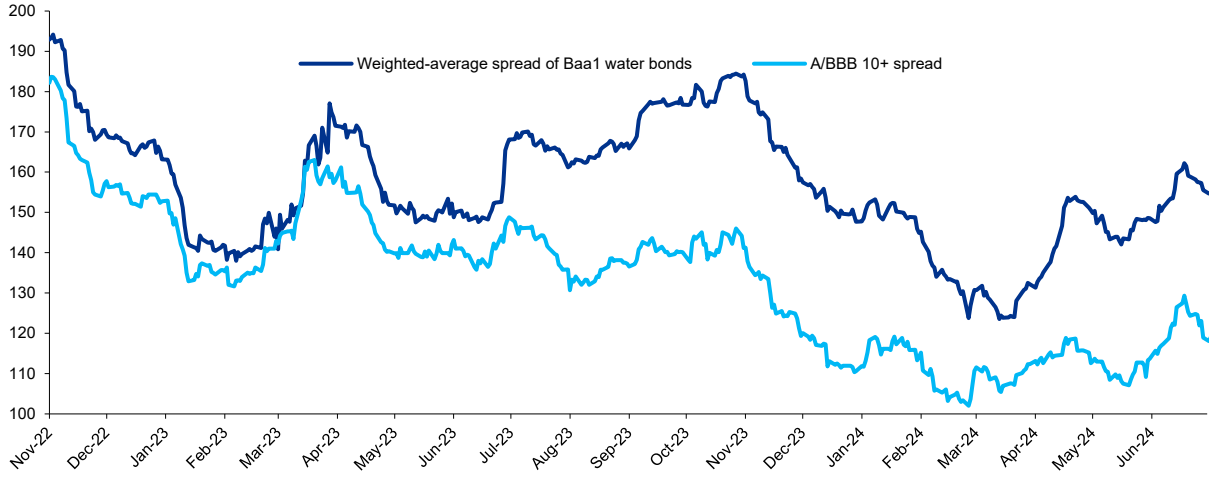
Empirical analysis of the performance of water company issuances in the secondary market

The secondary market spreads[(a)] on Baa1 rated water company bonds[(b)] have significantly increased relative to the spread on iBoxx A/BBB 10+.

Between November 2022 and March 2023, the spread difference was 9bps, increasing to 28bps from April 2023 to June 2024, and reaching 34bps in June 2024.

This material differential in secondary market spreads corroborates market perception of increased credit risk for the notional water company.

Evolution of the spreads for sample water company instruments included in the BBB 10+ iBoxx



Source: KPMG analysis based on Refinitiv Datastream data

Notes:
(a) Spreads relative to benchmark curve as per Refinitiv Datastream.
(b) The bonds considered are NES 2042, SVT 2042, SVT 2040, WSX 2036, and NES 2034, all of which are part of the iBoxx BBB index and hold a Baa1 rating from Moody's. The weighted average spread has been calculated using the current relative weightings of these bonds. Each of these bonds have been outstanding between 1 November 2022 and 30 June 2026. Other water company bonds in the BBB index have not bee included as they either were not outstanding during this full period or have a Moody's rating different from Baa1.

Implications of the results for setting the allowance for new debt at PR24 (cont.)

The findings of the analysis of the yield-at-issue performance of water bonds are as follows:

No outperformance when extending the CMA PR19 analysis:

The CMA's conclusion that there is no empirical evidence for debt issuances post 2000 to support an adjustment to the benchmark index for outperformance remains valid when including issuances up to June 2024.

The extended analysis shows minimal outperformance for bonds issued within five years of the benchmark, similar to the results considered during the appeal.

Underperformance against A/BBB Index during AMP7:

Issuances after November 2022, which are the most representative and relevant for estimating the allowance for PR24, underperform on all metrics against the A/BBB index, including like-for-like comparison and that without controlling for tenor or rating.

Baa1/BBB+ rated issuances specifically underperform the A/BBB 10+ index.

Factors contributing to underperformance may include increased perceived risk for the sector and a higher effective rating for the A/BBB index than the rating assumed for the notional company.

Incomplete analysis of performance in the PR24 DD:

Whilst Ofwat has removed the benchmark index adjustment in the PR24 DD, the analysis in this Report indicates that this measure alone does not ensure the allowance is reasonable and achievable for the notional company. The exclusion of issuances post-March 2023 significantly understates the extent of underperformance of water company bonds.

Additionally, the departure from iBoxx inclusion criteria and the FM approach – such as including private placements, foreign currency bonds and instruments with tenors shorter than 10 years – may skew the results of the PR24 DD analysis.

The inclusion of shorter tenor instruments represents a departure from the approach applied at PR19 and PR24 FM. In the latter, Ofwat stated that by focusing on issuances with tenors longer than 10 years, it was avoiding "***any impression that we are pushing water companies to issue at very short tenors***."

Notes: (a) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 4.3.2.
(b) Ofgem (2022), RIIO-GD&T2 FD – Finance Annex, para. 2.18

Implications of the results for setting the allowance for new debt at PR24 (cont.)

The following adjustments are considered appropriate to the yields on the iBoxx A/BBB 10+ index to ensure the benchmark is reasonable and achievable for the notional company:

- **Lower bound: 22bps**, reflecting the like-for-like underperformance of all issuances post November 2022.
- **Upper bound: 46bps**, reflecting the underperformance of Baa1/BBB+ rated issuances post November 2022 when controlling for tenor.

The midpoint of this range is 34bps which is slightly below the spread of Baa1/BBB+ issuances relative to A/BBB 10+ index (39bps).

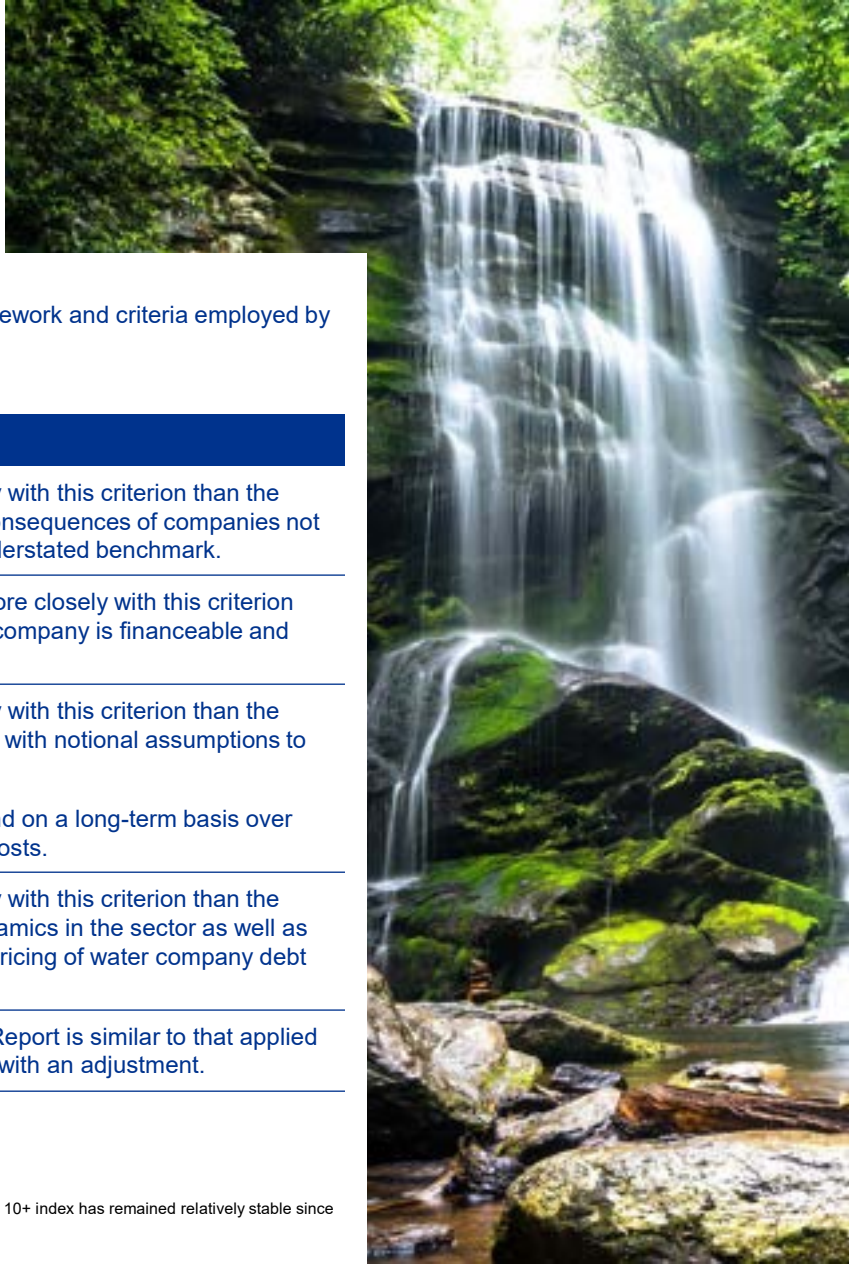
34bps is also consistent with the secondary market spreads of Baa1/BBB+ rated water company bonds from the BBB 10+ index during June 2024.

The omission of issuances after March 2023 is the key reason for the difference between this estimate and the PR24 DD's finding of a 5bps outperformance over the A/BBB 10+ index. Including issuances from April 2023 to the PR24 DD's data cut-off in March 2024 would have revealed significant underperformance across all measures.

This Report adopts a cut-off date of June 2024, excluding subsequent events from the quantitative analysis. The recent downgrade of Thames Water to sub-investment grade has resulted in removal of its bonds from the benchmark index. This has in turn reduced the yield on the A/BBB 10+ index by 14bps. All else equal, this increases the adjustment required to ensure the allowance remains achievable and the CoD_N policy is sustainable to 36 – 60bps.

Notes: (a) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 4.3.2.
(b) Ofgem (2022), RIIO-GD&T2 FD – Finance Annex, para. 2.18

Implications of the results for setting the allowance for new debt at PR24 (cont.)



The comparative impact of the approach proposed in this Report has been assessed using the framework and criteria employed by Ofwat during its evaluation of the cost of debt policy at PR19[(a)].

Criteria	Evaluation
Ensures risks are allocated efficiently between companies and customers	The approach proposed in this Report aligns more closely with this criterion than the PR24 DD as it would not expose customers to adverse consequences of companies not being able to issue debt at assumed pricing due to an understated benchmark.
Promotes fairness and reflects the best interests of customers	The approach proposed in this Report approach aligns more closely with this criterion than PR24 DD as it is customer interest that the notional company is financeable and able to recover efficient costs on a mean expected basis.
Reflects an efficient cost of debt and provides an appropriate incentive to minimise long-term debt costs	The approach proposed in this Report aligns more closely with this criterion than the PR24 DD as it would allow a company issuing debt in line with notional assumptions to achieve the cost assumed for the notional company. The option maintains incentives to raise debt efficiently and on a long-term basis over multiple price review periods and reduce long-term debt costs.
Is robust to changing markets and financing arrangements	The approach proposed in this Report aligns more closely with this criterion than the PR24 DD as it takes into account the changing rating dynamics in the sector as well as the most recent market evidence around changes in the pricing of water company debt issuance compared to benchmark indices.
Is transparent and avoids undue complexity	The level of complexity of the approach proposed in this Report is similar to that applied in the FM – i.e. the CoD_N is based on a benchmark index with an adjustment.

Notes: (a) Ofwat (2016), Water 2020: consultation on the approach to the cost of debt for PR19, p. 16.
(b) It could be argued that the Utilities index is more sensitive to the tenor decisions of water companies. However, the effective maturity of the 10+ index has remained relatively stable since 2000, despite water companies issuing bonds at shorter tenors on average during certain periods.

Source: KPMG analysis

03

Basis risk management

Context

In the water sector, the RCV and revenues are indexed to outturn inflation, which means that both the RCV and the revenue that water companies can earn vary with outturn inflation.

Issuing index-linked debt (ILD) allows companies to match their liabilities (debt repayments) with the inflation-adjusted revenue they receive. Unlike fixed-rate debt whose repayments do not vary depending on outturn inflation, for ILD both the principal and interest payments are indexed to inflation. Issuing ILD reduces the risk that inflation will increase company costs (through higher interest payments on non-inflation-linked debt) without a corresponding increase in revenue. Consistent with this, the water sector has typically maintained just over 50% of its total debt in ILD form.

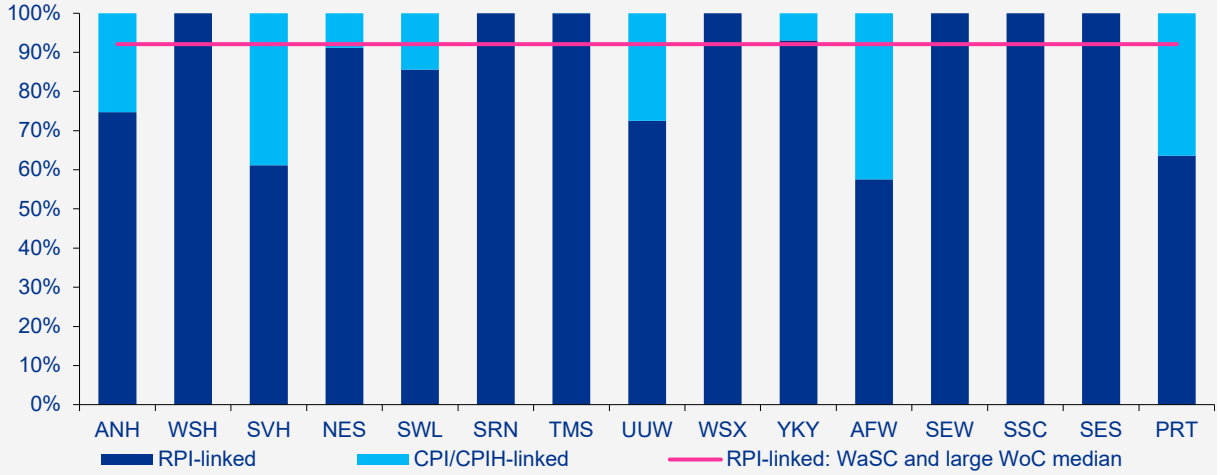
Prior to AMP7, the RCV was indexed to RPI, and companies issued RPI-linked debt to match their RPI-linked asset base. AMP8 will see the water sector transition to full CPIH indexation, replacing the 50% RPI and 50% CPIH indexation applied at the beginning of AMP7.

Embedded index-linked debt (ILD) in the sector is almost entirely RPI-linked. This is illustrated in the chart below which shows the composition of ILD for each company.

The decision to transition from RPI to CPIH indexation, accelerating the transition at 2030 (RPI Reform), is beyond the control of companies and could not have been predicted when company debt structures and hedging strategies were established across the last 20-30 years.

Additionally, given the substantial scale of capital programs projected for AMP8, the sector is expected to raise significant amounts of new debt. To maintain asset-liability matching, a proportion of this new debt should be issued on a CPIH-linked basis. However, the market for CPIH-linked financial instruments is highly limited, and while the CPI-linked market has developed in recent years, its ability to accommodate the additional supply required for AMP8 is uncertain.

Composition of index-linked debt



Source: KPMG analysis based on the data from Monitoring Financial Resilience 2023 report

Regulatory precedent on basis risk

The approach adopted in the PR24 FM and DD

01 In the PR24 DD, Ofwat maintained that an allowance for basis risk is neither necessary nor a fair allocation of risk between companies and customers[(a)]. It argued that, based on inflation since 1997, companies with the notional structure would have benefited from the PR24 assumptions of 2% CPIH and a 0.9% RPI-CPIH wedge[(b)].

02 In the FM[(c)] Ofwat noted that an allowance for basis risk had been provided at RIIO-2, however it did not intend to provide one for water as it was not convinced these costs would apply equally.

03 Ofwat considered that it had not been provided with any estimates of the scale of risk, the cost of insuring against it, or why the policy to transition to full CPIH indexation obliged companies to bear higher costs.

04 In the FM Ofwat additionally argued that the wedge implied by the then latest OBR forecasts and inflation swaps was lower than its 'early view' estimate of 90bps. If these lower values materialised in practice, this would result in gains for companies, thus limiting the benefit of insuring against basis risk.

05 Finally, Ofwat noted that by 2025, the sector will have had nearly a decade to plan a transition to CPIH indexation and that any transitional costs related to full CPIH indexation should be weighed against the benefits to equity investors from an inflation measure that reduces the volatility of the RCV.

The approach adopted in the RIIO-2 FDs and RIIO-3

01 At RIIO-2, price controls for energy networks were fully transitioned to CPIH indexation, unlike the partial indexation implemented for water at PR19.

02 Ofgem provided an allowance of 5bps for the issuance of new CPI/CPIH-linked debt and the management of basis risk between RPI-CPI/CPIH[(d)], recognising that its decision to switch from RPI to CPIH indexation would result in additional costs.

03 The incremental cost of new CPI/CPIH-linked debt was estimated based on the premium at issue for CPI debt (30bps). This was multiplied by the assumed proportion of index-linked debt and share of new debt implied by the length of the trailing average.

04 The cost of basis risk management was estimated based on swap charges (10 – 15bps). This was multiplied by the assumed proportion of index-linked debt and share of embedded debt implied by the length of the trailing average.

05 In the RIIO-3 Sector Specific Methodology Decision[(c)], Ofgem stated that the provision of the allowance in its DD will depend on whether (1) licensees generally hedge the associated risk in a manner the allowance methodology assumes and (2) if not generally hedged, whether basis risk constitutes a negative expected return for licensees.

Notes: (a) Ofwat (2024), PR24 DD, Aligning risk and return – Allowed return appendix, section 3.4.
(b) Ofwat (2024), PR24 DD, Aligning risk and return appendix, section 1.4.3.
(c) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 4.5.2.
(d) Ofgem (2022), ED2 FD – Finance Annex, paras. 2.40 – 2.44.
(e) Ofgem (2024), RIIO-3 Sector Specific Methodology Decision – Finance Annex, para 2.83.

Risk implied by the exposure to inflation wedges

There is a material and volatile wedge between RPI and CPI, CPI and CPIH as well as RPI and CPIH.

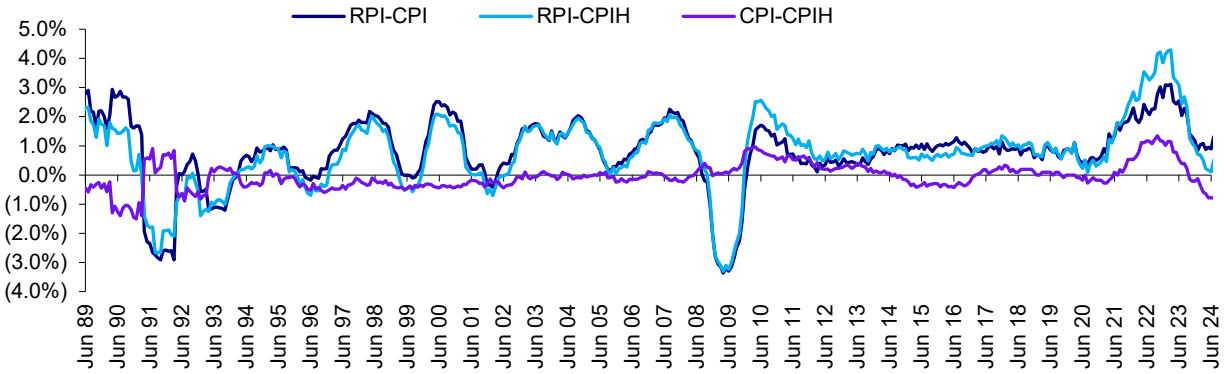
The latest forecasts imply that a material wedge is expected to persist during the period leading up to the 2030 RPI Reform:

- HMT's comparison of independent forecasts from May 2024 implies a wedge of 1.2% for 2028[(a)]
- OBR's forecasts from March 2024 imply a wedge of 0.9% [(b)] for 2028
- CPI and RPI-linked swap data for June 2024 implies an average wedge of 93bps to the end of 2030.

In the FM, Ofwat argued that central estimates of the wedge, based on official forecasts and inflation swaps, were below the 0.9% wedge at the time of publication. This suggested limited benefits from hedging against basis risk. However, based on latest data central estimates exceed the assumed 0.9% wedge.

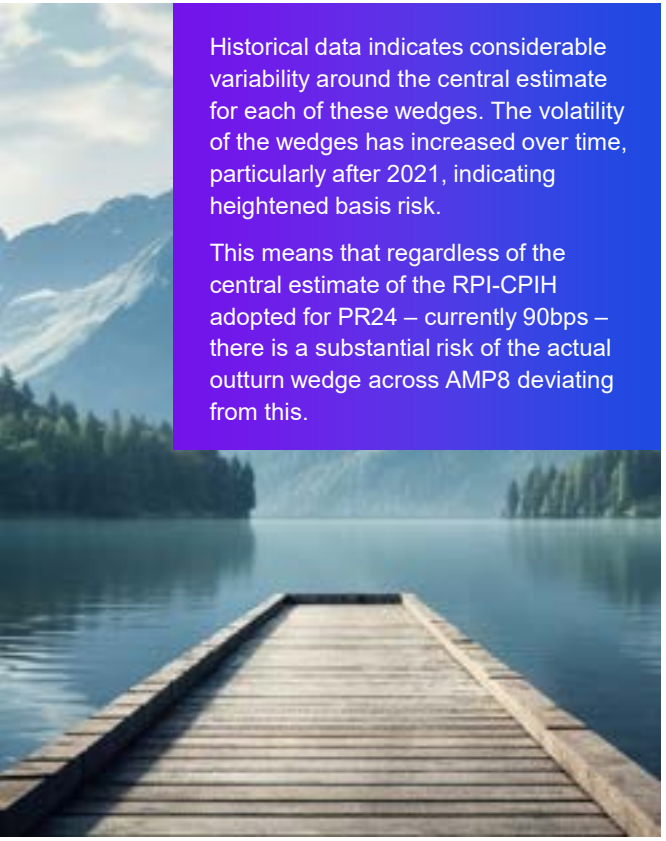
Moreover, whilst it is assumed that the CPI-CPIH wedge is zero, in practice there might be a material difference between outturn values for these inflation measures (as set out on the next page).

Evolution of inflation wedges



Source: KPMG analysis based on ONS data

Risk implied by the exposure to inflation wedges (cont.)



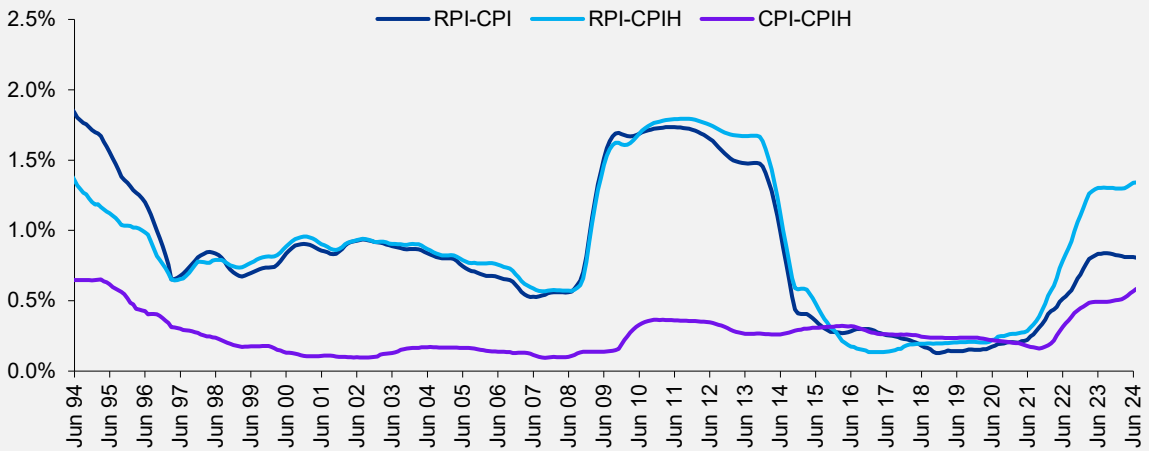
Historical data indicates considerable variability around the central estimate for each of these wedges. The volatility of the wedges has increased over time, particularly after 2021, indicating heightened basis risk.

This means that regardless of the central estimate of the RPI-CPIH adopted for PR24 – currently 90bps – there is a substantial risk of the actual outturn wedge across AMP8 deviating from this.

Variation around the P50 value

1988-2024	RPI-CPI	RPI-CPIH	CPI-CPIH
Average	0.82%	0.77%	-0.05%
P10[(c)]	-0.22%	-0.63%	-0.48%
P90[(c)]	2.15%	2.00%	0.56%
Degree of variation against central estimate	-1.04 to +1.33%	-1.40 to +1.22%	-0.43 to +0.61%

5-year average standard deviation of inflation wedges



Notes: (a) HMT (May 2024), Forecasts for the UK economy: a comparison of independent forecasts

(b) Ibid.

(c) P10 and P90 are terms used in probability and statistics to represent the 10th and 90th percentiles of a distribution, respectively. P10: The value below which 10% of the distribution falls. P90: The value above which 10% of the distribution falls.

Source: KPMG analysis based on ONS data

Translating the impact of the basis risk on RoRE variance to CoD

The effect of the basis risk exposure on the CoD is estimated by first translating the associated RoRE impact into beta terms. This beta value is then translated into the WACC and expressed as an equivalent change in the CoD.

The RoRE impact is estimated using the KPMG risk model[(a)], considering the financing RoRE range both with and without the basis risk exposure, while holding all other risk factors constant.

The resulting variance in the total RoRE range (the average of P10-P50 and P90-P50) is *higher* for a company with exposure to basis risk[(b)]. As inflation is a macroeconomic risk factor beyond companies' control, this increased variance is considered to be systematic.

In the PR24 DD Ofwat contends that the analysis of historical CPIH and RPI-CPIH wedge outturns does not indicate losses for companies in RoRE terms. However, Ofwat's analysis does not isolate the impact of the wedge, meaning it does not directly measure the effect of basis risk.

The increase in RoRE variance due to basis risk exposure is converted to an implied standard deviation of the notional company's return. Based on RoRE outputs from the KPMG risk model and assuming normally distributed returns, the standard deviation for a notional company with basis risk at PR24 is 0.54%, versus 0.51% without it, indicating a 1.06x increase in total risk exposure.

The scaled-up standard deviation is translated into an equity beta uplift based on the decomposition set out below. The decomposition implies that equity beta increases proportionally with the total risk exposure of a notional efficient company, assuming the company's correlation with the overall market as well as the volatility of market returns, remains constant. The assumption of a constant correlation holds when the total equity risk exposure is scaled up by a constant multiplier.

To evaluate whether a reduced correlation could offset the increase in the standard deviation of the company's return, a reverse stress test was conducted. The results indicate that the likelihood of such an offset is below 10%[(c)].

As a result, the notional equity beta should be uplifted by the same scaling factor of 1.06x, leading to an increase of 19bps in the CoE (based on the point estimate of ERP of 4.88% based on KPMG analysis[(d)]) and an implied rise of 9bps in the WACC. This translates to approximately 16bps on the CoD and is equivalent to 65bps on the cost of embedded index-linked debt.

Parameter	Basis risk Impact	
Notional equity beta (KPMG June 2024 cut-off)	0.687	A
Notional equity beta uplifted by a scaling factor of 1.06x	0.727	B
ERP (KPMG June 2024 cut-off)	4.88%	C
Increase in pre-tax CoE	19bps	D = C * (B-A)
Increase in WACC	9bps	E = D * (1 – 55%)
Implied increase in CoD	16bps	F = E/55%
Implied increase in cost of embedded ILD	65bps	G = F/(33% * 76%)[(e)]

$$\beta_i = \rho_{i,m} \frac{\sigma_i}{\sigma_m}$$

Where:

- $\rho_{i,m}$ is the correlation between the returns of a company and the market portfolio;
- σ_i is the standard deviation of a company's returns;
- σ_m is the standard deviation of the market portfolio's returns;

Notes: (c) $\rho_{i,m}$ (Pearson's correlation coefficient) can be rewritten as follows: $\rho_{i,m} = \frac{Covariance(i,m)}{\sigma_i * \sigma_m}$

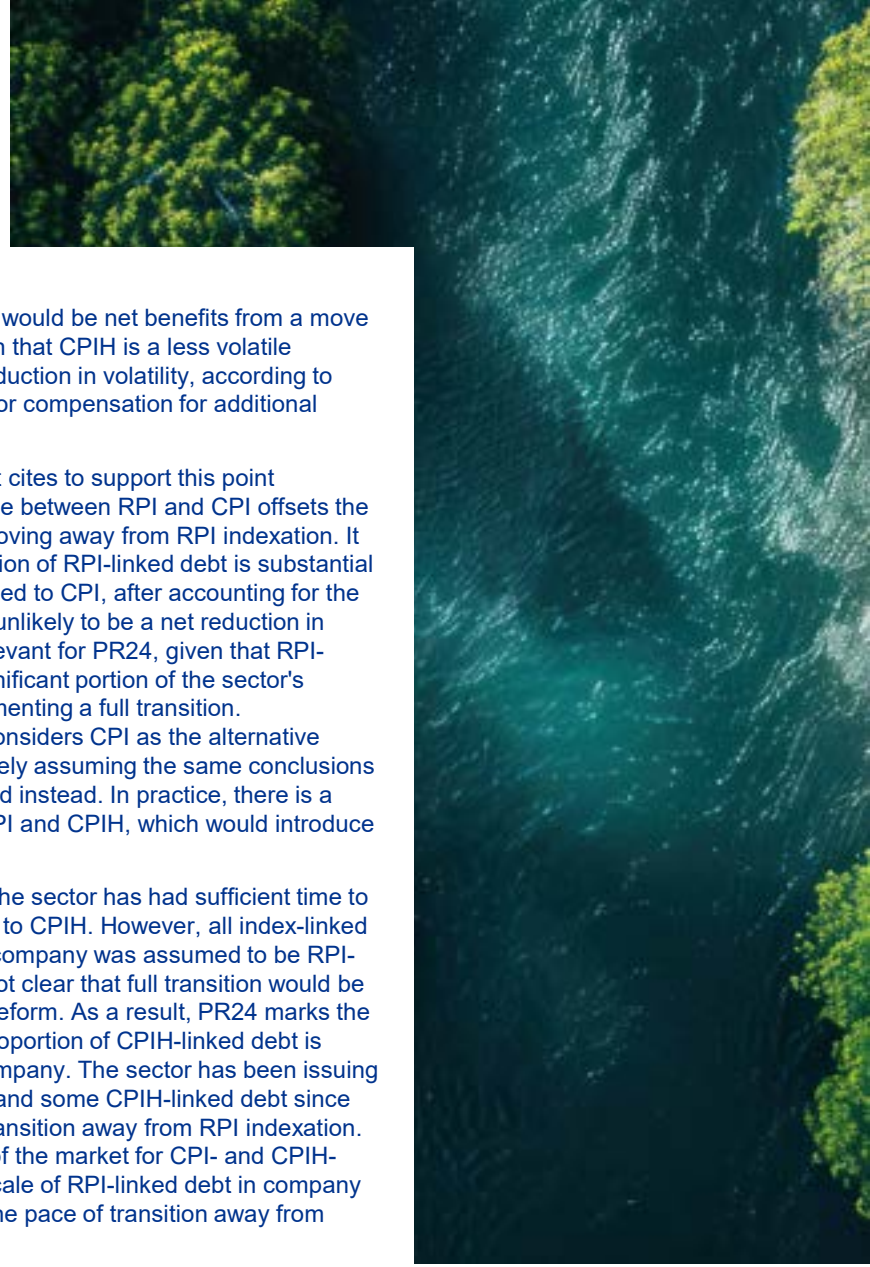
The analysis above suggests the financing risk associated with basis risk is 1.06 times greater than no such risk. Based on the decomposition of $\rho_{i,m}$, the impact of the scaled-up total equity risk exposure of the totex risk will cancel out on the upper and lower side of the formula, due to the fact that: $Covariance(1.06 * i, m) = 1.06 * Covariance(i, m)$, and $\sigma_{1.06*i} = 1.06 * \sigma_i$

Therefore, the Pearson's correlation coefficient can be assumed to be constant when the total equity risk exposure is scaled up by a constant scaling factor of 1.06.

Notes: (a) KPMG risk analysis assesses, based on the available empirical evidence and historical sector performance data, whether the DD parameters and mechanisms allow the notional company to earn base allowed return on a median expected basis. The stochastic risk model is constructed to simulate the notional company's risk exposure in RoRE terms by key risk drivers, accounting for risk mitigations purposed by Ofwat in PR24 DD.

(b) Please refer to Appendix 1 for detailed RoRE results.; (c) Please refer to Appendix 1 the results of the reverse stress test.; (d) KPMG (2024), Estimating the Cost of Equity for PR24; (e) Using notional company assumptions for share of embedded debt and proportion of ILD.

The implications of full CPIH indexation for regulatory policy



The decision to transition from an RPI- to a CPIH-based framework – including accelerated transition ahead of RPI Reform in 2030 – is beyond companies' control and could not have been anticipated when debt structures and hedging strategies were being established. The limited (1) depth of the CPIH market and (2) ability of the CPI market to absorb the new and increasing supply from issuers is also beyond water company control. Absent an allowance, companies will be exposed to additional risks and costs which are not priced in – arising from the specification of regulatory policy arising from accelerated transition to CPIH. The transition should be implemented in a manner that is NPV neutral and does not penalise and disadvantage companies due to exogenous factors outside their control.

Exposing companies to additional risks and costs from the transition would contravene the principles Ofwat set out for its implementation. For example, Ofwat noted that[a]:

- ***"We should move towards implementation of CPI, applying it to both prices and the RCV, but with careful regard to transitional issues".***
- ***"We will commit to ensuring that the impact of this is neutral to both company (nominal) revenues and customer bills in net present value terms... We see this commitment as being a critical part of our package and understand its importance. We therefore welcome views as to how we can best support the credibility of this commitment".***
- ***"We also stated that the choice of indexation method should not impact on the total (nominal) level of returns earned by investors".***

Ofwat has argued that there would be net benefits from a move to full CPIH indexation, given that CPIH is a less volatile measure of inflation. This reduction in volatility, according to Ofwat, eliminates the need for compensation for additional basis risk[b].

However, the analysis Ofwat cites to support this point acknowledges that the wedge between RPI and CPI offsets the reduction in volatility from moving away from RPI indexation. It notes that where the proportion of RPI-linked debt is substantial and indexation is fully switched to CPI, after accounting for the RPI-CPI mismatch, there is unlikely to be a net reduction in risk[c]. This is particularly relevant for PR24, given that RPI-linked debt constitutes a significant portion of the sector's portfolio and Ofwat is implementing a full transition. Furthermore, this analysis considers CPI as the alternative indexation measure, effectively assuming the same conclusions would hold if CPIH were used instead. In practice, there is a non-zero wedge between CPI and CPIH, which would introduce additional volatility.

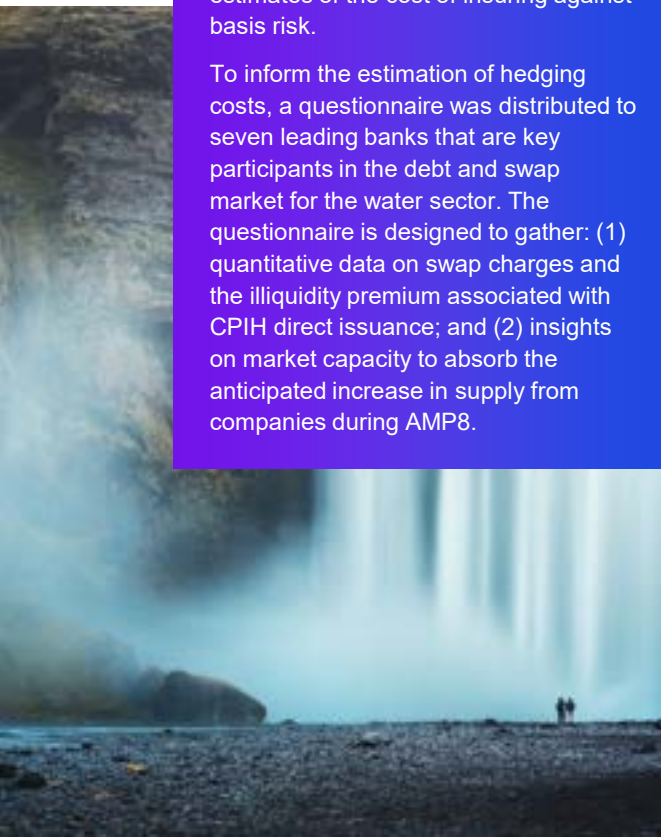
Ofwat has also argued that the sector has had sufficient time to prepare for the full transition to CPIH. However, all index-linked debt issued by the notional company was assumed to be RPI-linked at PR19, and it was not clear that full transition would be implemented ahead of RPI reform. As a result, PR24 marks the first time that a significant proportion of CPIH-linked debt is assumed for the notional company. The sector has been issuing increasing amounts of CPI- and some CPIH-linked debt since 2017 in anticipation of the transition away from RPI indexation. However, the limited depth of the market for CPI- and CPIH-linked debt, relative to the scale of RPI-linked debt in company portfolios, has constrained the pace of transition away from RPI-linked debt.

Notes: (a) Ofwat (2015), Water 2020: Regulatory framework for wholesale markets and the 2019 price review
(b) Ofwat (2022), PR24 FM, Appendix 11 – Allowed return on capital, section 4.5.2 and Ofwat (2022), PR24 DM, Appendix 10 – Aligning risk and return, section 2
(c) Oxera (2016), Indexation of future price controls in the water sector, p. 68

Pricing evidence on hedging basis risk – bank questionnaires

In PR24 FM Ofwat highlighted that it had not been provided with any estimates of the cost of insuring against basis risk.

To inform the estimation of hedging costs, a questionnaire was distributed to seven leading banks that are key participants in the debt and swap market for the water sector. The questionnaire is designed to gather: (1) quantitative data on swap charges and the illiquidity premium associated with CPIH direct issuance; and (2) insights on market capacity to absorb the anticipated increase in supply from companies during AMP8.



Questionnaire responses on embedded ILD:

- For existing RPI-linked bonds, the optimal hedging strategy involves trading in basis swaps.
- Responses indicate that the CPIH swap market is still underdeveloped, meaning that basis swaps are almost exclusively available in the RPI-CPI market. As a result, companies are left exposed to the risk associated with the CPI-CPIH wedge.
- Bank quotes for basis swaps (RPI-CPI) average around 7bps for a 5-year swap, with a maximum of 12bps. A 5-year swap is deemed appropriate as there may not be a need to hedge this risk after the RPI Reform. As the quantification of basis risk exposure implies a 16bps impact on CoD, the 12bps estimate is proposed as the upper bound.

Questionnaire responses on new ILD:

For new issuances, water companies can manage basis risk in two ways: (1) by directly issuing CPIH or CPI bonds, with the latter potentially exposing them to the CPI-CPIH wedge; or (2) by issuing nominal bonds and entering into an inflation swap (fixed-to-CPI/CPIH).

- Responses indicate that although liquidity in the CPI bond market has improved over time, the market's capacity to absorb direct CPI issuance remains insufficient to accommodate all expected ILD issuances in the water sector during AMP8. Furthermore, the CPIH bond market is even less liquid, with some banks estimating an illiquidity premium of 9 – 13bps on CPIH bond issuance.
- With greater capacity in the swap market[(a)], the most effective way to issue new ILD that more closely aligns with the price control's indexation measure may be to raise nominal bonds and enter into CPI inflation swaps. Bank quotes for inflation swap charges are in the range of 58 – 62bps.

Bank quotes in the response to the questionnaire	Lower bound (bps)	Upper bound (bps)
Basis swap charges (RPI-CPI), 5-year tenor	7.0	12.0
Illiquidity premium on CPIH-linked	9.0	13.0
Swap charges on Fixed-to-CPI swap	58.0	62.0

Notes: (a) The explanation provided by one of the banks for this dynamic is as follows: Similar investors, such as pension funds and insurance companies, are active in both the index-linked bond and swap markets. These investors typically separate their investment activities into distinct mandates, such as equities, corporate debt, and government debt, while managing overarching liability hedges – like inflation and interest rate risk –at a central level. This separation means that liability hedging is handled independently from the management of corporate credit risk. Therefore, these institutional investors may opt for inflation swaps, which allow them to hedge inflation risk directly without introducing additional corporate credit risk. This results in greater demand for swaps as they effectively address the specific liability risks without overlapping with their corporate debt portfolios.

The estimates for basis risk pricing for PR24

The cost of basis risk management is estimated at 6bps across new and embedded debt, based on pricing evidence from banks.

- **For embedded debt, the range of 2 – 3bps reflects the cost of hedging this risk, cross-checked against by quantifying the additional volatility arising from basis risk, which translates into a 16bps adjustment. This significantly exceeds the cost of hedging through swaps. This cross-check, along with the potential market response to a significantly increased supply of ILD during AMP8, supports adopting 3bps as the estimate for pricing basis risk management on embedded debt.**
- **For new debt, the range of 1 – 5bps reflects the cost of issuing new CPI(H)-linked debt. 3bps is proposed as the point estimate.**

The pricing of basis risk is based on the proportion of ILD assumed for the notional company. However, in practice, the actual average ILD proportion differs significantly from the 33% notional assumption. Therefore, 6bps represents a conservative *de minimis* estimate.

Pricing of basis risk on embedded debt

	Basis of pricing	Estimate
Lower bound	The lower bound reflects the median cost of hedging the risk, based on information gathered from banks regarding basis swap charges.	7bps
Upper bound	The upper bound represents the maximum cost of hedging the risk based on bank surveys. This is corroborated by the quantification of the additional volatility arising from basis risk, which translates into a 16bps adjustment on CoD.	12bps
Overall range		7 – 12bps
Share of embedded debt		74%
ILD proportion		33%
Pricing of basis risk on embedded debt		2 – 3bps

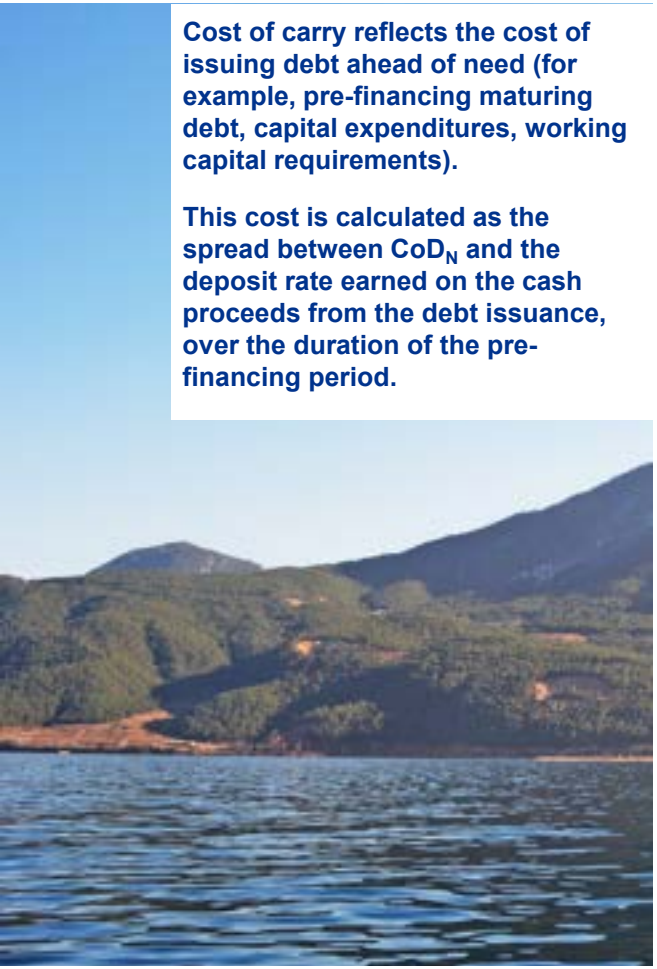
Pricing of basis risk on new debt

	Basis of pricing	Estimate
Lower bound	The lower bound reflects the additional costs from issuing more illiquid CPIH-linked debt to maintain asset-liability matching.	9 – 13bps
Upper bound	The pricing is based on CPI inflation swap charge information gathered from banks. Survey responses indicate that the demand for inflation-linked bonds is limited relative to swaps and that there is virtually no market for CPIH swaps, suggesting that swapping nominal debt into CPI may be the most effective way of issuing CPI-linked debt.	58 – 62bps
Overall range		11 – 60bps
Share of new debt		26%
ILD proportion		33%
Pricing of basis risk on new debt		1 – 5bps

04

Cost of carry

Context



Cost of carry reflects the cost of issuing debt ahead of need (for example, pre-financing maturing debt, capital expenditures, working capital requirements).

This cost is calculated as the spread between CoD_N and the deposit rate earned on the cash proceeds from the debt issuance, over the duration of the pre-financing period.

Ofwat and the CMA at PR14

At PR14, Ofwat and the CMA estimated cash holding cost of 20bps.

Both Ofwat and the CMA included cash holding costs of c.0.20% in their assessment of actual costs[(a)].

This estimate was designed to reflect "*ongoing costs associated with complying with debt covenants / managing liquidity, the level of which may be influenced by the need to hold additional cash or retain draw-down facilities*"[(b)].

However, neither Ofwat not the CMA provided an uplift for the cost of carry for the notional company.

Ofgem RIIO-2

Ofgem estimated a 10bps cost of carry allowance at RIIO-2.

In the RIIO-2 FDs, Ofgem examined cash held by licensees to estimate cost of carry[(e)] (similar to the CMA's approach at PR19). Ofgem used group accounts where licensee level accounts held no cash.

The cost of carry was calculated by multiplying the cash balance, expressed as a percentage of net debt, by the 5-year average spread between the benchmark iBoxx GBP Utilities 10+ index and the cash deposit rate.

Ofwat and the CMA at PR19

At PR19 the CMA estimated the cost of carry at 10bps.

Ofwat did not provide estimate cost of carry in the PR19 FD.

During the PR19 CMA appeals, companies argued that a cost of carry allowance should be provided when including floating rate debt in the calculation of actual costs. This is because floating rate debt primarily corresponds to cash held on balance sheets[(c)].

The CMA included a 10bps cost of carry estimate in its embedded debt calculations which reflected floating debt[(d)].

Ofwat PR24 DD

Ofwat estimated the cost of carry to be 7bps[(f)].

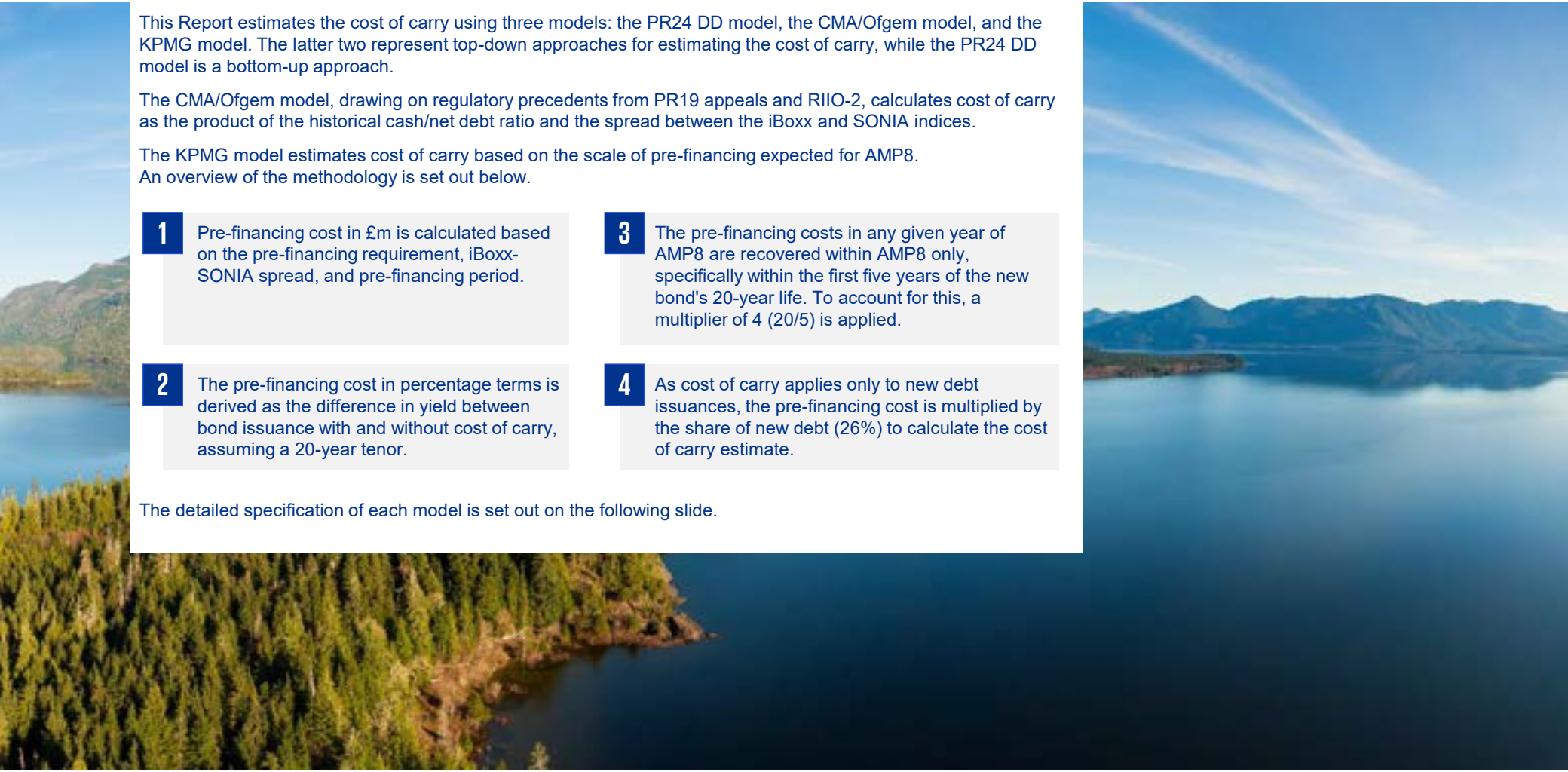
Cost of carry is calculated based on the spread between the iBoxx A/BBB10+ index and the 3-month SONIA rate. The calculation assumes:

- A 6-month pre-financing period.
- A pre-financing requirement of 12%, expressed as a percentage of debt, to provide liquidity for 12 months for capital expenditure (beyond funds from operations) and to pre-finance maturing debt.
- That 50% of the refinancing requirement can be financed through revolving credit facilities (RCFs).

Ofwat calculated its iBoxx-SONIA spread based on data from 2020 to 2022. The regulator noted that the average spread has narrowed since January 2023 and will consider using this narrower spread for the FD.

Notes:
(a) CMA (2015), Bristol Water plc determination, para. 10.100. Ofwat (2015), Ofwat's response to Bristol Water's Price Determination Statement of Case dated 11 March 2015, para. 310.
(b) CMA (2015), Bristol Water plc determination, para. 10.100
(c) CMA (2021), PR19 Final Determination, paras. 9.582 and 9.584.
(d) Ibid., para 9.606(a)(ii).
(e) See, for example, Ofgem (2021), RIIO-2 Final Determinations – Finance Annex (revised), para 2.23.
(e) The exact value and the calculation methodology are set out in the supplementary calculation published in August. The overall allowance for additional borrowing costs includes a new allowance for cost of carry and a decreased allowance for liquidity, resulting in a net 5bps increase in relative to the PR24 FM/.
(f) Ofwat (2024), PR24 DD, Aligning risk and return – Allowed return appendix, section 3.4.

Proposed approach and methodology



This Report estimates the cost of carry using three models: the PR24 DD model, the CMA/Ofgem model, and the KPMG model. The latter two represent top-down approaches for estimating the cost of carry, while the PR24 DD model is a bottom-up approach.

The CMA/Ofgem model, drawing on regulatory precedents from PR19 appeals and RIIO-2, calculates cost of carry as the product of the historical cash/net debt ratio and the spread between the iBoxx and SONIA indices.

The KPMG model estimates cost of carry based on the scale of pre-financing expected for AMP8.
An overview of the methodology is set out below.

1 Pre-financing cost in £m is calculated based on the pre-financing requirement, iBoxx-SONIA spread, and pre-financing period.

2 The pre-financing cost in percentage terms is derived as the difference in yield between bond issuance with and without cost of carry, assuming a 20-year tenor.

3 The pre-financing costs in any given year of AMP8 are recovered within AMP8 only, specifically within the first five years of the new bond's 20-year life. To account for this, a multiplier of 4 (20/5) is applied.

4 As cost of carry applies only to new debt issuances, the pre-financing cost is multiplied by the share of new debt (26%) to calculate the cost of carry estimate.

The detailed specification of each model is set out on the following slide.

Proposed approach and methodology (cont.)

	Model specifications		
	Ofwat PR24 DD ('Ofwat model')	**CMA PR19 and Ofgem model ('CMA/Ofgem model')**	**KPMG AMP8 growth model ('KPMG model')**
Summary of model framework	Bottom-up modelling, based on refinancing and liquidity requirements for AMP8 capex and historical iBoxx-SONIA spread.	Top-down modelling, based on historical cash/net debt ratio, historical RCF facility size and forecast iBoxx-SONIA spread.	Top-down modelling, based on forecast AMP8 RCV growth, forecast RCF facility size (as a percentage of RCV) and forecast iBoxx-SONIA spread.
Period used for iBoxx-SONIA spread	Average of 2020 to 2022.	May-June 2024, updated for forward rate adjustments for SONIA overnight rates, where rate cuts have not be priced in due to short tenor.	
Total financing requirement across AMP8	12% on an annualised basis (6% refinancing and 6% capex liquidity).	N/A	26% on average across AMP8, consistent with the share of new debt assumption in PR24 DD.
Number of debt issuances during AMP8	N/A	N/A	5, 3.5, or 2.5, depending on the pre-financing period (i.e., 5Y/12m, 5Y/18m, or 5Y/24m).
Length of pre-financing period	6 months.	N/A	Primary assumption of 18 months, with sensitivities of 12 and 24 months considered.
Relevant benchmark for CoDN	iBoxx A/BBB 10+.	iBoxx A/BBB 10+ *plus* 34bps uplift (consistent with the assumption for CoD_N in this Report).	
Relevant benchmark for the return on cash and cash equivalents	3m Overnight Index Swap (OIS).	Weighted average SONIA across cash and cash equivalents, with cash linked to overnight SONIA and cash equivalents linked to 3m SONIA.	
Total amount of RCF	N/A	N/A	RCF as a percentage of RCV assumed ton be consistent with AMP7.
Availability of undrawn RCF for use for pre-financing	50% of the refinancing requirement (i.e. 6%).	N/A	50% of the refinancing requirement.
Companies included in analysis	WaSCs and large WoCs.	WaSCs and large WoCs.	WaSCs and large WoCs.

Analysis of and commentary on the Ofwat model

Parameter	Impact	Ofwat assumption	RAG[a]	KPMG commentary
Length of pre-financing period	Large	6 months		This assumption is inconsistent with rating agency requirements and industry practices. For example, S&P requires corporate issuers to achieve "**adequate**" or "**strong**" liquidity assessment for BBB- rating and above. Achieving "**adequate**" requires liquidity sources to exceed uses by at least 1.2x over the next 12 months. Achieving "**Strong**" requires a minimum of 1.5x coverage over the next 12 months and 1.0x coverage for the subsequent 12 months (covering 24 months in total). Evidence from companies also supports longer pre-financing periods. Surveys conducted among water companies yielded seven responses, none indicating a pre-financing period shorter than 12 months. One company, for example, reported a 15-month liquidity policy, which it noted aligns with broader industry practices based on a recent benchmarking exercise. More generally, companies tend to adopt more prudent policies in the context of market volatility, increases in perceived credit risk of the sector and substantial investment programmes that increase required funding levels.
Average period for iBoxx-SONIA spread	Large	2020 to 2022. Ofwat noted that since January 2023 the average spread has narrowed, and that it will consider whether to adopt this narrower spread in the FD.		Ofwat has not acknowledged that the narrowing of the spread post-January 2023 is attributable to the difference in iBoxx and SONIA tenors. This difference means that rate cut expectations are reflected in iBoxx yields (with 10+ years to maturity) but not in SONIA rates. KPMG has estimated the forward rate adjustment due to this difference to be 58bps[b].

Notes: (a) RAG definition: Red – Ofwat assumption does not appear to be appropriate; Amber – Ofwat assumption does not, in principle, appear to be appropriate but it is recommended that Ofwat revisit the assumption for FD based on evidence submitted; Green – Ofwat assumption appears appropriate.

(b) See Appendix 2.

Analysis of and commentary on the Ofwat model (cont.)

Parameter	Impact	Ofwat assumption	RAG[a]	KPMG commentary
Total financing requirement over AMP8	Large	12% of total debt balance[b]		The total financing requirement would increase at the FD, if the Totex allowance and/or refinancing requirement is increased for one or more companies.
Portion of financing requirement met by utilising RCF	Large	50% (or 6% of total debt balance)		Ofwat appears to be assuming that 50% of the pre-financing requirement will be met using RCFs, although this is not confirmed explicitly. Some companies explained that they hold a certain proportion (33% – 50%) of their committed but undrawn RCF as permanent buffer for meeting unexpected cash needs.
Benchmark index for calculating iBoxx-SONIA spread	Large	iBoxx £ A/BBB 10+ index		The unadjusted yields understate the cost of borrowing for water companies. The evidence in the PR24 DD does not capture the full extent of water company underperformance.
OIS tenor	Small	3 months		While this represents a reasonable assumption for short-term deposits, cash at hand is likely to earn the overnight SONIA rate, which is generally lower than a 3-month rate.

Notes: (a) RAG definition: Red – Ofwat assumption does not appear to be appropriate; Amber – Ofwat assumption does not, in principle, appear to be appropriate but it is recommended that Ofwat revisit the assumption for FD based on evidence submitted; Green – Ofwat assumption appears appropriate.

(b) The financing requirement in the Ofwat model is annualised and hence is not like-for-like with the share of new debt, which reflects the cumulative new debt requirement across the AMP.

Cost of carry estimates for PR24

The tables below set out the pre-financing cost on total book debt for the three models based on primary assumptions and sensitivities.

These estimates reflect the debt issuance profile implied by the PR24 DD. This includes: (1) refinancing debt from the PR24 DD Balance Sheet model; and (2) RCV-financing debt from the PR24 DD financial models, calculated by multiplying the difference between the FY25 and FY30 closing values by the notional gearing of 55%. For the KPMG model, results based on the debt issuance profile submitted in company BPs are also presented.

The iBoxx-SONIA spread in each model is based on iBoxx A/BBB 10+ plus 34bps. The spread is calculated over (1) May-June 2024[(a)] and (2) 2020-2022[(b)].

Both the KPMG and updated Ofwat models capture the impact of pre-financing expected for AMP8. Assuming an 18-month pre-financing period, aligned with company policies and rating agency requirements, yields an estimated cost of carry of 12 – 14bps using the KPMG model. The updated Ofwat model, which now incorporates with an 18-month pre-financing period and appropriate new debt pricing, estimates a cost of carry of at least 13bps. Sensitivity analysis reveals that the assumed pre-financing period significantly impacts the results.

KPMG model results (bps)		Length of pre-financing period (months)		
		12	18	24
Source of issuance profile	PR24 DD	5.1	**11.6**	18.2
	BPs	7.9	**14.4**	21.1

Updated Ofwat model results (bps)		Length of pre-financing period (months)		
		12	18	24
Period used for iBoxx-SONIA spread	2020-22	15.7	**23.5**	31.3
	2024	8.8	**13.2**	17.7

The CMA/Ofgem model yields an estimate of 8 – 15bps, reflecting the appropriate pricing of CoD_N. However, by design, it does not account for expected pre-financing requirements for AMP8.

CMA/Ofgem model results (bps)	Period used for iBoxx-SONIA spread	
	2020-22	2024
Pre-financing cost	14.9	8.0

Notes: (a) 2m average for iBoxx and SONIA as of 30 June 2024. 3m SONIA rates are adjusted downward by 58bps to account for expected rate cuts not priced in. See detailed discussions in Appendix 2.

(b) Average iBoxx-SONIA spread between July 2020 and September 2022, before structural changes to the spread occurred.

Source: KPMG analysis

Cost of carry estimates for PR24 (cont.)

Cost of carry estimates based on the three models are as follows:

The KPMG model implies a cost of carry of 12 – 14bps, assuming

(1) an 18-month pre-financing period and

(2) a pre-financing cost based on iBoxx A/BBB 10+ plus 34bps. This is 5 – 7bps higher than the PR24 DD estimate.

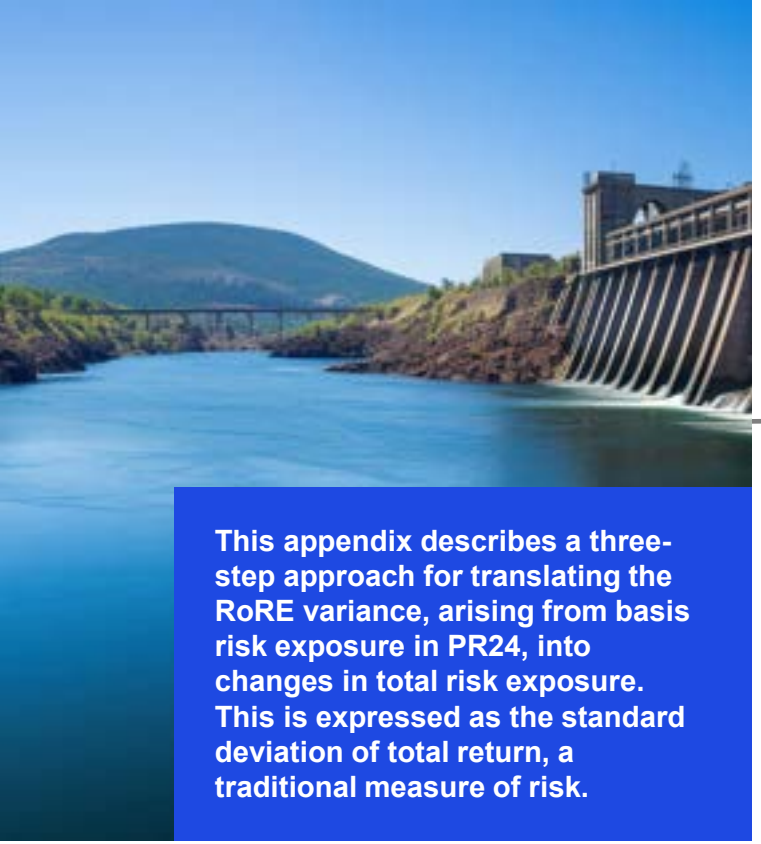
The updated Ofwat model implies a cost of carry of at least 13bps, assuming (1) an 18-month pre-financing period and (2) a pre-financing cost based on iBoxx A/BBB 10+ plus 34bps. This is broadly in line with the lower bound of the results from the KPMG model.

The CMA/Ofgem model implies a cost of carry of 8 – 15bps, assuming a pre-financing cost based on iBoxx A/BBB 10+ plus 34bps. However, this model is unlikely to capture increases in pre-financing requirements driven by AMP8 capital programmes.

An estimate of 12 – 14bps based on the KPMG model is proposed in this Report.

05

Appendices



Appendix 1: Methodology for translating RoRE variance into standard deviation

This appendix describes a three-step approach for translating the RoRE variance, arising from basis risk exposure in PR24, into changes in total risk exposure. This is expressed as the standard deviation of total return, a traditional measure of risk.

Step 1

Simulate RoRE performance in terms of P10/P50/P90 for each risk driver using the KPMG risk model, under two scenarios: (1) with exposure to basis risk and (2) without exposure to basis risk.

Step 2

Calculate risk exposure for each risk factor

The standard deviation for each risk factor is derived by averaging the P10-P50 and P90-P50 ranges and dividing by 1.268[(a)].

This approach aligns with the CAPM assumption that returns are normally distributed, meaning they are symmetrically clustered around the mean. While there may be asymmetric downside risks in the expected performance of each risk factor under the PR24 DD regulatory framework, such risks are beyond the scope of this specific analysis.

Step 3

Aggregate the exposure to each factor into overall exposure for the firm

The standard deviation of each risk factor is aggregated to determine the total risk exposure for the notional company using the following formula:

$$\sigma_P^2 = \sum_{i=1}^{n} \omega_i^2 \, \sigma_i^2$$

$$\sigma_P = \sqrt{\sigma_P^2}$$

Where:

- σ_P is the total risk exposure measured as standard deviation
- σ_i is the risk exposure of each driver, e.g. Financing risk
- ω_i is the relative weight of each risk driver[(b)]

Notes: (a) This methodology assumes that performance is normally distributed, and thus that (1) P50, mean, and median values for each risk driver are equivalent and (2) the range of P90-P50 and P10-P50 should conceptually be the same and equal to 1.285 standard deviation (SD), where 1.285 is the critical value for the 10% confidence level in a normal distribution. Where the P90-P50 and P10-P50 ranges from the simulation differ, standard deviation is assumed to be the average of P90-P50 and P10-P50..

(b) The relative weight of each risk driver is derived as the proportion of its P90-P50/P10-P50 average variance to total RoRE variance. The same weights are applied to PR19 as derived from the KPMG risk model for PR24.

Appendix 1: Methodology for translating RoRE variance into standard deviation (cont.)

The tables below set out the RoRE outputs from the KPMG risk model for PR24, with and without exposure to basis risk, holding all other risk factors constant. P10 and P90 represent the downside and upside of the expected performance for each factor. The only difference between the tables is the simulated Financing RoRE range, with an average variance of P90-P50/P10-P50 at 1.52% in the presence of basis risk versus 1.18% without it.

The tables also set out the total risk exposure for a notional water company in PR24, measured as the weighted average of the standard deviations for each risk driver, both with and without exposure to basis risk. Keeping all risks constant except for Financing risk, the total risk exposure for a notional company with basis risk in PR24 is 0.54%, compared to 0.51% without basis risk. This indicates an increase in total risk by a scaling factor of 1.06x.

Incl. basis risk	Implied P10	Implied P50	Implied P90	Average of Variance	Standard Deviation of risk drivers (σ_i)	*Relative weight (ω_i)*	Implied risk variance ($\sigma_i^2 \omega_i^2$)	Implied total risk (σ_P)
Totex	-2.43%	-0.91%	0.42%	1.43%	1.11%	*22.02%*	0.00060%	
Retail	-1.55%	0.00%	1.55%	1.55%	1.21%	*23.96%*	0.00084%	
ODIs	-2.56%	-0.84%	0.37%	1.47%	1.14%	*22.64%*	0.00067%	
Financing	**-1.49%**	**0.05%**	**1.55%**	**1.52%**	**1.19%**	***23.49%***	**0.00078%**	
C-MeX	-0.33%	0.04%	0.48%	0.41%	0.32%	*6.26%*	0.00000%	
Revenue & other	-0.05%	-0.03%	0.00%	0.03%	0.02%	*0.39%*	0.00000%	
DPC	-0.16%	0.00%	0.00%	0.08%	0.06%	*1.24%*	0.00000%	
Total	**-8.57%**	**-1.69%**	**4.37%**	**6.47%**	**5.05%**	***100.00%***	**0.00289%**	**0.54%**

Source: KPMG risk model, extracted August 19, 2024.

Notes: In this report, the RoRE outputs are based on the "**Unmitigated rebased**" numbers in the club risk model, which is the scenario with full estimated risk exposure of the notional company under the PR24 DD regulatory regime, but removing the miscalibration risk, i.e. assuming that companies are able to improve their performance to the levels required in AMP8 to meet the submitted BP targets. The RoRE for each driver have been adjusted to be on additive basis, i.e. the total RoRE equals to the sum of the individual RoREs.

Appendix 1: Methodology for translating RoRE variance into standard deviation (cont.)

The tables below set out the RoRE outputs from the KPMG risk model for PR24, with and without exposure to basis risk, holding all other risk factors constant. P10 and P90 represent the downside and upside of the expected performance for each factor. The only difference between the tables is the simulated Financing RoRE range, with an average variance of P90-P50/P10-P50 at 1.52% in the presence of basis risk versus 1.18% without it.

The tables also set out the total risk exposure for a notional water company in PR24, measured as the weighted average of the standard deviations for each risk driver, both with and without exposure to basis risk. Keeping all risks constant except for Financing risk, the total risk exposure for a notional company with basis risk in PR24 is 0.54%, compared to 0.51% without basis risk. This indicates an increase in total risk by a scaling factor of 1.06x.

Excl. basis riskc	Implied P10	Implied P50	Implied P90	Average of Variance	Standard Deviation of risk drivers (σ_i)	*Relative weight (ω_i)*	Implied risk variance ($\sigma_i^2 \omega_i^2$)	Implied total risk (σ_P)
Totex	-2.43%	-0.91%	0.42%	1.43%	1.11%	*22.02%*	0.00060%	
Retail	-1.55%	0.00%	1.55%	1.55%	1.21%	*23.96%*	0.00084%	
ODIs	-2.56%	-0.84%	0.37%	1.47%	1.14%	*22.64%*	0.00067%	
Financing	**-1.15%**	**0.03%**	**1.21%**	**1.18%**	**0.92%**	***23.49%***	**0.00047%**	
C-MeX	-0.33%	0.04%	0.48%	0.41%	0.32%	*6.26%*	0.00000%	
Revenue & other	-0.05%	-0.03%	0.00%	0.03%	0.02%	*0.39%*	0.00000%	
DPC	-0.16%	0.00%	0.00%	0.08%	0.06%	*1.24%*	0.00000%	
Total	**-8.23%**	**-1.71%**	**4.03%**	**6.13%**	**4.78%**	***100.00%***	**0.00258%**	**0.51%**

Source: KPMG risk model, extracted August 19, 2024.

Notes: In this report, the RoRE outputs are based on the "**Unmitigated rebased**" numbers in the club risk model, which is the scenario with full estimated risk exposure of the notional company under the PR24 DD regulatory regime, but removing the miscalibration risk, i.e. assuming that companies are able to improve their performance to the levels required in AMP8 to meet the submitted BP targets. The RoRE for each driver have been adjusted to be on additive basis, i.e. the total RoRE equals to the sum of the individual RoREs.

Appendix 1: Methodology for translating RoRE variance into standard deviation – reverse stress test on correlation

Accurately estimating the potential change in correlation resulting from the increased standard deviation of company returns due to basis risk exposure is challenging.

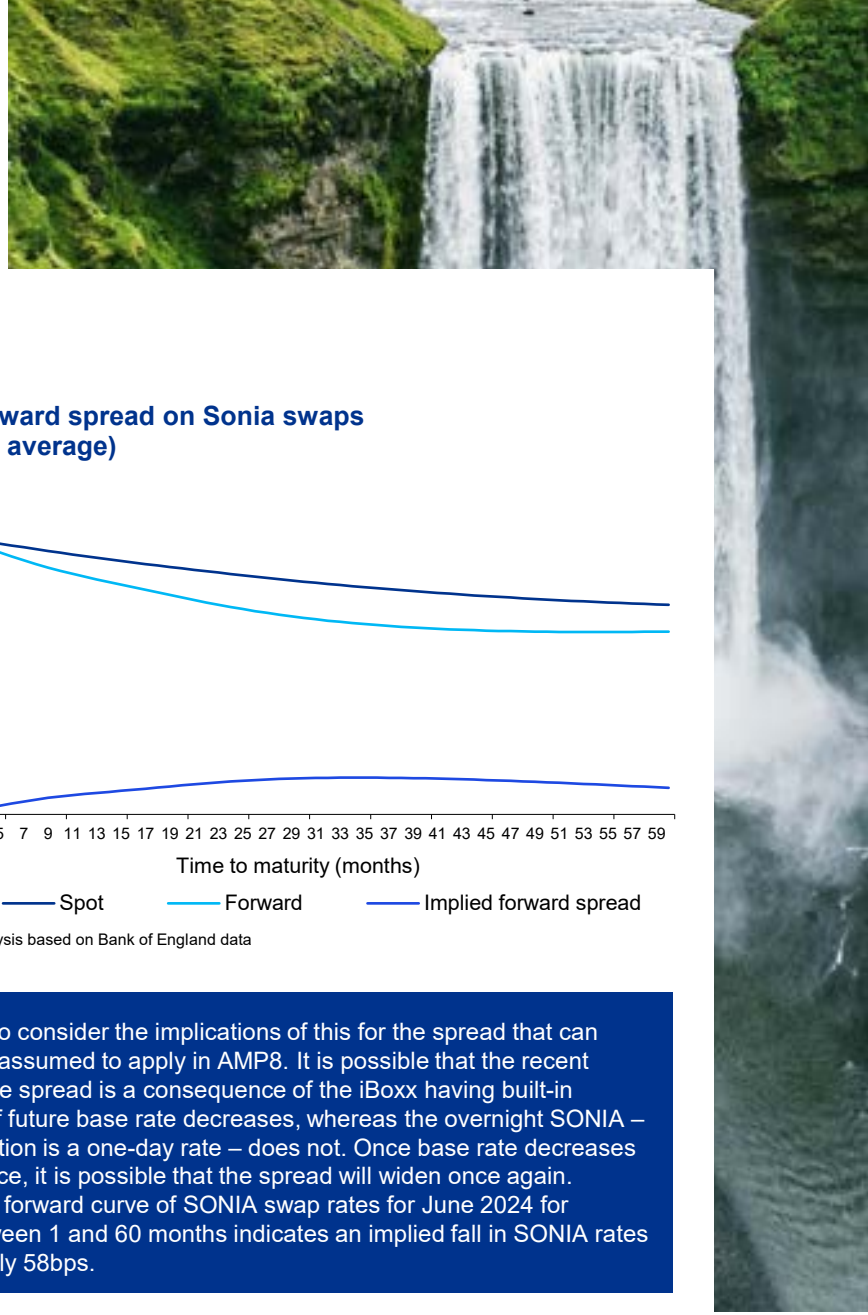
As such, a reverse stress test is conducted to assess the plausibility of a reduced correlation to offset the increased equity risk exposure. This involves calculating how much the correlation would need to decrease to keep the beta unchanged and evaluating whether such a decrease is realistic based on historical correlation trends. If the required correlation to offset the increased volatility is lower than the P10 of historical levels, it would indicate that maintaining a constant beta might be unrealistic. For completeness, the offsetting correlation is compared with 2Y, 5Y and 10Y windows with historical data since 2006.

The results of the test are shown in the table below. Based on the scaled-up standard deviation in equity return, the likelihood of correlation decreasing enough to maintain beta unchanged is lower than 10% for the 5- and 10-year windows used for beta estimation in the PR24 DD. Therefore, the possibility of a lower correlation to completely offset the increase in equity return volatility is low, thus the equity beta is more likely to increase.

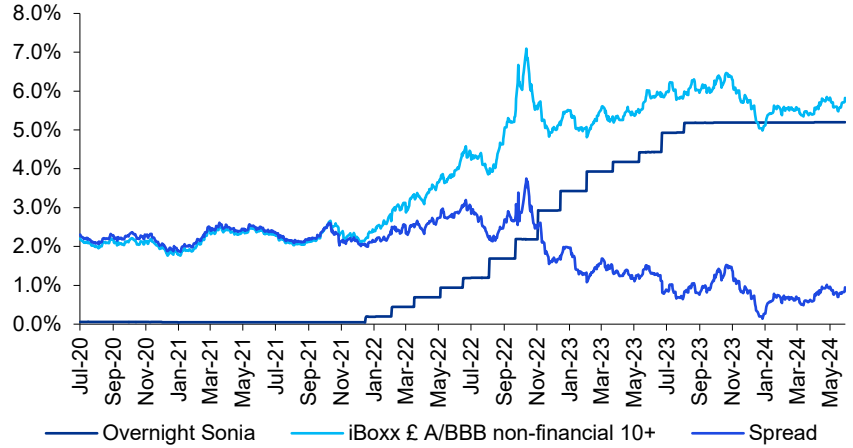
Estimation Window	2Y	5Y	10Y
Correlation as of 30 June 2024	0.36	0.42	0.44
Required correlation to offset the increased volatility	**0.34**	**0.40**	**0.41**
Historical correlation from Jan 2004 to 30 Jun 2024 (P10)	0.33	0.41	0.44
Historical correlation from 1 Oct 2014 to 30 Jun 2024 (P10)	**0.32**	**0.41**	**0.44**
Compared with Jan 2004 to 30 Jun 2024	Likelihood > 10%	Likelihood <10%	Likelihood <10%
Compared with 1 Oct 2014 to 30 Jun 2024	Likelihood >10%	Likelihood <10%	Likelihood <10%

Source: KPMG analysis.

Appendix 2: Evolution of the spread between SONIA and iBoxx

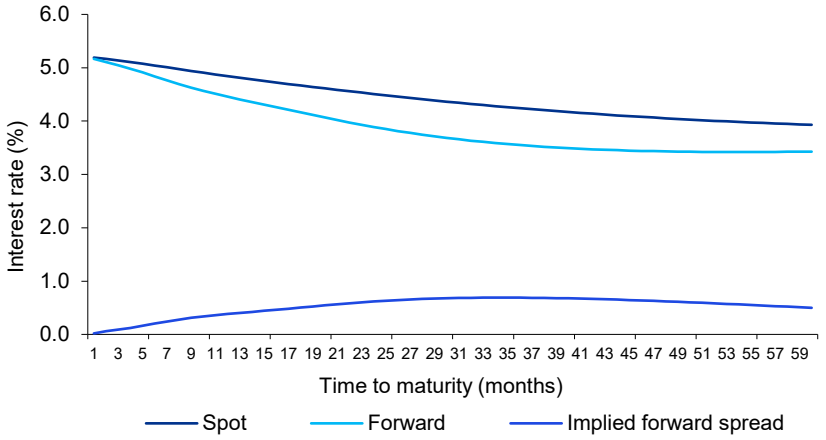


Evolution of iBoxx (A/BBB 10+) and Sonia (overnight) spread



Source: Refinitiv Datastream and Bank of England

Implied forward spread on Sonia swaps (June 2024 average)



Source: KPMG analysis based on Bank of England data

Between July 2020 and September 2022, the spread between overnight SONIA and iBoxx A/BBB 10+ is typically 2-3%. A structural break is observed from November 2022 onwards, with the spread decreasing to 1.5% by January 2023 and to less than 1% throughout 2024. This spread is a key modelling input, reflecting the difference between the cost of financing and the return achievable on cash and cash equivalents. *Ceteris paribus*, a larger spread results in a higher cost of carry, and *vice versa*.

It is important to consider the implications of this for the spread that can reasonably be assumed to apply in AMP8. It is possible that the recent narrowing of the spread is a consequence of the iBoxx having built-in expectations of future base rate decreases, whereas the overnight SONIA – which by definition is a one-day rate – does not. Once base rate decreases have taken place, it is possible that the spread will widen once again. Comparing the forward curve of SONIA swap rates for June 2024 for maturities between 1 and 60 months indicates an implied fall in SONIA rates of approximately 58bps.

Appendix 3: important notice

This Report has been prepared by KPMG LLP ('**KPMG**', '**we**' or '**our**') for Water UK on the basis of an engagement contract dated 26 September 2023 and varied by an amendment and restatement agreement dated 16 August 2024 between Water UK and KPMG (together the **"Engagement Contract**"). Water UK commissioned the work to assist Water UK in its considerations regarding the Water Services Regulation Authority ("Ofwat")'s PR24 Draft Determination on the cost of new debt and additional borrowing costs.

Water UK should note that our findings do not constitute recommendations as to whether or not Water UK should proceed with any particular course of action.

The findings expressed in this Report are (subject to the foregoing) those of KPMG and do not necessarily align with those of Water UK.

KPMG has not assisted Water UK in preparation of its separate response to the PR24 Draft Determination on cost of new debt and additional borrowing costs to which this Report relates. For the avoidance of doubt, it is Water UK's sole responsibility to decide what should be included in their response or submission to Ofwat. KPMG has not made any decisions for Water UK or assumed any responsibility in respect of what Water UK decides, or has decided to, include in its response or submission.

This Report is for the benefit of Water UK only. This Report is not suitable to be relied on by any party wishing to acquire rights against KPMG (other than Water UK) for any purpose or in any context. Any party other than Water UK that obtains access to this Report or a copy and chooses to rely on this Report (or any part of it) does so at its own risk. To the fullest extent permitted by law, KPMG does not assume any responsibility or liability in respect of our work or this Report to any party other than Water UK.

The sector-wide market information in this Report reflects prevailing conditions as of the date of the Report, all of which are accordingly subject to change. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. Information sources and source limitations are set out in this Report. We have satisfied ourselves, where possible, that the information presented in this Report is consistent with the information sources used, but we have not sought to establish the reliability or accuracy of the information sources by reference to other evidence. We relied upon and assumed without independent verification, the accuracy and completeness of information available from public sources and financial information platforms. KPMG does not accept any responsibility for the underlying data used in this Report.

The company-specific information in relation to water company debt is based on representations made to us by the management of each water company. We do not accept responsibility for such information which remains the responsibility of management. We relied upon and assumed without independent verification, the accuracy and completeness of the information. We have not sought to establish the reliability of the information by reference to other evidence. The company-specific information has been reviewed by the management of each water company.

This Report also contains or refers to questionnaire responses ("**Data**") provided by banks ("**Third Parties**"). The Data was not prepared or supplied by the Third Parties in contemplation, or for the purpose, of Water UK's or any other person's interests or needs.

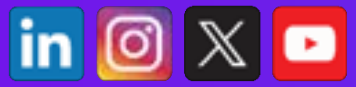
Appendix 3: important notice (cont.)

In respect of the Data: (i) no representation or warranty, either express or implied, is provided by any Third Party and no responsibility or liability, either express or implied, is taken by or accepted by any Third Party in relation to the accuracy, completeness, reasonableness or reliability of the Data or the assumptions upon which the Data was prepared, nor whether it is relevant or suitable for Water UK's or any other person's purposes; (ii) the Data is confidential in accordance with KPMG's contractual obligations to the Third Parties; (iii) no Third Party owes or accepts any duty, liability or responsibility to Water UK or any other person, whether in contract, as a fiduciary, in tort (including, without limitation, negligence and breach of statutory duty) or otherwise and the Third Parties shall not be liable to Water UK or any other person in respect of any loss, damage or expense in connection with the Data; and (iv) neither Water UK nor any other person may rely on the Data or any part of it and, if they do so rely on any of the Data for any purpose, they do so at their own risk.

Where our Report makes reference to 'KPMG Analysis' this indicates only that we have (where specified) undertaken certain analytical activities on the underlying data to arrive at the information presented. We do not accept responsibility for the underlying data.

This engagement is not an assurance engagement conducted in accordance with any generally accepted assurance standards and consequently no assurance opinion is expressed.

KPMG



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