Havant Thicket Reservoir: Allowed Cost of Capital
Prepared for Portsmouth Water

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1. Introduction

This short paper examines the principles that Portsmouth Water and Ofwat can apply when calibrating the allowed return on capital for the Havant Thicket Reservoir project.

The report is structured into five main parts, as follows:

- section 2 provides some factual background;
- sections 3 to 5 look in turn at the allowed cost of debt, the issuance and liquidity costs allowance, and the allowed cost of equity; and
- section 6 concludes.

2. The Havant Thicket Reservoir Project

The Havant Thicket Reservoir is a new 8,700Ml reservoir that Portsmouth Water is building in Hampshire. Once completed, Portsmouth Water will supply water from the reservoir to Southern Water under a bulk supply agreement. The agreement provides that Southern Water will pay for the construction and operation of the reservoir, meaning that the cost of the project will ultimately be factored into bills paid by Southern Water's customers rather than the bills paid by Portsmouth Water's own customers.

From a regulatory perspective, the price control arrangements for the project have a number of unusual features:

- in its PR19 determination, Ofwat set a stand-alone price control for the project, separate from Portsmouth Water's other price controls;
- the Havant Thicket price control has a duration of ten years rather than the standard five years;
- following a determination made in January 2023, Portsmouth Water has a fixed 10-year totex allowance of £310m (in 2017/18 prices) for the period to 31 March 2030. However, the allowed return on capital for the project will be reviewed as part of Ofwat's PR24 price review; and
- as noted above, the price control applies to the monies that Southern Water pays to Portsmouth Water rather than the charges that Portsmouth Water levies on its own customers.

Similarly, the financial profile of the project is unusual in the following respects:

- the size of the £339m project is large in relation to Portsmouth Water's starting RCV of ~£220m;
- in February 2023 Portsmouth Water's shareholders committed £170m of new equity, principally due to the project's financing requirements; and
- Portsmouth Water has also had to secure £280m of new borrowing and standby borrowing facilities, more than doubling its previous level of debt.

The combination of an atypical regulatory framework and an usually sized/structured financing requirement naturally raises questions about how the cost of the capital that Portsmouth Water has deployed should be remunerated.

In the sections that follow, we ask first of all if it is makes sense for Ofwat to apply the standard PR19/PR24 rate of return when fixing allowed revenues. Where the answer to this question is "no", we go on to consider possible bespoke arrangements.

3. Allowed Cost of Debt

3.1 Background

The purpose of Ofwat's cost of debt allowance is to provide a regulated company with sufficient revenue to pay for efficiently incurred interest costs.

Ofwat has an established policy of setting an allowance which:

- is appropriate for a notional company with a notionally efficient level of borrowing (rather than the actual company and its actual financing arrangements); and
- covers the cost of both existing/embedded debt and brand new borrowing.

In PR19, Ofwat's cost of debt allowance was calibrated as a weighted average of:

- the average yield on two iBoxx bond market indices over a period stretching from 2020 back to 2005; and
- the out-turn yield on the same iBoxx indices over a five-year period starting 1 April 2020.

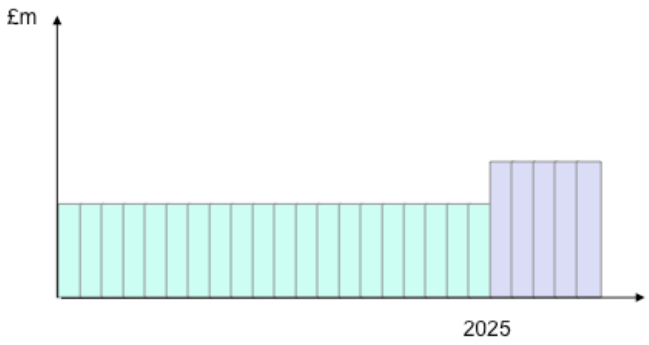
The first of these component parts was a fixed, lump-sum allowance, but the second component part is, in effect, an indexed allowance whose value will be determined by the prevailing market interest rates that companies face within period. The weights in this calculation are 80:20, reflecting Ofwat's PR19 assessment of the relative sizes of the stock of embedded debt that the industry would take into the 2020-25 regulatory period vs the new debt that companies would need to issue to finance new investment and maturing embedded debt.

In its December PR24 methodology document, Ofwat indicated that it was minded to adopt a broadly similar approach when it sets its PR24 price controls for the period 2025-30. If implemented, the cost of embedded debt will this time be based on the sector-average interest rate across debt taken out up to 2025 and all the way back to the 1990s, cross-checked to the average iBoxx yield over a 15- to 20-year look-back period. Ofwat will once again index the cost of new debt in line with out-turn iBoxx benchmark yields. And the weights for embedded debt and new debt will be updated to align with the sector-wide mix of debt that will emerge from companies' new five-year capital programmes.

In figure 1, overleaf, we give a very simple graphical depiction of the notional mix of embedded and new debt under Ofwat's indicative PR24 cost of debt allowance.

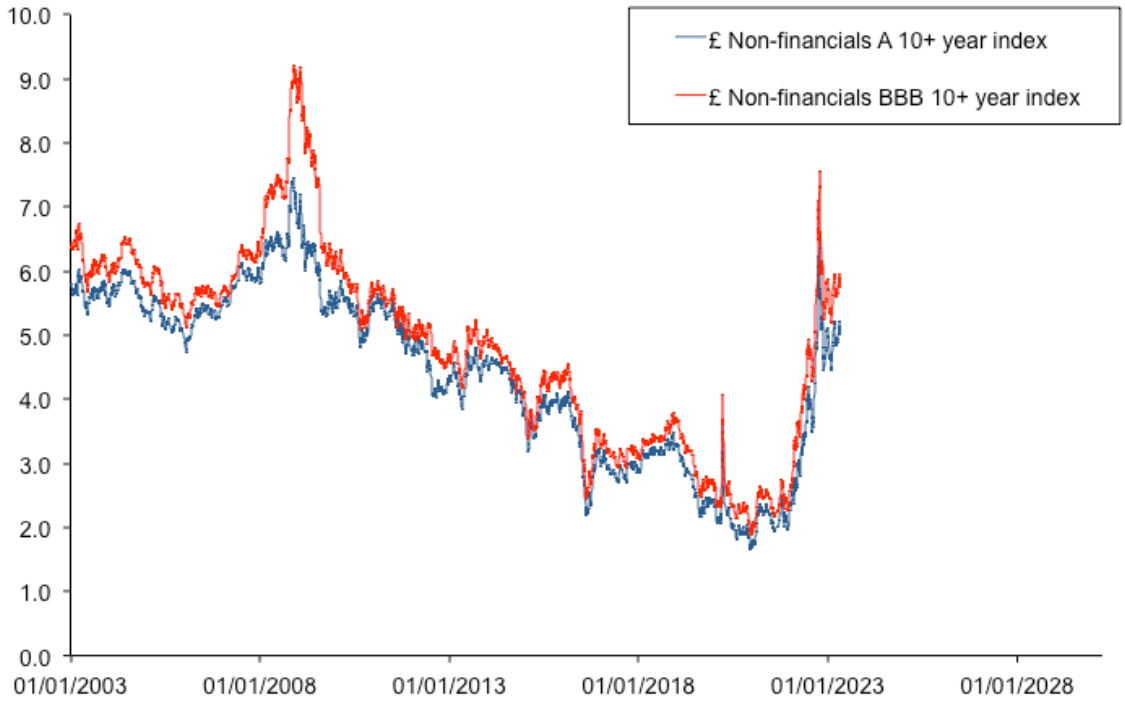
(NB: the blue bars are taller than the green bars because the early indications are that the sector is likely to be taking on historically large capital programmes during the 2025-30 regulatory period.)

Figure 1: The notional company's debt portfolio



The bars in this chart are, to all intents and purposes, the weights in Ofwat's rolling 'record' or 'memory' of historical interest rates going back circa 20 years, as constantly updated over the course of the regulatory period. In figure 2, I show the interest rates which are so far factored into this calculation.

Figure 2: Cost of debt benchmarks (%)



Source: IHS Markit website.

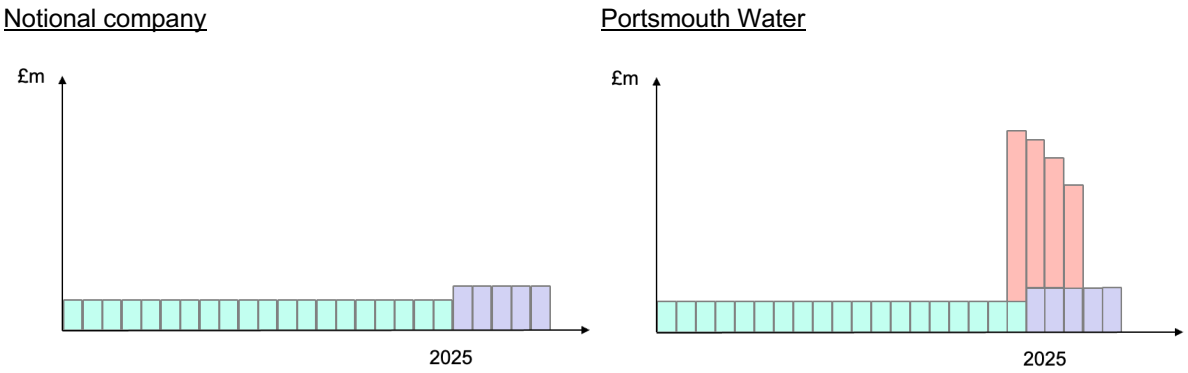
The standout features of this chart are the gradual decline in interest rates during the 2010s and then the sharp jump in interest rates that occurred in 2022. Whereas during the 2010s a water company became accustomed to issuing debt with coupons of less than 4%, corporate borrowers are today looking at interest rates 5-6%.

This reversion to higher interest rates is not expected to be a short-term phenomenon. While Ofwat's PR19 and PR24 allowances for new debt will continue to track the curves in figure 2 up or down in line with future movements in market rates, Ofwat set its December 2022 'placeholder' for the cost of new debt at a value of 5.34% on the basis that current rates are likely to be a good predictor of future rates.

The Havant Thicket Reservoir is a brand new project with a brand new financing requirement. As noted in section 2, the scale of the new borrowing that Portsmouth Water has been required to take on exceeds the total amount of debt that Portsmouth Water had accumulated up until 2022. This means that the mix of debt for the project on a stand-alone basis, as well as the mix of debt for Portsmouth as a single appointee, will look very different from the mix that we see in figure 1.

Figure 3 puts the two profiles side by side. The charts show very clearly that Havant Thicket Reservoir / Portsmouth Water will have a bigger concentration of 2024-28 debt than other water companies and, hence, the notional company that Ofwat's PR19 and PR24 cost of debt allowances are tailored to.

Figure 3: Notional debt portfolio vs Portsmouth Water debt portfolio



This matters because, as figure 2 shows, new debt has a quite markedly different cost to previous interest rates. It follows that the industry-wide weighting scheme, and resulting industry-wide cost of debt allowance, that Ofwat uses in all of its other price control work will be a very poor fit to the specific circumstances that Portsmouth Water has faced with the Havant Thicket project.

3.2 Regulatory good practice

Preferences and practice as regards the application of a single industry-average cost of debt to multiple companies operating in the same sector varies from regulator to regulator. Some regulators – e.g. the NI Utility Regulator and the CAA – have a standing preference for using company-specific cost of debt allowances in their regulatory decision. Ofgem and Ofwat, on the other hand, have a track record of applying a single, common approach to all of the companies that they regulate.

Even in these cases, however, there have been occasions in which the regulator has chosen to depart from a one-size-fits-all approach:

- Ofgem's RIIO-1 and RIIO-2 controls contain two distinctive cost of debt indices and two correspondingly different cost of debt allowances for the GDNs/TOs, as one group of licensees, and the electricity DNOs, as a second group;[1]
- Ofgem has also deemed it appropriate to give SHETL (the north of Scotland transmission licensee) a bespoke cost of debt index/allowance; [2]

[1] Ofgem (2020), RIIO-2 final determinations – finance annex; and Ofgem (2022), RIIO-ED2 final determinations – finance annex.
[2] Ofgem (2012), RIIO-T1 final proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission.

- Ofwat's cost of debt allowance for the Tideway project is based on a company-specific starting allowance and a company-specific adjustment mechanism;[3] and
- the assumption is that the returns that appointees will collect from customers for onward payments to partner companies under Ofwat's direct procurement for customers (DPC) scheme will match the project's interest costs and not the standard regulatory cost of debt allowance.

The second of these examples is worth drawing out in more detail as an illustration of the thought process that can lead regulators to apply a non-standard approach to a specific company. In its RIIO-1 price control decision, Ofgem identified that the scale of SHETL's investment programme, when looked at as a percentage of SHETL's starting RAV,[4] was likely to far exceed the investment being undertaken by other licensees. Ofgem's analysis was as follows:[5]

> Given SHETL's very high capex:RAV ratio (based on its 'best view'), we consider it appropriate to treat the company as a 'special case' in RIIO-T1 when determining the appropriate financial package. Hence, in addition to a [standard] cost of equity of 7.0 per cent and notional gearing of 55 per cent, we think it is appropriate for SHETL to have its cost of debt index in RIIO-T1 weighted by RAV additions (including 'shadow RAV' and expenditure on Strategic Wider Works). This is in line with our Strategy Decision document, where we acknowledged that a simple trailing average index may not fully reflect the cost of debt of a company with a rapidly-growing RAV if interest rates change sharply.

The SHETL-specific cost of index/allowance was based on the same iBoxx £ A and BBB non-financials 10+ year benchmarks that Ofgem referred to elsewhere in its RIIO-1 controls. Ofgem also used the same ten-year trailing average period that it used contemporaneously for the GDNs and TOs. However, the weighting of individual years within SHETL's ten-year trailing average was calibrated to match the profile of SHETL's RAV growth rather than the uniform weighting scheme that Ofgem used for the other licensees.

As an illustration of the effect this had, table 2 reproduces the calculations of both the SHETL-specific cost of debt allowance and the standard industry cost of debt allowance for year 2020/2021.

Table 1: Ofgem's RIIO-1 cost of debt allowances, 2020/221

	2010/11	**2011/12**	**2012/13**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**
iBoxx	2.39%	2.18%	1.83%	1.44%	1.18%	1.23%	0.15%	-0.16%	0.04%	-0.70%
Industry										
Weights	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Allowed	1.09%									
SHETL										
Weights	3%	3%	3%	10%	14%	20%	18%	14%	6%	9%
Allowed	0.76%									

Source: Ofgem's cost of debt model 2020.

[3] Project licence granted to Bazalgette Tunnel Limited.
[4] SHETL's total capex over the period 2013-21 was forecast to be approximately 240% of its starting RAV.
[5] Ofgem (2012), RIIO-T1: initial proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd, para 5.24.

The table shows that SHETL's index gave relatively more weight to interest rates later in the later in the ten-year period and relatively less weight to interest rates earlier in the ten-year period. At a time when rates were falling, this meant that SHETL's bespoke index resulted in a lower cost of debt allowance than the other licensees received, consistent with the benefit that it obtained from raising more of its debt later and securing a relatively low weighted average interest rate.

3.3 Conclusion

We think that the SHETL case study provides a template for the way in which Ofwat and Portsmouth Water might consider handling the atypical profile of borrowing that the Havant Thicket Reservoir project generates. The thinking might be that:

- Ofwat should continue to hold Portsmouth Water to a benchmark, market-based cost of debt – e.g. the iBoxx £ non-financials indices – rather than revert to a pass-through of actual interest costs; but
- the specific market benchmark for the Havant Thicket cost of debt allowance should align with the profile of the Havant Thicket RCV growth rather than a historical weighting of interest rates that Portsmouth Water did not and could not have taken advantage of.

It goes beyond the scope of this initial discussion paper to propose a detailed specification for this index. However, we are clear that the design challenges are not insurmountable and that the resulting cost of debt allowance can provide a better match to Portsmouth Water's efficient interest costs than the standard PR19/PR24 allowance.

4. Issuance and Liquidity Costs Allowance

A similar analysis applies in the case of the allowance that Ofwat includes in its cost of debt calculation for issuance and liquidity costs.

Under the PR19 and PR24 methodologies, the size of this allowance is set at a level that covers the annualised amounts that the notional company must pay in fees to financial intermediaries and the costs that the notional company incurs when maintaining liquidity. In practice, this has entailed:

- calculating average issuance costs on actual water company bond issues over a 25-year historical period; and
- estimating the cost that a typical company will pay in current market conditions if it maintains liquidity facilities worth 10% of its outstanding debt.

At the time of writing, Ofwat's estimate of these costs combined is the equivalent of an additional 10 basis points on top of the interest owed to lenders.

The question that again arises is: is the financing for the Havant Thicket Reservoir akin to an extension of the financing that water companies obtain in the usual course of their operations or does the project have unique features that present unique costs?

Portsmouth Water has provided us with details of the composition of the £280m of debt finance that it secured in early 2023. Our first impression is that there are several features of the financing that are quite different from the industry's normal way of borrowing:

- the debt at this stage of the project is primarily bank term loans and revolving credit facilities, rather than the bond issues that water companies tend to rely on;
- the sizing of each individual debt instrument/loan/facility is relatively small;

- the tenor of the loans is relatively short at 5+1 years and 14 years; and
- Portsmouth Water has had to take out a relatively high quantum of liquidity facilities at appointee level worth £50m.

This combination of the type, sizing and tenor of the Portsmouth Water's borrowing is inevitably going to result in a different quantum of issuance costs and a different quantum of liquidity costs compared to the issuance and liquidity costs that the sector as a whole is paying on the ~£65 billion of long-term financing that it has secured for the sector RCV. (NB: This is particularly the case when the standard industry allowance is ultimately formulated as an allowed cost per £m borrowed.)

Case studies in which a regulator has given a higher allowance to smaller companies and/or companies with atypical borrowing profiles include:

- Ofgem RIIO-2 uplift of 26 basis points uplift to new debt given to smaller "infrequent issuer" gas and electricity networks;[6]
- the NI Utility Regulator's award of relatively high fee allowances of 33 basis points and 41 basis points to Phoenix Natural Gas and firmus energy respectively, in line with the companies' actual debt-related transaction costs;[7] and
- the exceptional liquidity costs allowance of 14 basis points that the CAA has recently given to Heathrow Airport in recognition of the costs associated with the sizing of its Covid-period liquidity facilities.[8]

This body of precedent suggests to us that there should be a proper, clean-sheet evaluation of the appropriate allowance for issuance and liquidity costs within the Havant Thicket Reservoir price control. As in the case of the cost of debt allowance, this assessment can be based on the costs that a notional company would incur in securing finance for the project – i.e. it need not amount to a pass-through of Portsmouth Water's actual costs. But to the extent that Portsmouth Water and Ofwat find that it would not be possible for a company to obtain the required while incurring costs of only 10 basis points per annum, there is no reason why efficient, unavoidable cost should not be passed on in full to customers.

5. Allowed Cost of Equity

Having dealt in the preceding two sections with the additional debt-related costs that Portsmouth Water will incur, we next consider the cost of the additional equity capital that Portsmouth Water's shareholders have invested.

The purpose of Ofwat's allowed return on equity is to compensate shareholders in full for the opportunity cost that they incur – i.e. the returns that that they could otherwise earn by investing in similar assets elsewhere with a similar risk profile. Ofwat's estimates of this opportunity cost are calibrated using the capital asset pricing model (CAPM), which says that:

$$\text{cost of equity} = \text{risk-free rate} + \beta \cdot (\text{expected market return} - \text{risk-free rate})$$

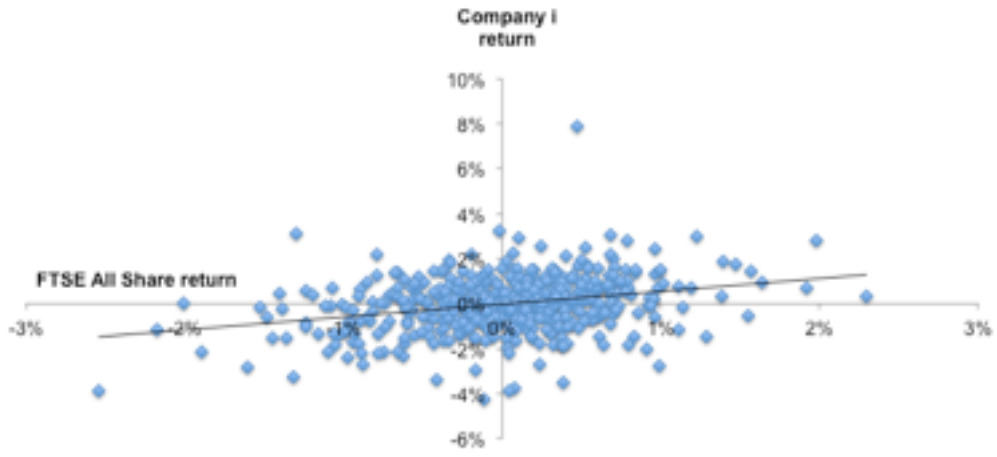
The risk-free rate and the expected market return terms in the CAPM formula are generic numbers that apply to all investments across the UK economy. As such, Ofwat's chosen risk-free rate and

[6] Ofgem (2022), RIIO-ED2 final determinations – finance annex.
[7] Utility Regulator (2022), GD23 gas distribution price control 2023-28 final determination.
[8] CAA (2023), Economic regulation of Heathrow Airport Limited: H7 final decision.

expected market return values ought to be just as applicable to the Havant Thicket project as they are to any of the companies that Ofwat regulates.

The CAPM beta, on the other hand, is intended to capture the riskiness of different types of investment. In its normal periodic reviews, Ofwat calibrates its beta principally by looking at the covariance that movements in Severn Trent's and United Utilities' share prices have historically shown to movements in the FTSE All Share index.

Figure 4: The CAPM beta calculation



The question for Portsmouth Water and Ofwat to consider in the context of the Havant Thicket Reservoir price control is: is it reasonable to think that the Severn Trent and United Utilities betas are a good proxy for the beta that the project would exhibit if it were a stand-alone, listed company?

In order to answer this question, it is important to think about water and sewerage undertakers' risk profiles and the kinds of risk that the equity capital in the reservoir infrastructure project is bearing. A full relative risk analysis needs to consider, as a minimum:

- revenue risks;
- bad debt risks;
- expenditure risks;
- performance risks;
- financing risks;
- regulatory risks; and
- political risks.

In table 2, below, we set out our characterisation of the risks faced by normal water companies and by Portsmouth Water at the Havant Thicket Reservoir under these headings.

Table 2: Relative risk analysis

	Appointed companies	**Havant Thicket Reservoir**
Revenue risks	Low – water and sewerage companies have mostly fixed entitlements to revenues irrespective of volumes	Low – Portsmouth Water has a fixed entitlement to revenues
Bad debt risks	Low – retail businesses are exposed to bad debt risks, but wholesale businesses can recover bad debts through their revenue caps	Low – Portsmouth Water is dependent on Southern Water for its revenues, but the regulatory framework effectively shields Portsmouth Water from counterparty risk
Expenditure risks	Medium – appointed businesses typically manage annual ongoing expenditures worth around 10-15% of their RCVs	High then low – Portsmouth Water will bear construction risk on a project worth close to 2x its starting RCV, but thereafter will incur minimal ongoing expenditures after construction
Performance risks	Medium – Ofwat's recent price reviews have incorporated outcome delivery incentives (ODIs) which expose appointed companies to variations in returns according to the companies' delivery against performance benchmarks Appointed businesses must also adhere to DWI and EA requirements	Low to medium – Portsomuth Water will pay ODI penalties for late delivery of the scheme. Once operational, it will be liable to pay Southern Water liquidated damages in the event that it is unable to supply water. Portsmouth Water must also adhere to DWI requirements
Financing risks	Medium – appointed companies are exposed to the risk that changes in market parameters will open up gaps between the allowed return and investors' cost of capital within the confines of each five-year period A cost of debt indexation ensures continual alignment between cost and revenues for new debt	Medium – Portsmouth Water's allowed return will be set and reset using the same basic framework that Ofwat applies elsewhere in the industry (NB: risk around the allowed cost of debt depends on Ofwat's response to the points made in section 3 of this paper)
Regulatory risks	Medium – appointed companies' revenues are reviewed and reset by Ofwat in their entirety every five years	Medium – the entirety of Havant Thicket price control revenues will be reviewed and reset by Ofwat at regular five-year intervals
Political risks	Medium – talk of renationalisation, political pressures on Ofwat, etc. can affect equity values	Medium – the reservoir will be caught as much as all the other privately owned infrastructure companies in debates about the legitimacy of private ownership and private-sector returns

A comparison between the two columns indicates that the key rows in this table are the entries for expenditure risks and performance risks. In most other respects, the project's risk profile looks quite similar to that of a conventional regulated company. However, when one looks at expenditure and performance, there are clear differences between the risks in a greenfield construction project of a stand-alone and in a utility company that has responsibility for delivering final services to customers.

It looks, therefore, like the key task at PR24 and at future reviews will be to determine whether the Havant Thicket Reservoir's initial concentrated construction risk and subsequent low 'operational intensity' require Ofwat to depart from the standard industry beta.

This is not the first time that a regulator has had to think about such matters. And it is fair to say that opinions have been mixed.

On the one hand, there are clear precedents for ascribing a higher beta to companies taking on large amounts of expenditure as a proportion of their regulatory capital value:

- Ofgem in previous price controls has set higher betas for companies with higher capex-to-RAV ratios and lower betas for companies with lower capex-to-RAV ratios; [9]
- the NI Utility Regulator has given the NI gas distributions networks higher betas/costs of capital during the greenfield construction of the networks; [10]
- the Competition Commission and the CAA uplifted BAA's cost of equity when it was building Terminal 5 at Heathrow; [11]
- the CMA has said in some of its reports that a higher totex-to-RAV ratio warrants the award of a higher beta. [12]

In each case, the regulator's logic has been that any given % over-run or under-spend against the regulator's expenditure allowance has a greater % impact on out-turn returns when the scale of the expenditure that a company is undertaking is large in comparison to the amount of equity that shareholders have invested in the business.[13]

On the other hand, some other regulators have taken the view that variation in expenditure-to-RCV ratios does not translate into variation in required returns:

- Ofwat in its recent periodic reviews has rejected the argument that water-only companies' relatively high totex in comparison to RCVs necessitates a higher return on equity;
- the CMA panel for the PR19 redetermination backed Ofwat's position (and in doing so directly contradicted its predecessors' views from PR09 and PR14); [14] and
- the NI Utility Regulator has so far declined to set lower costs of capital for the NI gas networks as they enter their operational phases and settle down at very low rates of annual expenditure relative to RCVs.[15]

The case against adjustments to the cost of capital was set out by Ofwat in its submissions to the CMA during the redetermination of Bristol Water's PR19 price controls.[16] Bristol Water had claimed that its comparatively high totex-to-RCV justified a higher beta and higher cost of equity, but Ofwat pushed back on this in two main ways.

[9] Ofgem (2012), Final proposals for National Grid Electricity Transmission and National Grid Gas.
[10] Utility Regulator (2017), Price control for Northern Ireland's gas distribution networks GD17 – final determination.
[11] CC (2002), BAA Ltd.
[12] See, for example, CMA (2017), Firmus Energy (Distribution) Limited vs Northern Ireland Authority for Utility Regulation final determination.
[13] For further discussion on this point, see First Economics (2022), An estimate of the GD23 costs of capital.
[14] CMA (2021), Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations
[15] Utility Regulator (2022), GD23 – gas distribution price control 2023-28 final determination.
[16] Ofwat (2020), Reference of the PR19 final determinations: response to Bristol Water's statement of case.

First, Ofwat questioned whether expenditure risk is a systematic risk (NB: under CAPM only exposure to systematic risks affects beta and the cost of equity), and, if it is, whether the risk is pro-cyclical or is actually counter-cyclical. Ofwat noted that, if it were the latter:

> … To the extent that totex cost shocks tend to have counter-cyclical impact on water company profits, the fact that totex represents a more substantial part of Bristol Water's cost base actually means that Bristol Water may have lower (not higher) exposure to systematic risk.

Second, Ofwat elevated financing risk from the other risks listed in table 1:

> … there are also systematic risks associated with financing costs. As noted in the Europe Economics report, a relatively high RCV and revenue share from allowed return carries its own risks (i.e. changes in the true market cost of equity and cost of debt driven by macroeconomic events). Hence, a company like Bristol Water that has relatively high operating costs and low financing costs (because its RCV is lower) does not necessarily have higher risk exposure overall. To assess the net impact on risk exposure, it is necessary to compare the change in systematic risk exposure from relatively high operating costs with the change in in systematic risk exposure from low financing costs. Without making this comparison, no conclusion can be drawn on whether there is an overall increase or decrease in the company's asset beta due to its cost structure.

There is, therefore, a distinct lack of consensus among experts about the relevance of rows 3 and 4 in table 2 to a discussion about beta.

Our view, for what it's worth, is that the size of a company's expenditure relative to the size of investors' equity capital does exert an impact on betas, and we include this as a key risk factor in all of our cost of capital reports. The experience of the last two years seems to be quite a good case study in this respect in that companies with relatively high expenditure-to-RCV ratios have suffered proportionately more from high commodity prices at the same time as the emergence of high inflation has exerted a downward impact on share price generally – i.e. this particular cost shock has been pro-cyclical.

Be that as it may, we do think there is a need for further debate on this point during PR24. The one thing we can say for certain is that Portsmouth Water and Ofwat will need to be consistent in their approach over time – i.e. whatever position is reached in PR24 during a period of heightened construction risk needs to be mirrored in PR29 and subsequently when Havant Thicket Reservoir moves into its less intensive operational phase.

6. Conclusion

The key points that emerge from this paper are as follows:

- there is a clear case for putting in place a bespoke cost of debt allowance built from bespoke time-period weightings that align to the atypical profile of Portsmouth Water's borrowings;
- similarly, the allowance for issuance and liquidity costs ought to be tailored to the costs that an efficient company would unavoidably incur when arranging the financing for the Havant Thicket project; and
- the regulatory approach to the cost of equity needs to be settled with a long-term perspective that considers the compensation for bearing risk during both the construction and the operational phases of the project.