frontier economics

The allowed rate of return for SDP

A report prepared for Sydney Desalination Plant | 9 September 2022

Disclaimer

Contents

Tables

Figures

1 Introduction

1.1 Background

1. Sydney Desalination Plant (SDP) is regulated by the Independent Pricing and Regulatory Tribunal (IPART). IPART determines the maximum revenue that SDP is allowed to earn over a regulatory period.
2. The building blocks approach involves summing up estimates of SDP's efficient costs in each year of the regulatory period. One of these categories of costs is the 'return on capital', which IPART explains as follows:

> *We include an allowance for a return on assets in the revenue requirement. This represents our assessment of the opportunity cost of the capital invested to provide the regulated services. Our approach ensures that the business can continue to make efficient capital investments in the future.*
>
> *To calculate this allowance, we multiply the value of the RAB [Regulatory Asset Base] in each year of the determination period by an appropriate rate of return. As for previous reviews, we have determined the return on capital using the WACC.*[1]

3. SDP is preparing its pricing proposal to IPART for the 2023-27 regulatory period, and has sought advice from us in relation to the appropriate Weighted Average Cost of Capital (WACC) allowance that should be used by IPART determine SDP's return on capital. This report presents our advice to SDP on that issue.

1.2 Our instructions

4. SDP has asked us to:
   a. Explain the approach that IPART uses to determine the overall allowed rate of return;
   b. Outline IPART's existing methodology for determining the nominal WACC allowance and gamma;
   c. Provide an estimate of the nominal and real WACCs for SDP for the 2023-27 regulatory period using IPART's existing methodology; and
   d. Provide an opinion on IPART's rationale for applying a cost of debt true-up in every regulatory decision since 2018, and whether that is consistent with IPART's 2018 WACC methodology.

[1] IPART, Sydney Desalination Plant Pty Ltd – Review of prices from 1 July 2017 to 30 June 2022, Final Report, June 2017, p. 123.

1.3 Authors of this report

5. This report has been prepared by Professor Stephen Gray and Dinesh Kumareswaran, with assistance from Dr James Key.

    a. Professor Stephen Gray is the Malcolm Broomhead Chair in Finance at the University of Queensland and Chairman of Frontier Economics. Stephen advises on issues relating to valuation, cost of capital, corporate financial strategy, and pricing issues. He has advised nearly all regulated businesses in Australia (across industries and jurisdictions) on rate of return matters. Stephen's work on empirical finance, asset-pricing and corporate finance has been published in leading academic and practitioner journals. At UQ Business School, Stephen teaches a range of award and executive education courses in financial management, asset valuation, and corporate finance. He has Honours degrees in commerce and law from The University of Queensland and a PhD in financial economics from Stanford University. He has received a number of academic awards including the Prime Minister's Award for University Teacher of the Year in the Economics and Business field in 2002.

    b. Dinesh Kumareswaran is a Director at Frontier Economics and an economist with nearly 20 years of experience in competition and regulatory economics. Dinesh advises regulators and regulated businesses on the different forms of economic regulation, the principles of best practice regulation, asset valuation, regulatory depreciation, the allowed rate of return, forecasts of efficient costs, incentive mechanisms and economic benchmarking. Before joining Frontier Economics, Dinesh was a Senior Economist at New Zealand's competition authority and economic regulator, the New Zealand Commerce Commission. Dinesh holds Master's and Honours degrees in economics from Victoria University of Wellington, New Zealand.

    c. Dr James Key specialises in the analysis of quantitative data and in the application of econometrics and statistical techniques. Formerly an Assistant Professor at the University of Western Australia. James advises clients on the application of econometrics to competition matters, and advises clients on regulatory issues in a range of industries, including the water industry. James holds a PhD in Economics from the Pennsylvania State University and an Honours degree in economics from Victoria University of Wellington.

1.4 Summary of key findings

IPART's rate of return framework

6. IPART estimates the allowed rate of return using the following approach:

    a. IPART first estimates the nominal rate of return required by investors. It does this by estimating the nominal post-tax (vanilla) WACC.

    b. IPART then determine a real rate of return allowance by subtracting from its estimate of the nominal required rate of return a forecast of inflation over the regulatory period. This real allowed rate of return is used to determine the return on capital allowance over the regulatory period.

    c. IPART then provides compensation to investors for inflation by indexing the Regulatory Asset Base (RAB) using actual (i.e., outturn) inflation over the regulatory period.

7. There are many attractive features about IPART's current WACC methodology. The most important of these is IPART's approach of pairing together internally consistent estimates of the risk-free rate and estimated risk premiums.

8. In our view, IPART's approach of pairing together internally-consistent estimates of the risk-free rate and MRP makes IPART's approach for estimating the (nominal) cost of equity the most sound and robust approach used by any regulator in Australia at the present time.

IPART's cost of debt true-up approach

9. In 2018, IPART made a significant improvement to its WACC methodology by adopting a trailing average approach to determining the return on debt allowance. A key rationale for adopting this approach was to minimise the mismatches between the return on debt allowance and the efficient cost of debt that would be incurred by a benchmark business over a regulatory period.

10. However, in every decision since 2018, IPART has adopted a cost of debt true-up approach. Under that approach, the cost of debt allowance is fixed for the duration of each regulatory period. Any unders/overs between that fixed allowance and the annually-updated trailing average cost of debt over the period would then be true-up in the next regulatory period. During the regulatory period, prices are not adjusted annually to reflect annual updates to the trailing average cost of debt allowance.

11. This appears to have become IPART's default approach, notwithstanding that IPART committed to assess the use of the cost of debt true-up approach on a case-by-case basis.

12. The key problem with the cost of debt true-up approach is that, unlike an approach where prices are updated annually to reflect year-on-year changes in the return on debt allowance, the cost of debt true-up approach can produce cash flow mismatches between the regulatory allowance and efficient costs. These cash flow mismatches can be challenging for a business to manage and could result in a deterioration of financeability.

13. This problem could be avoided by simply setting the regulatory allowance equal to the efficient cost in each year of each regulatory period. This would involve updating prices annually to reflect year-on-year changes in the return on debt allowance. This is an administratively simple process that is no more complex than annual updates to prices to reflect changes in outturn inflation.

14. IPART's main rationale for applying the cost of debt true-up approach, rather than annual price adjustments, is to avoid uncertainty and volatility in prices to consumers. However, we show through indicative modelling that the annual changes in end-users' prices, as a result of applying the annual updating approach to SDP, would likely be negligible (i.e., less than 0.2% p.a.).

Estimates of the required rate of return

15. Using the latest data available, we estimate that:

    a. The nominal required rate of return over the 2023-27 regulatory period (derived using IPART's 2018 WACC methodology) is 6.6%;

    b. The forecast rate of annual inflation over the 2023-27 regulatory period (derived using inflation forecasts published in the Reserve Bank of Australia's (RBA's) May 2022 Statement on Monetary Policy) is 2.8%; and, therefore

    c. The required real rate of return over the 2023-27 regulatory period (using the Fisher relationship) is 3.6%.

2 IPART's WACC methodology

2.1 Overall rate of return framework

16. IPART determines SDP's notional revenue requirement in each year of a regulatory period as the sum of several 'building blocks', including:

    a. The return on capital. This is the product of the allowed rate of return and the Regulatory Asset Base (RAB);

    b. The return of capital or 'regulatory depreciation';

    c. The return on working capital;

    d. An allowance for operating expenditure;

    e. Other revenue adjustments (e.g., payments related to the Energy Adjustment Mechanism and the Efficiency Carryover Mechanism); and

    f. An allowance for corporation tax.

17. IPART determines the allowed rate of return for SDP by estimating its nominal post-tax 'vanilla' Weighted Average Cost of Capital (WACC) using the standard formula:

$$WACC = Cost\ of\ equity \times (1 - Gearing) + Cost\ of\ debt \times Gearing$$

where the cost of equity is estimated using the Sharpe-Lintner Capital Asset Pricing Model (CAPM):

$$Cost\ of\ equity = Risk\text{-}free\ rate + Beta \times Market\ risk\ premium$$

and the cost of debt is estimated as:

$$Cost\ of\ debt = Risk\text{-}free\ rate + Debt\ premium + Debt\ raising\ costs.$$

18. IPART then converts its estimate of the nominal WACC into real terms by deflating its estimate of the nominal WACC by a forecast of inflation:

$$Real\ rate\ of\ return = \frac{1 + Nominal\ WACC}{1 + Expected\ inflation\ rate} - 1.$$

19. When determining revenue allowances for regulated infrastructure businesses, all regulators in Australia, including IPART, take account of the value of imputation tax credits. Under the Australian tax system, eligible investors may redeem imputation tax credits (attached to dividend payments) to reduce their personal tax obligations. The purpose of these imputation tax credits is to avoid investors being taxed twice: once through corporate taxes, and a second time through personal taxation. IPART considers that, to the extent these credits have any economic value to investors, they represent a source of return. In other words, part of the required return an investor will require in exchange for committing capital to a particular asset flows from the direct returns generated by that asset, and the remainder obtains from the ability of investors to reduce their personal tax burden, via the dividend imputation tax system.

20. IPART considers that the returns received by investors should be reduced by the value of imputation tax credits, because only some of the overall required rate of return is derived from the returns generated by the asset. Therefore, IPART's practice is to estimate the value of imputation tax credits—referred to as 'gamma'—and then to the revenue allowance (via the tax building block) by an amount commensurate with the estimate of gamma.

21. Whilst gamma does affect the allowed rate of return directly (i.e., it affects the allowance for corporation tax rather than the return on capital), IPART considers gamma a part of its WACC methodology because if affects the overall returns that investors in the regulated business can expect to receive.

2.2 The role of the rate of return allowance within the regulatory framework

22. The rate of return allowance plays an important role in promoting the long-term interests of consumers in IPART's regulatory framework. The WACC represents the minimum rate of return that investors require in order to commit capital to a firm rather than invest elsewhere. That is, it is the lowest return that investors in the firm would require in order to provide compensation for the risks they bear and to cover the opportunity cost of their funds.

23. If the WACC allowance is set above this minimum required return, then investors would be compensated more than they need in order to commit funds, and consumers would pay more than the efficient level for the regulated services delivered by the firm. However, if the WACC allowance is set below this minimum required return, then the return provided by the regulatory framework would be inadequate to compensate investors for the opportunity costs and risks they face. Under these circumstances, it would not be economically rational for investors to commit capital to the firm. This, in turn, would undermine the business's ability to make the prudent and efficient investments that are necessary to deliver the regulated services. Inefficient underinvestment in regulated services would not promote the long term interests of consumers.

24. IPART recognised this in its most recent review of its WACC methodology:

> *The WACC is a key input for calculating the revenue requirements and setting prices for the businesses we regulate, and our decisions on this cost need to be as accurate as possible. If we set the WACC too high, customers would pay too much and the regulated business could be encouraged to over-invest. If we set it too low, the business' financial viability could suffer, and it may under-invest. Neither outcome is in the long-term interest of customers.*[2]

2.3 Internally-consistent WACC estimates

25. IPART's approach determines the overall rate of return allowance by:

    a. Estimating a 'current' WACC;

    b. Estimating a 'long-term' WACC, and

[2] IPART, Review of our WACC method, Final Report, February 2018, p. 1.

then applying a default equal weighting to these two estimates, unless IPART determines that the prevailing level of economic uncertainty is abnormally high or low.[3]

26. A unique feature of IPART's methodology is that IPART strives to estimate the cost of equity and the cost of debt embodied in the current and long-term WACC estimates in an internally-consistent way. That is, when estimating the cost of equity, IPART pairs together:

    a. A current estimate of the risk-free rate with a current estimate of the market risk premium (MRP); and

    b. A long-term estimate of the risk-free rate with a long-term estimate of the MRP.

27. This has resulted in IPART's method producing realistic estimates of the cost of equity that have changed over time in a plausible and economically-meaningful way. By contrast, many other regulators in Australia—such as the Australian Energy Regulator (AER)—estimate the cost of equity by inconsistently pairing together:

    a. A current estimate of the risk-free rate (proxied by prevailing government bond yields); with

    b. A fixed, long-term estimate of the MRP.

28. This has led to estimates of the cost of equity moving in lock-step with changes in government bond yields, which has produced implausible estimates of the cost of equity. Since government bond yields typically fall during financial crises, and rise during economic booms, the mix-and-match approach used by the AER and others implies (counterintuitively) that the return required by equity investors:

    a. Declines during financial crises; and

    b. Increases during economic booms.

29. The approach followed by IPART, which involves pairing together consistent estimates of the risk-free rate and risk premiums, does not produce cost of equity estimates that move in this implausible fashion.

30. Recently, IPART made a submission to the Essential Services Commission of South Australia's (ESCOSA's) review of SA Water's regulated prices for the 2020-24 regulatory period explaining why the approach followed by ESCOSA, the AER and other regulators is likely to produce unreasonably low return on equity allowances in the current market conditions. IPART submitted that:

[3] IPART constructs an 'uncertainty index' by combining various indicators of economic uncertainty. IPART adopts the midpoint between its 'current' and 'long-term' WACC estimates when the uncertainty index is at, or within, one standard deviation of the long-term average of the index. See IPART, Review of our WACC method, Final Report, February 2018, footnote 41.

ESCOSA, along with the AER and most other Australian regulators calculate the return on equity using equation (1).

$$Re = (short\ term)Rf + \beta * (long\ term)MRP\ (1)$$

As spot risk free rates are very low right now and the long-term MRP is lower than the current MRP, this procedure gives a low estimate of the cost of equity.

In contrast, we calculate the return on equity using equations (2) – (4).

$$(short\ term)Re = (short\ term)Rf + \beta * (short\ term)MRP\ (2)$$

$$(long\ term)Re = (long\ term)Rf + \beta * (long\ term)MRP\ (3)$$

$$Re = \frac{\left((short\ term)Re + (long\ term)Re\right)}{2}\ (4)$$

In our view, despite the fact that it is widely used, the approach taken in equation (1) will generate biased estimates of the market cost of equity because it combines incompatible short term and long term market observations. As you note in your statement of reasons (p 156) Frontier Economics recommended that, because there is an inverse relationship between the MRP and risk-free rate, it is important to adopt an approach to estimating the required return on equity that pairs the risk-free rate consistently with the MRP. We agree with Frontier on this point.

Our approach avoids that problem. Both short-term and long-term cost of equity estimates employ matched MRP and risk-free rate observations. It is highly significant that our current and long-term cost of equity estimates are quite similar to each other. Both of these numbers are higher than ESCOSA's equity return. We use the midpoint of the two in our WACC calculation. We consider that our procedure generates values that correspond to equity prices a firm could obtain in real markets, either one for short-term (liquid) equity or one for long-term (patient) equity. We say these are real markets because the empirical basis of the current MRP estimates is the observation of daily share price movements on the ASX. The return on equity is calculated and then the MRP is deduced from that. [4]

31. IPART explains in the submission quoted above why it is imperative to combine consistent risk-free rate and MRP to avoid economically non-sensical and biased cost of equity estimates.

32. In our view, IPART's approach of pairing together internally-consistent estimates of the risk-free rate and MRP makes IPART's approach for estimating the (nominal) cost of equity the most sound approach used by any regulator in Australia at the present time.

[4] IPART, Submission on Draft Report, SA Water Regulatory Determination 2020, 3 April 2020, pp. 2-3.

33. For reasons of internal consistency, when estimating the cost of debt, IPART also pairs together:
    a. A current estimate of the risk-free rate with a current estimate of the debt risk premium; and
    b. A long-term estimate of the risk-free rate with a long-term estimate of the debt risk premium.

2.4 IPART approach to estimating the nominal WACC and gamma

34. IPART has provided SDP with the following guidance about how SDP's WACC allowance would be set for the forthcoming regulatory period:
    a. The transition to trailing average current cost of debt would occur over 5 years commencing 1 July 2022 and ending 30 June 2027. This is what would have happened if not for the delay to the start of the RP3 price review.[5]
    b. The initial estimate of the current cost of equity for the regulatory period would be based on the initial current risk-free rate used in the current cost of debt calculation, plus the product of beta and the current MRP. That value of current cost of equity would remain unchanged until the end of the regulatory period.[6]
    c. The inflation forecast would be calculated according to the 2018 WACC methodology as a 5-year geometric average in which the first year's forecast is based on an RBA Statement on Monetary Policy (SMP) forecast. However, the decision about which edition of the SMP is to be used would be made as part of the price review.[7]
    d. The sampling periods to be used for the estimation of WACC are consistent with the guidance provided by IPART in correspondence with IPART. The sampling periods we have adopted in our calculations are those proposed in a confidential appendix to SDP's pricing submission to IPART.[8]
35. We have reflected this IPART guidance in our advice to SDP.
36. **Table 1** below summarises the 2018 IPART WACC methodology for estimating the nominal current and long-term WACC parameters, and gamma, when setting SDP's notional revenue requirement for the 2023-27 regulatory period.

[5] IPART letter to SDP, RP3 WACC approach, 21 April 2022.

[6] IPART letter to SDP, RP3 WACC approach, 21 April 2022.

[7] IPART letter to SDP, RP3 WACC approach, 21 April 2022.

[8] IPART letter to SDP, RP3 WACC method and averaging period, 7 February 2022.

Table 1: Summary of IPART's approach to estimating the WACC parameters, inflation and gamma

WACC parameter	Current estimate	Long-term estimate
Risk-free rate for cost of equity allowance	40-day average of annualised yields on 10-year Commonwealth Government Securities (CGS), obtained from the RBA. Current risk-free rate estimate fixed for the duration of the regulatory period.	10-year historical average of annualised yields on 10-year CGS obtained from the RBA. Long-term risk-free rate estimate fixed for the duration of the regulatory period.
Risk-free rate for cost of debt allowance	For 2022-23, 40-day average of annualised yields on 10-year Commonwealth Government Securities (CGS), obtained from the RBA. In subsequent years, transitioning to a five-year trailing average of 10-year annualised CGS yields. Current risk-free rate to be updated annually.	10-year (covering the years 2013 to 2022) trailing average of annualised yields on 10-year CGS obtained from the RBA. Long-term risk-free rate to be updated annually.
Debt premium	For 2022-23, the difference between the annualised cost of debt, using the debt margin for 10-year BBB-rated corporate bonds published by the RBA and the current risk-free rate estimate, and the annualised current risk-free rate estimate. In subsequent years, the difference between the annualised cost of debt, using a transition to a five-year trailing average of the debt margin for 10-year BBB-rated corporate bonds and the current risk-free rate estimate, and the annualised current risk-free rate estimate. The corporate bond yield for each historical year is determined using a two-month average over the relevant sampling period. Current debt premium to be updated annually.	The difference between the annualised cost of debt, using a 10-year trailing average of the debt margin for 10-year BBB-rated corporate bonds and the long-term risk-free rate estimate, and the annualised long-term risk-free rate estimate. The corporate bond yield for each historical year is determined using a two-month average over the relevant sampling period. Long-term debt premium to be updated annually.
Debt raising costs	12.5 basis points.	
Gearing	To be assessed at each price review, but IPART has used a benchmark gearing estimate of 60% in every decision since 2018.	

WACC parameter	Current estimate	Long-term estimate
Market risk premium	Derived using six methods, including IPART's five variations of the Dividend Growth Model, and the economic indicators method.	6.0%, based on IPART's long-term MRP estimate.
Equity beta	0.7 based on IPART's beta methodology to adopt the status quo estimate unless the empirical evidence has departed materially and for a prolonged period of time (two regulatory periods or more) from that level. IPART's final decision on its beta methodology indicates the earliest it would consider reviewing the status quo estimate of 0.7 is August 2024, even if aspects of its beta methodology are reviewed again at the next WACC methodology review)[9]	
Gamma	0.25 based on the latest market value (dividend drop-off study) evidence.	
Inflation	Assume that inflation will turn out in line with the RBA 1-year ahead forecast for 2022-23, and then 2.5% for every subsequent year of the 2023-27 regulatory period. Then compute the geometric average of these five assumed annual rates of inflation. We have used the RBA 1-year ahead forecast for 2022-23 published in the May 2022 Statement on Monetary Policy, since this would have been the latest forecast available to IPART, had it been able to reset prices for SDP on 1 July 2022 (i.e., in the absence of the 12-month delay to the start of the forthcoming regulatory period). This approach would ensure that the timing of the information used to forecast inflation aligns with timing of the information used to estimate other WACC parameters, thus promoting internal consistency.	

Source: IPART, Review of our WACC method, Final Report, February 2018; IPART, Estimating equity beta, Final Report, August 2020.

37. **Table 2** presents estimates of the nominal WACC and gamma for the 2023-27 regulatory period using information published in IPART's August 2021 Biannual WACC update.

[9] IPART, Estimating Equity Beta for the Weighted Average Cost of Capital, Final Report, August 2020, p. 2.

Table 2: Estimates of the nominal WACC and gamma for FY2023 using IPART methodology

Parameter	Current estimate	Long-term estimate
Risk-free rate	3.20%	2.60%
Debt premium	3.10%	2.50%
Debt raising costs	12.5bp	12.5bp
Gearing	60%	60%
Market risk premium	8.0%	6.0%
Equity beta	0.7	0.7
Inflation	2.80%	2.80%
Nominal cost of equity	8.80%	6.80%
Nominal cost of debt	6.30%	5.10%
Nominal vanilla WACC	7.30%	5.78%
Real vanilla WACC	4.40%	2.90%
Default point estimate (nominal)		**6.60%**
Default point estimate (real)		**3.60%**
Gamma		**0.25**

Source: IPART Biannual WACC update, August 2021. Note: Risk-free rate and debt premium estimated using the sampling periods proposed confidentially by SDP to IPART.

3 IPART's cost of debt true-up

3.1 The 2018 WACC methodology decision

38. During IPART's last WACC methodology review, various submitters supported the adoption of a trailing average approach to setting the cost of debt allowance on the grounds that it would allow regulated businesses to match their actual cost of debt to the regulatory allowance without incurring imprudent refinancing risks.

39. In its final decision on the 2018 WACC methodology, IPART agreed with those submissions and noted that:

> *We have considered stakeholders' analysis and decided to change our approach. Because our 2013 method does not update the historic cost of debt within a regulatory period, it implicitly assumes that debt maturing within the period is refinanced at historic costs rather than prevailing interest rates. In general, this means firms are not able to match the cost of debt maturing within a regulatory period with the cost of new debt issuance. As a result, our 2013 method can create refinancing risks for firms on the portion of their debt that is maturing during the regulatory period.*
>
> *We also accept that because a trailing average approach updates the historic cost of debt annually within a regulatory period, it assumes that maturing debt is refinanced at prevailing interest rates. This increases accuracy and reduces refinancing risks for firms.*[10]

40. Subsequently, in its pricing decision for the Murray River to Broken Hill Pipeline, IPART reiterated that the trailing average approach allows businesses to better manage their refinancing risks:

> *In our view, a trailing average cost of debt allows regulated businesses to better manage their refinancing risk, while maintaining their incentives for efficient investment.* [11]

41. As IPART accepted in the 2018 WACC methodology decision, the trailing average reduces refinancing risks for firms because "a trailing average approach updates the historic cost of debt annually within a regulatory period" (emphasis added).

42. Indeed, precisely for this reason, other regulators that have adopted the trailing average approach—including the Australian Energy Regulator (AER), the Economic Regulation Authority of Western Australia and the Essential Services Commission in Victoria—update the cost of debt

[10] IPART, Review of our WACC method, Final Report, February 2018, p. 27.

[11] IPART, Murray River to Broken Hill Pipeline, Final Report, May 2019, p. 59.

allowance annually. Annual updating of prices is well-accepted regulatory practice when implementing the trailing average approach.

43. However, during the 2018 WACC methodology review, some businesses proposed that the annual changes in the trailing average cost of debt allowance should be accumulated within each regulatory period and passed through using a true-up mechanism in the next regulatory period.

44. IPART consulted on the use of a true-up mechanism in relation to the trailing average cost of debt allowance in its draft WACC methodology decision. In response to that consultation, SDP provided the results from financial modelling that demonstrated the impact that a true-up mechanism can have on the cash flows and credit metrics of a benchmark business with SDP's characteristics.[12] SDP noted in its submission that:

    a. The cash flow mismatches arising from application of the true-up proposed by IPART cannot be hedged fully, so would expose a benchmark efficient entity to unnecessary financial risk;

    b. These cash flow mismatches could imperil the key financial metrics that determine the creditworthiness and future borrowing costs of SDP; and

    c. Larger regulated businesses, with diversified sources of non-regulated revenues and/or State government support may be better placed than SDP to manage such cash flow mismatches.

45. SDP proposed that:

    a. Any end of regulatory period true-up should be applied only to those firms that advocate, and are able to accommodate, such a true-up; and

    b. The implementation of any true-up should be confined to the firm advocating it and should not affect the regulatory arrangements of other businesses such as SDP that are less able to accommodate the cash flow timing risks associated with such a true-up mechanism.

46. In response to IPART's Draft WACC methodology, Sydney Water (SDP's direct customer) submitted that it would support an annual cost of debt allowance pass-through for bulk water suppliers (including SDP), and noted that Sydney Water could accommodate this relatively simply by extending the existing pass-through arrangements for bulk water costs.[13]

47. IPART's Final WACC methodology decision appeared to largely accept SDP's proposals. Specifically, IPART stated that it would decide whether to apply a true-up or annual pass through of changes in the cost of debt allowance on a case-by-case basis:

> *...we will decide whether to apply annual price adjustments or a true-up on a case-by-case basis, as part of our review process. In making this decision, we will have regard to any evidence the regulated firm or its customers put forward to support one approach or the other. Neither option would be a default.* [14]

48. IPART recognised that some businesses had expressed a preference for a true-up approach:

[12] SDP submission on IPART's Draft WACC methodology decision, 8 December 2017, p. 9.

[13] Sydney Water's submission to IPART's WACC review draft report 2017-18, 8 December 2017, p. 12.

[14] IPART, Review of our WACC method, Final Report, February 2018, p. 38.

> *…Sydney Water submitted its strong preference for using a true-up to adjust prices. It stated that "the benefits to our customers of simple, transparent and stable bills for the entire regulatory period far outweighs any perceived small cumulative benefits of unidirectional changes in bills over the regulatory period".* [15]

49. However, IPART also recognised that other businesses had expressed valid concerns that a true-up could impose financeability risks:

> *…SDP noted that while a firm was waiting to receive a true-up in its favour in several years' time, it could potentially breach its debt covenants, which often specify financial ratios that must be met in each year. While the eventual receipt of the true-up would theoretically overcome the problem, it might not be timely from the lenders' point of view.* [16]

50. IPART has explained that the true-up approach would be implemented in a "NPV-neutral" way.[17] This means that the cost of debt allowances to a regulated business using the true-up approach and the annual updating approach would be equivalent in NPV terms. However, the timing of cash flows under the two approaches would not be equivalent. As recognised in the quote above, mismatches in the timing of cash inflows (regulated revenues) and outflows (debt service obligations) under the true-up approach could create financeability problems for individual businesses.

51. IPART went on to provide the following assurance in the 2018 WACC methodology decision:

> *We can see merit in both points of view. The different perspectives reflect the different circumstances of each organisation. For this reason, we have decided not to impose a uniform rule on all regulated firms. Instead, we will decide whether to apply annual price adjustments or the true-up on a case-by-case basis, as part of our review process. In reaching this decision, we will consider any submissions from the regulated business, its customers and other relevant stakeholders. Neither option would be considered the default.* [18]

[15] IPART, Review of our WACC method, Final Report, February 2018, p. 38.

[16] IPART, Review of our WACC method, Final Report, February 2018, p. 38.

[17] IPART, Review of prices for WaterNSW Greater Sydney, Issues Paper, September 2019, p. 48.

[18] IPART, Review of our WACC method, Final Report, February 2018, p. 39.

3.2 Reasoning provided by IPART for applying a cost of debt true-up

52. However, IPART has applied the cost of debt true-up approach as the default method in every regulatory decision since it finalised its 2018 WACC methodology, regardless of the particular circumstances of the regulated business in question.

53. IPART has indicated that its key reason for preferring the true-up approach is that the true-up approach provides price certainty to customers over the regulatory period. For instance, during its most recent review of WaterNSW's prices for Greater Sydney, IPART stated the following:

> *We prefer the option of applying a regulatory true-up at the subsequent determination period because it provides certainty to customers about their prices over the upcoming determination period.* [19]

54. IPART reiterated this view in its recent draft decision on WaterNSW's rural bulk water prices:

> *Our decision is to use an end of period true-up approach. This is consistent with our decision for the 2020 review of prices for Sydney Water and helps provide price certainty to customers.*[20]

55. As explained above, price stability was the key benefit cited by supporters of the true-up approach during the development of the 2018 WACC methodology. However, IPART itself has acknowledged that annual price changes for customers under a trailing average approach are unlikely to be large. This point is discussed in further detail below. The financial impact of cash flow mismatches on the other hand could be significant.

56. Furthermore, as some businesses have pointed out to IPART in submissions, annual updates to prices for inflation and other price inputs are commonplace—including under IPART's regulatory framework. The annual updating of prices to accommodate changes in the cost of debt allowance is, in principle, no different to applying annual adjustments to prices to reflect inflation. If price stability is such an overriding consideration, it is unclear why IPART does not also do away with adjustments for inflation. To the extent that it is efficient for consumers to be exposed to annual price changes that reflect inflation, it is also efficient for consumers to be exposed to changes in price changes that reflect changes in the efficient cost of debt.

57. The main concern that SDP and others have expressed about the true-up approach was that it could create unnecessary and avoidable cash flow mismatches that could undermine the financeability of some businesses. As IPART has acknowledged, financeability concerns related to

[19] IPART, Review of prices for WaterNSW Greater Sydney, Issues Paper, September 2019, p. 48.

[20] IPART, Review of Water NSW's rural bulk water prices, Draft Report, March 2021, p. 77.

the true-up approach was one of the reasons cited by WaterNSW in favour of an annual updating approach:

> *WaterNSW states that without annual updates the cashflow impact of differences between the cost of debt allowance and the actual interest costs are borne by the firm and may impact on credit ratings. It claims that this may impact the financeability of the firm.*[21, 22]

58. We agree with the concerns expressed by SDP and WaterNSW. We also note that application of IPART's cost of debt true-up undermines one of the key benefits of the trailing average approach to determining the return on debt allowance: namely, to ensure a closer match between the return on debt allowance and the efficient cost of debt of the benchmark business.

59. In the 2018 WACC methodology decision, IPART acknowledged that there were opposing points of view about the appropriateness and consequences of the true-up and annual updating approaches, and that there was merit in these opposing points of view. Therefore, IPART decided that it would choose between annual price adjustments and a true-up approach on a case-by-case basis rather than impose a uniform approach on all regulated firms.

60. However, despite a commitment to adopt a case-by-case approach, IPART has used the true-up approach in every pricing decision since it finalised the 2018 WACC methodology, despite some of the regulated businesses involved in those price reviews proposing an annual updating approach, in part to deal with financeability concerns. In no price review since the publication of the 2018 WACC methodology decision has IPART actually applied, or indicated an intention to apply, the annual updating approach.

61. Given this, it appears that IPART has imposed a uniform rule on all businesses rather than following a case-by-case approach, as it committed to do in the 2018 WACC methodology. The true-up approach seems to have become IPART's default option, regardless of the specific circumstances of individual businesses. In our view, this one-size-fits-all approach is incompatible with the 2018 WACC methodology.

62. IPART has explained that the application of a true-up approach would avoid volatility in prices due to large changes in the cost of debt:

[21] IPART, Review of prices for WaterNSW Greater Sydney, Issues Paper, September 2019, p. 46.

[22] WaterNSW cited a number other valid reasons to favour annual updating, including following: annual updating of the cost of debt allowances reduces the likelihood of large price shocks to customers from one regulatory period to the next; an annual updating approach aligns well with an efficient and prudent debt management strategy so incentivises businesses to incur efficient debt raising costs; and an annual updating approach is administratively simple because it is standard practice for regulated businesses to update prices annually (e.g., in line with changes in inflation).

> *...if we applied an annual update, a large change in the cost of debt would flow through to customer prices in the following year of the determination period, unless additional side constraints were imposed in the determination.*[23]

63. This statement contradicts directly IPART's stated view in the 2018 WACC methodology decision that annual changes in the cost of debt allowance under a trailing average approach are likely to be small. For example, IPART explained in the final 2018 WACC methodology decision that:

> *The annual changes in this cost during the period under a 10-year trailing average approach are likely to be small because the cost of debt is recalculated for only 5% of the benchmark firm's total debt each year.*[24]

64. And that:

> *Each year, the change in the historic estimate will be added to the change in the current estimate. Depending on the length of the regulatory period, in total, about 15-20% of the firm's debt would reprice each year under our 2018 method.* [25]

65. We agree with the conclusion that IPART reached in the 2018 WACC methodology decision that annual price changes under IPART's new trailing average approach "are likely to be small." Large year-on-year changes in the prevailing cost of debt market would not flow fully into the cost of debt allowance, since the prevailing cost of debt in any given year represents only a small fraction of the overall cost of debt allowance in that year.

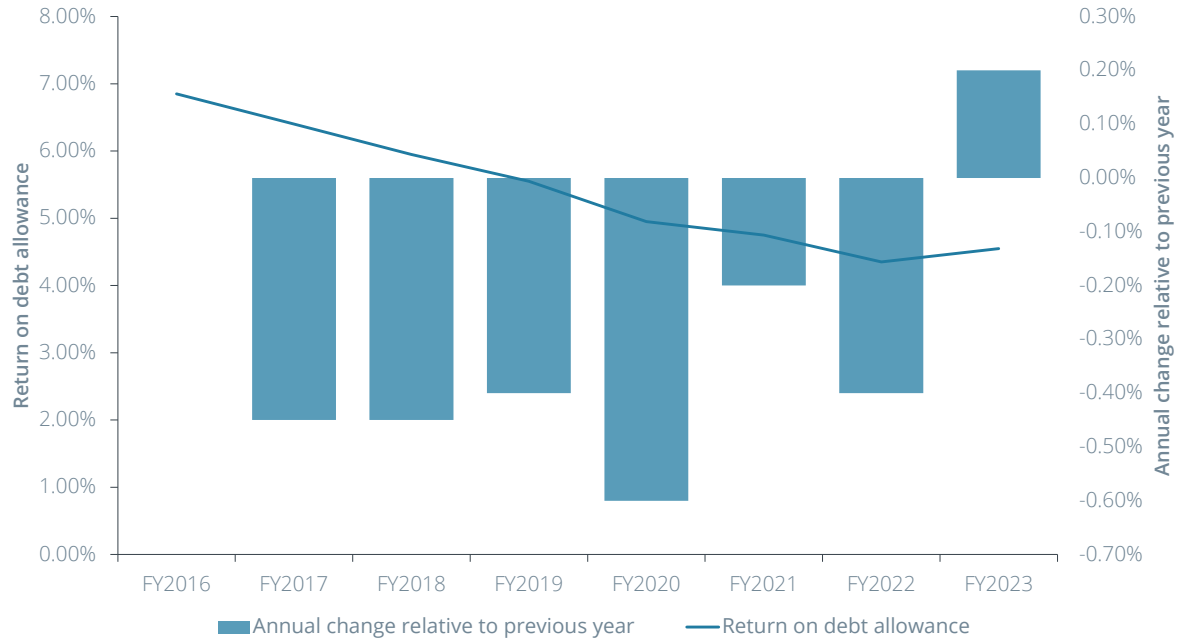
66. We demonstrate this below using data obtained from IPART's biannual WACC update model. **Figure 1** below presents the cost of debt allowance over time—derived using IPART's 2018 WACC methodology—that would apply to a business operating under a five-year regulatory period.

[23] IPART, Review of prices for WaterNSW Greater Sydney, Issues Paper, September 2019, p. 48.

[24] IPART, Review of our WACC method, Final Report, February 2018, p. 27.

[25] IPART, Review of our WACC method, Final Report, February 2018, footnote 53, p. 27.

Figure 1: Annually-updated cost of debt allowance assuming a five-year regulatory period



Source: Data from IPART biannual WACC update model, Frontier Economics analysis.

67. The Figure shows that the maximum annual change in the cost of debt allowance, over the period analysed, would have been 60 basis points. Assuming a benchmark gearing level of 60%, this would translate into a maximum annual change in the rate of return allowance of 36 basis points over the period.

68. **Figure 1** shows that the cost of debt allowance had been declining persistently for several years (until 2022-23), because the relatively high borrowing rates associated with the Global Financial Crisis (GFC) and the period immediately following the GFC have gradually 'rolled out' of the trailing average. This trend is not likely to continue over the upcoming regulatory period.

69. This means that IPART's decision to apply a cost of debt true-up has delayed consumers receiving the benefit of the declining cost of debt. Had IPART allowed annual price adjustments to reflect changes in the cost of debt allowance, consumers would have received the benefit of lower prices immediately, rather than having to wait until the next regulatory period (i.e., up to four or five years into the future).

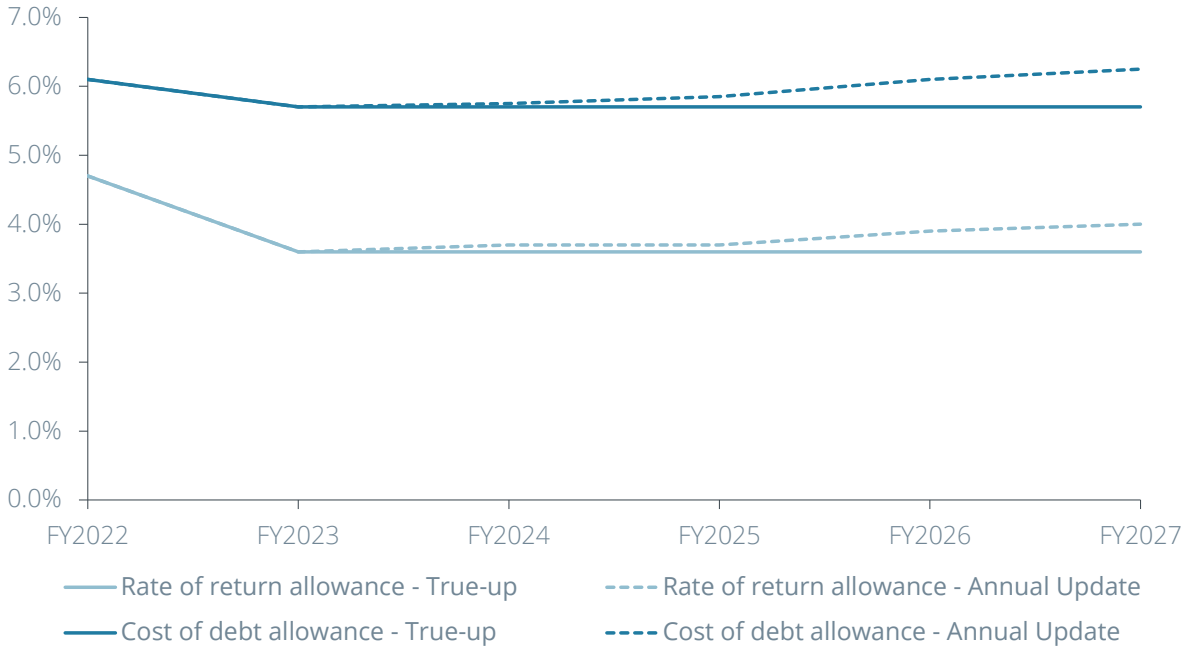
70. Below, we present a possible scenario of the cost of debt and rate of return allowances that would apply to SDP over the 2023-27 under the true-up and annual updating approaches—to demonstrate that annual updating of prices to reflect annual updating of the trailing average cost of debt allowance would result in immaterial price volatility.[26]

71. For the purposes of developing this scenario, we assumed that the prevailing risk-free rate in each of the years 2023-24 to 2026-27 would evolve in line with the expected rates implied by Bloomberg's forward curve for 10-year Commonwealth Government Securities, as at 31 May 2022. We also assume (for simplicity) that the prevailing debt spread in each year over the 2023-27 regulatory period remains constant at the 2022-23 level.

[26] The trailing average cost of debt allowance under this scenario is computed using the rates for historical tranches derived from IPART's August 2022 Biannual WACC update spreadsheet.

72. **Figure 2** suggests that under this scenario, the cost of debt allowance and, therefore, the overall rate of return allowance would be expected to rise over the 2023-27 regulatory period due to the relatively high cost of debt expected over the upcoming years.

Figure 2: SDP's cost of debt and rate of return allowances over the 2023-27 regulatory period under the annual updating and true-up approaches



Source: Frontier Economics analysis.

73. Using the estimates presented in **Figure 2**, we show below in **Figure 3** the impact on the revenues that SDP would be allowed to recover from Sydney Water under two scenarios:[27]

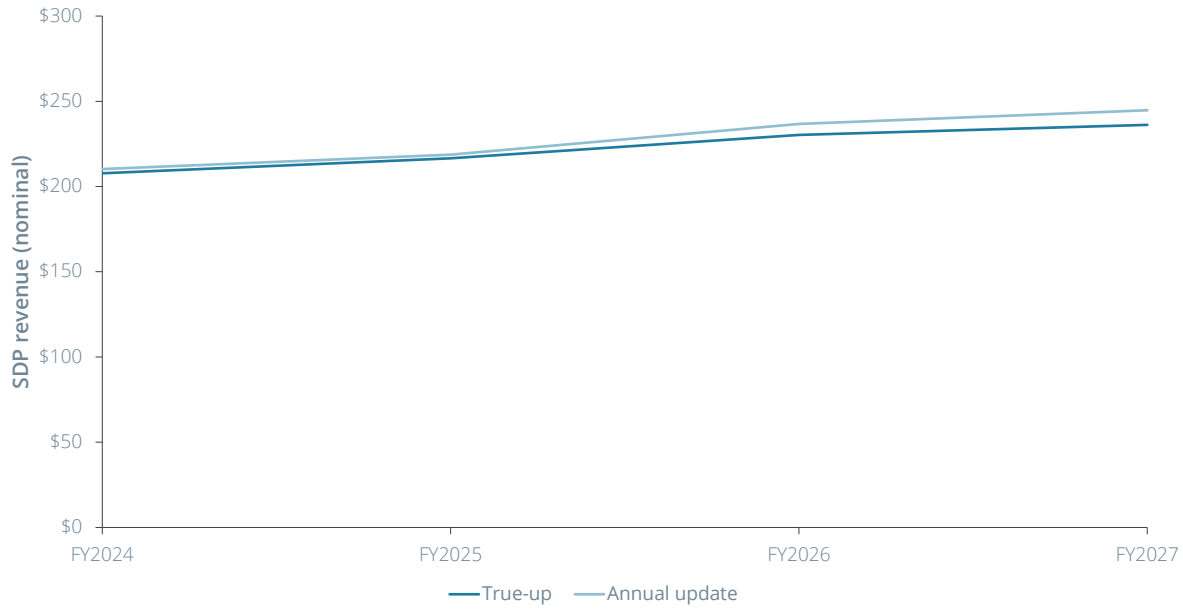
    a. SDP's charges are updated each year within the regulatory period to reflect annual updates of the trailing average cost of debt allowance; or

    b. Application of a cost of debt true-up.

74. The chart demonstrates that the difference in SDP's allowed revenues (and, therefore, SDP's charges to Sydney Water) under the annual updating and cost of debt true-up approaches would be very small. For instance, the maximum difference in allowed revenue (as a proportion of total allowed revenue) under the two cost of debt approaches would be just 3.5% in Full Production Mode.

[27] The projected revenues in this Figure were derived using SDP's pricing model.

Figure 3: Indicative SDP allowed revenues over the 2023-27 regulatory period under the annual updating and cost of debt true-up approaches (Full Production Mode)



Source: Frontier Economics analysis using SDP pricing model.

75. SDP's regulated charges are passed through to end users by Sydney Water. Hence, we also examine how Sydney Water's allowed revenues would differ if the annual updating and cost of debt true-up approaches were applied to SDP, to assess the potential impact of the two cost of debt approaches on end users.

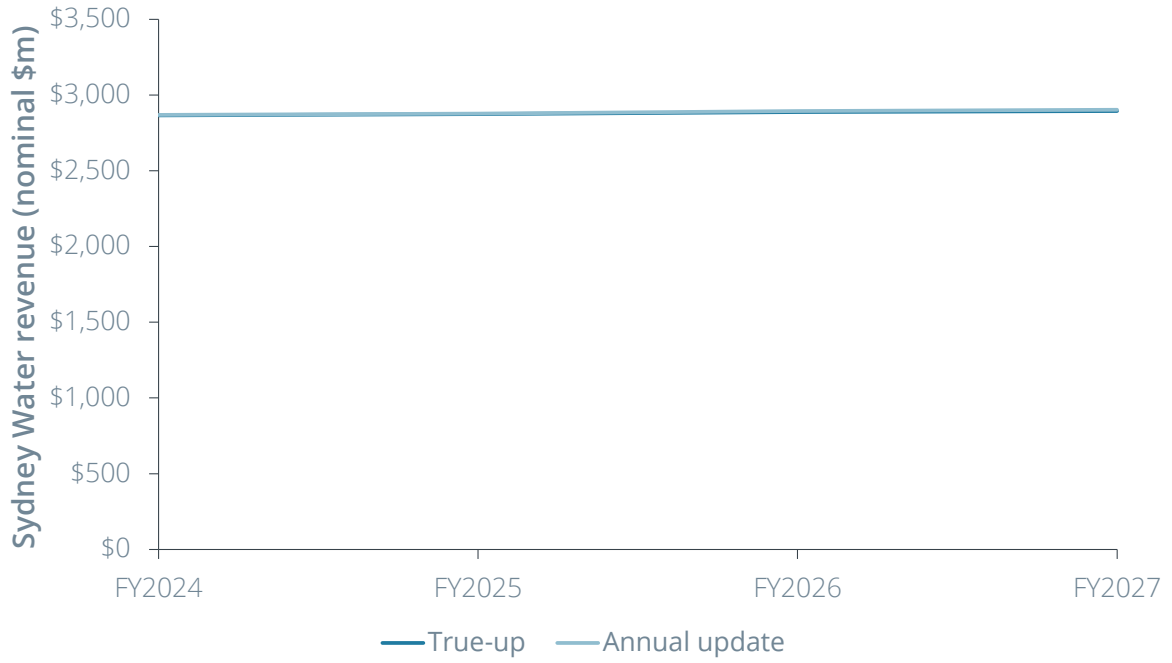
76. As **Figure 4** shows, the extent to which the Sydney Water's allowed revenues would differ as a result of applying the annual update approach to SDP, rather than the cost of debt true-up approach, is indiscernible when plotted on a standard scale.[28] Given Sydney Water's size, the differences created by applying the two cost of debt approaches are apparent only if the vertical axes of the charts are rescaled dramatically—as shown by **Figure 5**.

77. The analysis below shows that Sydney Water's revenues would differ by a maximum of only $6 million in a given year, as between the annual updating and cost of debt true-up approaches. This represents just 0.2% of Sydney Water's total allowed revenues.

78. We note that applying the average absolute change in the trailing average cost of since 2016-17 (0.39%, see **Figure 1**) to the debt portion of SDP's proposed opening RAB for the 2023-27 regulatory period would have represented just 0.16% of Sydney Water's allowed revenues in 2022-23. Once again, this demonstrates that applying annual updates to SDP's prices to reflect year-on-year changes in the trailing average cost of debt allowance would have a negligible impact on end-users.

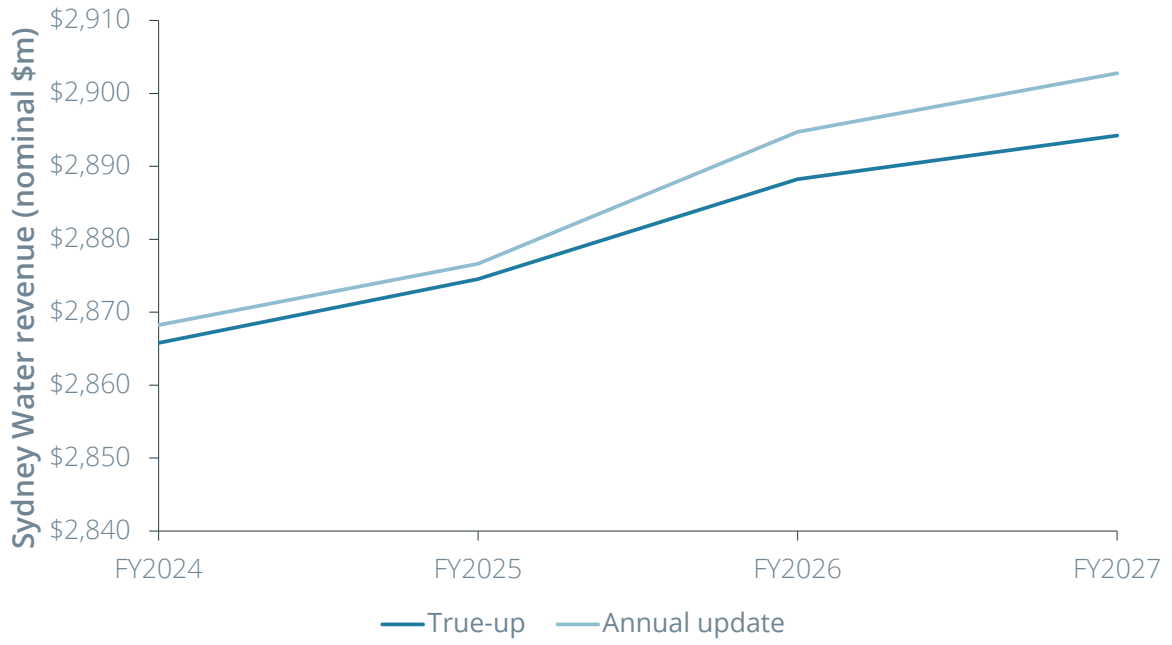
[28] The revenue impacts presented here are relative to the allowed revenues set by IPART for Sydney Water for FY2023.

Figure 4: Indicative Sydney Water allowed revenues if the annual updating and cost of debt true-up approaches were applied to SDP over the 2023-27 regulatory period (Full Production Mode)



Source: Frontier Economics analysis using SDP pricing model, IPART's regulatory decision for Sydney Water for the 2020-24 regulatory period.

Figure 5: Indicative Sydney Water allowed revenues if the annual updating and cost of debt true-up approaches were applied to SDP over the 2023-27 regulatory period (Full Production Mode)



Source: Frontier Economics analysis using SDP pricing model, IPART's regulatory decision for Sydney Water for the 2020-24 regulatory period

79. During the last WACC methodology review, Sydney Water itself acknowledged that updating SDP's and WaterNSW's bulk water charges annually, to reflect changes in the cost of debt allowance, would result in very small price impacts to retail consumers:

> *We do not expect the changes in the average customer residential bill due to annual changes in the CoD for SDP and WaterNSW to be material, given the size of SDP and WaterNSW's RAB's relative to that of Sydney Water. Our estimate of the average total likely range of impact on average residential customer bills is +/-$1-1.2 per annum in nominal prices.* [29]

80. Our indicative modelling demonstrates that annual price changes for customers are likely to be small if SDP's prices were adjusted through the regulatory period to reflect an annually-updated cost of debt allowance. However, the end of period true-up approach may result in significant cash flow mismatches that no efficient business in SDP's position can hedge or mitigate fully. That is, the modest benefits of slightly more stable prices within each regulatory period may only be achieved by imposing a potentially material cost (in the form of a deterioration in financeability) on some businesses. That cost could not be managed by small, privately-financed businesses such as SDP.

3.3 Conclusions

81. In 2018, IPART made a significant improvement to its WACC methodology by adopting a trailing average approach to determining the return on debt allowance. A key rationale for adopting this approach was to minimise the mismatches between the return on debt allowance and the efficient cost of debt that would be incurred by a benchmark business over a regulatory period.

82. However, in every decision since 2018, IPART has adopted a cost of debt true-up approach. Under this approach, the cost of debt allowance is fixed for the duration of each regulatory period. Any unders/overs between that fixed allowance and the annually-updated trailing average cost of debt over the period would then be trued-up in the next regulatory period.

83. This appears to have become IPART's default approach, notwithstanding that it committed to assess the use of the cost of debt true-up approach on a case-by-case basis.

84. The key problem with the cost of debt true-up approach is that, unlike an approach where prices are updated annually to reflect year-on-year changes in the return on debt allowance, the cost of debt true-up approach can produce cash flow mismatches between the regulatory allowance and efficient costs. These cash flow mismatches can be challenging for a business to manage and could result in a deterioration of financeability.

85. This problem could be avoided simply by setting the regulatory allowance equal to the efficient cost in each year of each regulatory period. This would involve updating prices annually to reflect year-on-year changes in the return on debt allowance.

86. IPART's main rationale for applying the cost of debt true-up approach, rather than annual price adjustments, is to avoid uncertainty and volatility in prices to consumers. However, we show

[29] Sydney Water's submission to IPART's WACC review draft report 2017-18, 8 December 2017, p. 13.

through indicative modelling that the annual changes in end-users' prices, as a result of applying the annual updating approach to SDP, would likely be negligible (i.e., less than 0.2% p.a.).

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