Review of IPART's financeability test

Report for IPART

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INCENTA
ECONOMIC CONSULTING

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1. Summary of advice

IPART has proposed a number of financeability measures (financial indicators) and associated targets (thresholds), some of which have raised objections among its stakeholders in the New South Wales water sector. A number of these objections are based on comparisons with the practices of credit rating agencies in Australia. While we think it is important to draw upon the practices of the credit rating agencies – given the objective of assessing financeability and the explicit target of a Baa/BBB rating – it is also important to acknowledge that IPART's objective differs from the credit rating agencies' purpose of assigning of a credit rating to a business. IPART's purpose is to check whether its pricing decisions are likely to give rise to a financeability concern, and in doing so it is only practicable for its test to focus on the outcomes of IPART's pricing decisions on the business.[1] Credit agencies, on the other hand, consider all the factors relevant to credit risk affecting a business to determine a credit rating that is consistent with a given probability of default.

Standard measures

Moody's vs. Standard and Poor's

We note that much of the criticism about the thresholds that were proposed by IPART for the standard credit rating financial indicators was unfair, and based on a misreading of how Moody's applies its stated thresholds for the financial indicators when it undertakes its credit assessments.

As a general matter, while we consider the Moody's methodology for credit assessment to be sound and appropriate for the task of assessing credit ratings, we believe that the methodology is less amenable to application in a regulatory benchmark setting than the method of Standard & Poor's. The particular difficulty with interpreting Moody's thresholds for the regulatory task is that the thresholds reflect a more generic business and then other factors tend to lead to a substantial increase in the assigned credit rating. Most regulated firms have financial indicators that suggest a Ba rating and yet are assigned a Baa rating. In contrast, the thresholds published by S&P typically reflect most of the risk factors that are relevant to the credit rating assessment, and the credit rating that is suggested by a mechanistic application of these threshold is typically the appropriate one for a regulatory benchmark purpose.

Interest Cover Ratio

We consider this metric is correctly presented and we agree that the Baa / BBB threshold of 1.8x is reasonable (noting that this is slightly higher than the S&P threshold for BBB for a regulated water business of 1.5x). We note that Moody's and S&P sometimes differ in their philosophy regarding the Interest Cover Ratio, with the former in some countries adopting a cash concept (cash interest paid) and the latter relying on interest expense. While the numerator will be the same under each measure, the denominator – and hence the interest cover ratio that is calculated – will be different. If the cash interest paid were to be less that the interest expense (e.g. due to CPI-indexed debt) the ratio calculated by Moody's would be greater than that calculated by S&P. As discussed below, there is

[1] We observe that the entities that IPART regulate include those that are quite different to a standard regulated utility (e.g., that hold a single asset and have a (potentially) limited life). The discussion in this report will not necessarily be applicable to a financeability assessment of such non-standard entities.

negligible CPI-indexed debt in the market, which would imply that the Moody's and S&P measures are generally very similar.

FFO/Debt

This metric is also correctly presented according to the Moody's methodology, which applies the cash interest payment when calculating FFO (the numerator), which is slightly different to that of S&P which applies the interest expense. Again, given the very small amount of CPI-indexed debt in the Australian market, the outcome for this financial indicator according to the Moody's and S&P calculation would be expected to be very similar or the same. We consider that the threshold of 6 per cent is appropriate for a regulated water business.

Debt/RAB

This is a traditional measure that requires little comment as to calculation. However, we consider that based on limits that Moody's has applied in regulated energy, the 70 per cent threshold may appear too low and that a higher threshold could be justified (85 per cent could be justified). We note that in the benchmark assessment the Debt/RAB ratio is an input rather than an output of a price setting process.

RCF/Debt

While we think this indicator may provide some information that is relevant to the financeability assessment for the "actual" case, we agree with IPART that it will not provide more information for the benchmark case, and note that it is given only a small weighting by credit rating agencies in any event.

Alternative measures – interest cover and FFO/Debt

IPART has proposed alternative measures, which were previously (in the Draft Report) referred to as "adjusted ratios". We understand that this terminology will be changed to "real ratios" for the Final Report, and for consistency we have aligned our terminology to match with IPART's new terminology.

Merits of the methods

IPART has also applied the interest cover and FFO/debt financial indicators discussed above with only the real component of interest (i.e., the cost of debt) included in the calculation of FFO and interest. This financial indicator could be justified as:

- reflecting a benchmark assumption that the businesses have all of their debt in inflation-linked instruments, and simply applying the Moody's calculations of the interest cover and FFO/debt financial indicators, or

- forming a new financial indicator, which is intended to capture the more general ability for a benchmark firm with a RAB that is escalating with CPI to issue new debt in line with the RAB indexation and so generate additional cash inflow (in this case, additional cash flow from

financing activities), and to avoid the inflation component of debt to be double-counted in the financeability assessment.[2]

Many of the criticisms of IPART were directed to whether it is appropriate to assume that a benchmark firm could be wholly financed with inflation-linked debt. We agree that it would be unreasonable to assume that a benchmark firm could finance to any material extent with inflation-linked debt (noting that there have not been any new issues of inflation-linked corporate debt by Australian utilities since the Global Financial Crisis, and few before). However, we think that the better interpretation of IPART's proposal is the second of those outlined above, namely that it is defining new financial indicators for the benchmark assessment.

To this end, we observe that the new measures have merit, and we agree with IPART's view that there is the potential for a benchmark firm with an indexing RAB to generate additional cash flow. However, we also think that it is reasonable to expect that the potential for this additional cash flow is built into the targets for the standard interest cover and FFO/debt measures.[3] If so, the real interest cover and FFO/debt measures should not be expected to suggest that the NSW water sector as a whole is any more or less financeable than suggested by the standard measure. Consequently, while we endorse applying the real financial indicators, we recommend:

- adjusting the thresholds to reflect the revised financial indicators, and
- also applying the standard financial indicators to the benchmark case (by which we mean applying the S&P indicators or, equivalently, Moody's indicators with an assumption that the firm has financed wholly in standard fixed rate terms).

This latter advice reflects:

- the difficulty of establishing robust thresholds for the revised indicators, and
- our view that the transparency of the exercise will be improved by drawing upon the practices of ratings agencies to the extent possible, albeit noting IPART's different objective as discussed above.

Thresholds for the new financial indicators

As noted above, to the extent that the potential additional cash flow is built into standard ratios, the new financial indicators would not be expected to suggest that the NSW water sector as a whole is any more or less financeable than suggested under the standard measures, although the new indicators may yield different insights across firms and over time.[4] This expectation suggests that an

[2] To be clear, Moody's calculation of the financial ratios will only recognise the additional cash flow associated with an indexing stock of debt where this arises from having inflation-linked debt instruments in place, and not from the case where a firm simply issues new debt to track the indexing RAB.

[3] By standard measure, we mean (i) the S&P financial indicators, or (ii) the Moody's financial indicators, but calculated on the assumption that the benchmark firm has a level of CPI-linked debt that is consistent with the level observed across peer corporate entities (i.e., very limited issuance).

[4] For example, one area where the standard and new measures will provide different insight is where forecasts of inflation either reduce materially or increase materially compared to past forecasts.

approximate means of deriving thresholds for the new indicators would be to calculate the average difference between the performance of the NSW water sector under the standard indicators and under the real indicators, and use this as the basis for adjusting the thresholds. Our estimate of the adjustments to the thresholds that this method would deliver are as follows:[5]

Figure 1.1 – Derivation of thresholds for the real financial indicators (benchmark financing assumed)

	Standard indicator	Real indicator	Difference
Interest Cover (average FY17 to FY21) - Benchmark assumptions			
Sydney Water Corporation	1.86	2.87	***1.01***
Hunter Water Corporation	1.81	2.80	***0.99***
Gosford	1.68	2.83	***1.15***
Wyong	1.80	3.03	***1.23***
Sydney Catchment Authority	1.73	2.79	***1.06***
Average	**1.78**	**2.86**	***1.08***
FFO / Debt (average FY17 to FY21) - Benchmark assumptions			
Sydney Water Corporation	5.14%	7.31%	***2.16%***
Hunter Water Corporation	4.93%	7.11%	***2.18%***
Gosford	4.04%	6.43%	***2.39%***
Wyong	4.69%	7.07%	***2.37%***
Sydney Catchment Authority	4.67%	7.08%	***2.41%***
Average	**4.69%**	**7.00%**	***2.30%***

Drawing upon the conclusions above, this would imply adopting thresholds for the new financial indicators of:

- Real interest cover: 1.8 + 1.1 = **2.9 times**,[6] and
- Real FFO/Debt: 6.0% + 2.3% = **8.3 per cent.**

However, we caution that these estimates of the thresholds for the real financial indicators should be treated as indicative only.

5 Our estimates apply actual and forecast financial information that was provided by IPART for the benchmark financing assumptions, spanning the 5 year period commencing with FY17. We have used in our analysis the larger entities that are more like standard utilities, and so have excluded the Sydney Desalination Plant, WaterNSW Rural and Essential Energy's Broken Hill business.

6 We have used IPART's threshold of 1.8x, which is based on the thresholds that Moody's applies, as the start point. We have advised that S&P would be likely to apply a threshold of 1.5x for interest cover. Applying S&P's threshold as the start point would imply a threshold for the adjusted interest cover financial indicator of 2.6x.

2. Advice and commentary on how IPART calculates its financial ratios and sets its thresholds

2.1 Introduction

IPART is seeking our view as to whether the credit metric ratios it proposes to calculate are being correctly calculated. By way of background, IPART applies two forms of financeability tests, which are expected to assist in the detection of potential financeability issues, and the causes of these issues, which could allow better targeted regulatory responses:

- Benchmark test – Under IPART's proposed benchmark test the cash flows determined by following a regulatory benchmarks approach are tested for financeability using the real cost of debt and benchmark gearing ratio used in the WACC.
- Actual test – In the actual test, IPART proposes to use the business's current debt outstanding, and forecast interest expense and dividend payments, but would not include the inflation indexation component in the interest expense if the interest expense is on a nominal basis.

The Draft Report proposes, in effect, that four ratios be applied:

- Interest Cover Ratio (ICR), calculated with:
  - the historical cost standard of interest, and
  - interest assumed to reflect the real cost of debt
- FFO/Debt, again calculated with:
  - the historical cost standard of interest, and
  - interest assumed to reflect the real cost of debt
- Debt/RAB.

IPART has also asked us to review the issue of whether the single thresholds that it has set for the financial metrics it intends to calculate are appropriate for the industries being regulated. The metrics that it presented in its Draft Report were as follows:[7]

- *An Adjusted Interest Coverage Ratio and an Interest Coverage Ratio of greater than 1.8 times.*
- *A FFO over debt ratio greater than 6%.*
- *A debt to RAB gearing ratio less than 70%.*

In this section, we:

[7] IPART (August, 2018), p.44.

- first address the question of whether there should be a single threshold for each metric
- then address the calculation and thresholds for the standard (historical cost) financial indicators, and
- the address the calculation and thresholds for the adjusted financial indicators.

2.2 Single threshold level for each credit metric ratio

IPART's proposals

IPART's Draft Report proposed that instead of providing an upper and lower bounds range of credit metrics for each metric, it will only provide a lower (or upper) threshold.

Our advice

We agree with IPART's intention to apply a single credit metric ratio threshold, as this is appropriate for financeability testing. We believe that such an approach provides for transparency and clarity.

2.3 Standard measures

In this section we introduce and discuss the standard credit metric measures that IPART is proposing to employ.

2.3.1 Interest Cover ratio (ICR)

IPART's proposals

IPART has proposed that the Interest Cover Ratio (ICR) with nominal debt financing can be presented as FFO (Funds from Operations adjusted for operating leases and superannuation liabilities) plus the nominal interest cost (which itself is comprised of a real return on debt, and an inflationary component), divided by the nominal interest cost (which can be similarly decomposed). IPART adopts the Moody's approach, which is to calculate the ICR using a cash flow measure, i.e. interest paid, rather than interest expense. Measured in this way, the ICR will yield different values depending on the degree of CPI-indexed debt that a business has or is assumed to have.

IPART's Draft Report has proposed a change in its approach since the last review of financeability testing, which is to apply the ICR only as a diagnostic tool in the actual test, and not to use it for the benchmark test. The adjusted ICR measure proposed to be used in the benchmark test is considered in section 2.4 below.

IPART has proposed an ICR threshold of 1.8x for a benchmark Baa / BBB credit rating for regulated water businesses.

Our advice

This is the standard interest cover metric that is applied by credit rating agencies to a large range of businesses. Our view is that this ratio is correctly measured as it is presented, and consistent with the Moody's measurement method. However, we note that Moody's and S&P have different views on

measurement, with the latter taking account of the non-cash component in the FFO measure and the former less likely to include this non-cash principal indexation component as part of the measure of interest. We understand S&P considers that using interest expense will provide a better view of long term financeability.[8] Having said that, we observe that the level of CPI-linked financing by Australian utilities is very small (with no new corporate issues since the Global Financial Crisis) and so the indicators that are currently calculated by Moody's and S&P would be materially the same for entities with the standard financing of a corporate.

IPART has proposed a threshold value of 1.8x for ICR to be consistent with a BBB credit rating. There has been some conjecture in submissions about the applicability of this threshold level. It has been suggested that an ICR of 1.8x does not satisfy the Moody's (Baa) Water guideline, which suggests an ICR of at least 2.5x is required. We disagree with those conjectures, since the higher ICR threshold for Baa merely reflects the way that the Moody's credit rating methodology operates. For the avoidance of doubt, we consider the Moody's methodology to be sound, and appropriate for the task of assessing credit ratings; however, we believe that the methodology is less amenable to application in a regulatory benchmark setting than the method of Standard & Poor's. This is discussed in Box 2.1 below and in more details in Appendices A and B.

[8] When considering the impact of CPI-linked debt, we understand that S&P has sought to place all businesses on a "level playing field" by maintaining its traditional interest cover metric including the influence of the indexation component of the interest (estimated if necessary), so that the interest cover measure needs no adjustment. S&P makes a qualitative adjustment afterwards to reflect the improved liquidity that CPI-linked or other low coupon debt may confer, noting however, that sufficiency of liquidity in the S&P methodology is typically applied as a minimum threshold that a firm must meet to obtain an investment grade credit rating. See, Standard & Poor's (10 February, 2009), *Methodology And Assumptions: Recognizing The Sustainable Cash Cost Of Inflation-Linked Debt For Corporates.*

Box 2.1 – Applicability of the different credit rating methods for the regulatory tasks

Moody's methodology

As discussed in Appendix A, the Moody's methodology commences with targets that are more generic than those applied by Standard & Poor's (discussed in Appendix B). As a consequence, for the regulated water industry, and for regulated energy businesses, the Moody's credit metric thresholds imply relatively low credit rating bands (since the thresholds are more reflective of an average risk business). These metrics account for 40 per cent of the total weighted "scorecard" that is at the centre of the Moody's methodology, and regulated water businesses score highly (have higher "factor credit ratings" applied) than the average business. As a result, regulated water businesses invariably obtain higher final credit ratings than is implied by their credit metrics alone. Because of this disconnect, the actual thresholds that IPART has proposed are lower than those displayed for a Moody's Baa / BBB credit, but this is appropriate.[9]

Standard & Poor's methodology

Standard & Poor's methodology is another sound methodology for assessment of credit rating; however, its approach is in our view more amenable to benchmark analysis within a regulatory context. In the Standard & Poor's methodology all of the industry risks and most of the specific firm risks are factored into the thresholds that S&P applies (and publishes) with its credit rating assessments. Typically, there are no further adjustment to the mechanistic assessment against the financial target thresholds, and some of the adjustments that are observed (for example, the effect of a higher-rated supportive parent) may be ignored in a benchmark regulatory rating assessment.

Turning to the proposed threshold of 1.8x, we think that this is appropriate (and possibly a little high) for a regulated water business where the target credit rating is BBB. Under the Standard & Poor's methodology, a threshold of 1.5x would apply to this indicator, although this seems to be an issue where there is a slight difference of view with Moody's.[10] Accordingly, we believe the threshold proposed is appropriate, provided the form of financing assumed reflects the observed practice of Australian corporates.

2.3.2 FFO/Debt ratio

IPART's proposals

The numerator of IPART's proposed FFO/Debt measure is funds from operations calculated in the standard manner using the Moody's approach (i.e. focused on the cash flow component of interest expense – interest paid), while the denominator is the debt outstanding adjusted for operating leases and superannuation liabilities.

The Baa / BBB threshold value proposed by IPART is 6 per cent.

9 To be clear, if a low volatility regulated water business were to achieve Baa level credit metrics, the high (generally higher than Baa) ratings that it would achieve on the other factors (accounting for 60 per cent of the weighting) would be likely to result in a higher overall credit rating than Baa.

10 Moody's applies a threshold of 1.8x for the Ba rating band, but for the reasons discussed in the text, this would be likely to correspond to a Baa rating for a regulated water business once the risk characteristics of the industry are considered.

Our advice

We observe that, for regulated infrastructure businesses and at the present time, the FFO/Debt metric is the key metric used by both Moody's and Standard & Poor's for credit rating purposes.

Again, the financial indicator proposed by IPART reflects Moody's practice (i.e., by using the cash interest cost) and differs to S&P's practice (where the interest expense is applied). However, again, given the very limited issuance of CPI-linked debt by Australian utilities, the values for the Moody's and S&P indicators will be the same or materially the same for entities with the standard financing of a corporate.

The proposed threshold of 6 per cent is consistent with Standard & Poor's threshold for a regulated water business where the target credit rating is Baa / BBB. This reflects our assumption that such an entity would be assigned an "excellent" business risk profile and be assessed against the thresholds for financial ratios that apply to "low volatility" industries, which would mean that the business would be able to have an "aggressive" financial risk profile and still maintain the target rating. We consider these assumptions to be reasonable. We would also expect the 6 per cent threshold to be appropriate for a business that is rated Baa / BBB by Moody's, provided the form of financing assumed reflects the observed practice of Australian corporates.

2.3.3 Gearing ratio (Debt / RAB)

IPART's proposals

IPART calculates the Gearing Ratio as end of period debt divided by the end of period Regulated Asset Base (RAB). This ratio is not needed in the benchmark test because it already assumes that the benchmark gearing ratio is applied (e.g. 60 per cent). However, IPART proposes to use this for the actual test, where the business's opening debt balance and forecast dividend payments would be applied.

Our advice

This measure is the traditional measure of Debt / RAB, and its measurement does not invite much comment.[11] However, Standard & Poor's does not use this measure, and cannot therefore be used as a cross-reference to assess the threshold. With respect to some of the previous metrics it may be noted that the thresholds IPART has proposed for a Baa / BBB threshold (1.8x for ICR and 6 per cent for FFO/Debt) reflect Moody's Ba thresholds, but that are, in reality, more consistent with a Baa rating.[12] This coincidence does not apply to the Debt/RAB ratio, where IPART has set the threshold at 70 per cent, which is the Moody's Baa threshold. Accordingly, the threshold set by IPART may be too low (a Ba threshold for debt / RAB would be 85 per cent).

Consistent with this, we have seen a threshold of 80 per cent applied for a regulated energy network forming a threshold between a BBB and BBB+ rating, which suggests that a debt / RAB ratio of 80 per cent for a regulated water business would be consistent with a BBB rating.[13] We therefore

[11] While Moody's applies "net debt" in the numerator, IPART notes that its modelling assumes surplus cash is paid out in a benchmarking context.

[12] Moody's Financial Services (8 June, 2018), p.21.

[13] We found that an 80 per cent threshold to maintain a BBB+ credit rating was applied by Moody's to Australian Gas Networks in 2015 (see Appendix A below).

recommend that IPART investigate this threshold further, by examining Debt / RAB thresholds in the regulated energy sector.

2.3.4 Other potential measures

Retained Cash Flow / Debt

One potential measure that IPART rejected was the Retained Cash Flow / Debt measure. It was rejected by IPART on grounds that in the financeability (benchmark) test dividends are calculated as a residual:[14]

> *This means an increase or decrease in cash flow (ie, FFO) will be reflected in a proportionate increase or decrease in dividend payments.*

Our advice

Our initial view was that this measure could provide some insight into how management's financial management, specifically its dividend policy could be seen to be mitigating or exacerbating a financeability issue over time, although we agree that this metric may not yield any further information for a benchmark assessment.[15]

However, on balance we agree with IPART's decision to exclude this measure. At best, it is a marginal metric that accounts for only 12.5 per cent of the metrics component of Moody's scorecard, and 5 per cent overall in Moody's analysis. It is also not a "core" or "supplementary" ratio in Standard & Poor's metrics.

2.4 Alternative measures

2.4.1 Proposal

IPART has also applied the interest cover and FFO/Debt financial indicators discussed above with only the real component of interest (i.e., the cost of debt) included in the calculation of FFO and interest. IPART's motivation for the alternative measures is to ensure that its assessment of financeability is focussed on the cash generated by the businesses, and also to avoid a perceived double-counting of inflation in the financeability assessment.

2.4.2 The alternative measures are best seen as new financial indicators

We observe that a number of submissions have argued that the market for inflation-linked corporate debt in Australia is very small and that a benchmark firm could not raise this finance for all of its debt. We agree with this comment. While there were a number of issues of inflation-linked corporate debt prior to the Global Financial Crisis (GFC), much of this was "credit wrapped", and since the GFC (and the falling out of favour of "credit wrapping") there has been virtually no new inflation linked debt issued. This is discussed further in Appendix C. Equally, while there is a larger market for

[14] IPART (August, 2018), p.42.

[15] This is because the only difference between the FFO/debt and RCF/debt ratios is dividends, which would need to be an assumption in the benchmark test. Accordingly, the additional information would be tied wholly to the assumption that is made.

inflation-linked debt in the UK, none of the major regulated network firms have more than 50 per cent of their debt as inflation-linked, for which there are two reasons.

- First, the market for inflation-linked debt in the UK is small in comparison with the market for conventional fixed rate debt, and so supply constraints in the inflation-linked market are experienced.

- Secondly, even if supply constraints were not normally present, it is typically seen as prudent and efficient debt management practice to firms to spread their debt issues across a range of markets. This practice ensures that good relationships with potential debt providers are retained across multiple markets, which in turn minimises the firm's exposure to supply issues (and thus refinancing risk) in any one of those markets.

Thus, we agree with the views expressed that it would be neither possible nor prudent for an Australian regulated utility to finance the entirety of its debt in inflation-linked terms. As noted in the discussion of the Moody's practice for the UK utilities in Appendix D, Ofwat in its modelling of financeability for the benchmark water businesses assumes that 33 per cent of a water business's debt portfolio is inflation-linked.

That said, whether this observation is relevant depends upon how IPART's proposed adjusted interest cover and FFO/Debt indicators are to be interpreted.

One interpretation is that IPART is applying Moody's financial indicators and is assuming that a benchmark business finances entirely in inflation-linked terms. This is the interpretation that appears to have been assumed in submissions.

A second interpretation is that IPART is extending Moody's financial indicator to:

- factor in the assumption that a benchmark entity will maintain its stock of debt at the benchmark assumption (i.e., a fixed percentage of the RAB), and will finance via the efficient means to achieve this, and

- take account of the cash inflow this generates when assessing the firm's ability to meet interest payments.

We understand that this second interpretation more accurately reflects IPART's intention. This financial indicator does not assume any particular form of financing and so is not subject to the criticism above.

Having said that, however, this interpretation means that IPART's financial indicator is not the same as those that Moody's applies. This is because the IPART measure would factor in the *expectation* of a cash inflow arising from an increase in net borrowings, rather than counting that cash inflow only where there is an existing loan agreement to this effect (i.e., inflation-linked bonds) in place.

2.4.3 IPART's concern about double-counting is valid, but likely embedded in thresholds

The regulatory benchmark assumption that IPART applies is that the RAB escalates with inflation, and so the benchmark stock of debt for the firm must also increase with inflation. In light of this, we

agree with IPART's observation that there is a potential double-counting of the inflation component of the cost of debt when interest cover is measured on a historical cost basis. That is, we agree that if a firm maintains the regulatory benchmark stock of debt, it would have an additional source of cash flow that is ignored in the interest cover calculation.

- If the firm raised inflation-linked debt so that debt automatically tracked the benchmark,[16] then the firm's (cash) coupon payments would only reflect the real component of the cost of debt, with the inflation being capitalised into the stock of debt.

- Alternatively, if the firm raised fixed rate debt, then it could nonetheless maintain the regulatory benchmark by raising the new debt to match the inflation indexation component. This would then generate additional cash flow in the form of an increase in net borrowings.

Indeed, the two strategies noted above could be structured to deliver the same cash flow outcome in an *ex ante* sense (*ex post*, differences would exist because of differences between forecast and actual inflation).

However, one comment that we would make is that the ability of regulated businesses with CPI-linked RABs to generate a cash inflow from increasing its net borrowings over time is not limited to the NSW water businesses. Rather, any business that expects rising cash flows would similarly be in a position to increase its net borrowings while maintaining a constant level of gearing, and so generate an additional source of cash inflow. More importantly, we would expect that most or all of the peer group for the NSW water businesses that are drawn upon by credit rating agencies when setting credit ratings would have an inflation-linked RAB.

While this observation does not mean that the real interest cover measure is inappropriate, it does imply that care is required to select an appropriate target. In particular, given that many firms (and possibly all of the peer group for the NSW water businesses) are likely to be in a position to generate additional cash inflow by raising net borrowings over time (and without harming their financial indicators), it should follow that the potential for this double-counting already would be reflected into the thresholds that rating agencies apply for historical cost interest cover. This has three implications.

- First, the application of the real measure should not be expected to show an increase in the financeability of the entire water sector.

- Secondly, as the adjusted measure would be easier for all firms to meet, the threshold for this indicator would also need to be higher.

- Third, the real measure would be expected to show the relative effects of the double-count across firms, and possibly about how financeability may change in response to certain events (such as a step up or down in the rate of inflation).

We return to the issue of the appropriate thresholds in section 2.4.4 below.

[16] This is setting aside some difference in the timing and calculation of the indexation adjustments between revenue/RAB and inflation-linked bonds.

2.4.4 Appropriate thresholds for the new measures

As noted above, the new interest cover and FFO/Debt ratios that are calculated in the manner that IPART proposes necessarily will be higher than the standard measure for all firms for which the measures are calculated. As the ratings agencies calculate the thresholds for the relevant financial indicators to reflect empirical relationships between that indicator and the risk of default, the thresholds that are applied for indicators where all firms would score higher than the standard indicators must be higher than for those standard indicators.

We also said that we expect that the application of the new interest cover and FFO/Debt indicators to the NSW water sector would not suggest that NSW water sector, on average, is any more or less financeable than the results of the standard indicators if the benefit from inflation-indexation of the RAB is already embedded in the thresholds that the ratings agencies apply for the standard financial ratios. Rather, we would expect that the different indicators may deliver different insights for different businesses, as well as over time.[17]

Accordingly, a difficulty with the application of the adjusted measure that there is no readily available target that can be taken from the practice of ratings agencies that can be applied for the regulatory benchmark financeability assessment. As noted above, the targets that ratings agencies set for financial indicators are based on empirical relationships between different financial indicators and historical rates of default, modified for the characteristics of the relevant peer group. Setting a target for a new indicator, therefore, may not be a straightforward task.

Having said that, our observation above that the NSW water sector *as a whole* could be assumed to fare equally under the standard and adjusted interest cover measures suggests that one means of establishing an *approximate* threshold for the adjusted interest cover and FFO/Debt indicators would be to add an increment to the standard thresholds that equates to the difference between the standard and adjusted indicators on average for the NSW water sector.[18]

We have undertaken this estimate applying actual and forecast financial information from IPART. In our analysis, we have:

- focussed on the average outcomes for the relevant financial indicators over the 5 year horizon commencing with FY17

[17] Probably the most significant difference between the IPART adjusted interest cover metric and the standard interest cover metric would be seen if inflation suddenly swings upward and this flows through into higher nominal interest rates. Under this scenario, the standard historical cost interest cover indicator would decline for regulated firms with CPI-linked revenue/RABs, whereas the adjusted interest cover indicator would not change. The latter indicator, in this situation, would provide the more relevant guidance, assuming that the targets for the standard historical cost interest cover indicator remain unchanged.

[18] Other methods could be applied to attempt to derive thresholds for the new indicators. One alternative would be to derive cost and revenue components for a benchmark firm and adjust the regulatory settings (for example, the rate of regulatory depreciation) so that the firm's financial indicators were just at the relevant threshold (e.g., FFO/Debt of 6 per cent). The corresponding outcome for the adjusted financial indictor could then be observed and applied as the threshold. This exercise could be repeated for different assumptions about the relativities of the cost and revenue components of the benchmark firm to test the robustness to variation in these assumptions.

- applied the benchmark financing assumptions, and
- limited the sample to the large firms that are most indicative of a standard utility service provider (on this basis, we have excluded the Sydney Desalination Plant, WaterNSW Rural and the Essential Energy Broken Hill business).

In terms of the calculation of the indicators, in a benchmark regulatory setting, the interest cover and FFO/Debt financial indicators can be expressed as follows:[19]

$$Interest\ Cover = \frac{Revenue - Opex - Tax}{Interest}$$

$$\frac{FFO}{Debt} = \frac{Revenue - Opex - Tax - Interest}{Debt}$$

The definition of *interest* forms the difference between the standard and real indicators. For the standard indicators interest is calculated by applying the full nominal rate of interest to the benchmark debt, whereas for the real indicators interest is calculated using the real interest rate.[20] Thus, compared to the standard indicators, the real indicators result in a lower denominator for interest cover and larger numerator for the FFO/Debt ratio, leading to a higher result in both cases.

Our estimates of the adjustments to the thresholds that this method would deliver are as follows:

[19] In a benchmark regulatory setting these formulae can be simplified even further by noting that, at the time of a price review, the expression "Revenue – Opex – Tax" is equal to the sum of the real return on equity and regulatory depreciation, provided that (i) the return on equity factors in the proportion of company tax that is not explicitly compensated (i.e., the proportion that is assumed to be delivered via imputation credits, or "gamma"), (ii) the revenue that is forecast for the year in question is not materially different to the target revenue (i.e., taking account of the effect of any smoothing of revenue over the regulatory period), and (iii) the target revenue is not adjusted for other factors (such as to give effect to incentive schemes).

[20] As an example, if the nominal interest rate (for corporate debt) is 5.0 per cent and the forecast of inflation is 2.0 per cent, then the real interest rate is 2.9 per cent. If the benchmark debt is 100, then the nominal interest is 5 and the real interest is 2.9.

Figure 2.1 – Derivation of thresholds for the real financial indicators (benchmark financing assumed)

	Standard indicator	Real indicator	Difference
Interest Cover (average FY17 to FY21) - Benchmark assumptions			
Sydney Water Corporation	1.86	2.87	***1.01***
Hunter Water Corporation	1.81	2.80	***0.99***
Gosford	1.68	2.83	***1.15***
Wyong	1.80	3.03	***1.23***
Sydney Catchment Authority	1.73	2.79	***1.06***
Average	**1.78**	**2.86**	***1.08***
FFO / Debt (average FY17 to FY21) - Benchmark assumptions			
Sydney Water Corporation	5.14%	7.31%	***2.16%***
Hunter Water Corporation	4.93%	7.11%	***2.18%***
Gosford	4.04%	6.43%	***2.39%***
Wyong	4.69%	7.07%	***2.37%***
Sydney Catchment Authority	4.67%	7.08%	***2.41%***
Average	**4.69%**	**7.00%**	***2.30%***

Drawing upon the conclusions above, this would imply adopting thresholds for the new financial indicators of:

- Real interest cover: 1.8 + 1.1 = **2.9 times**,[21] and
- Real FFO/Debt: 6.0% + 2.3% = **8.3 per cent.**

However, we caution that these estimates of the thresholds for the real inductors should be treated as indicative only.

2.4.5 Should the real measures be applied in a benchmark setting?

One implication that some may draw from the above discussion is that the real measures should be dispensed with. This reflects that fact that they are novel, there is no readily available threshold available for the metric and because the measure should not indicate that the NSW water sector is more or less financeable as a whole than suggested by the standard interest cover and FFO metrics.

We think this implication would go too far. We think the real financial indicators may deliver relevant insights for different businesses, as well as over time.

For example, probably the most significant difference between the IPART real interest cover metric and the standard interest cover metric would be seen if inflation suddenly swings upward and this flows through into higher nominal interest rates. Under this scenario, the standard historical cost interest cover indicator would decline for regulated firms with CPI-linked revenue/RABs, whereas the real interest cover indicator would not change. The latter indicator, in this situation, would provide the more relevant guidance, assuming that the targets for the standard historical cost interest cover

[21] We have used IPART's threshold of 1.8x, which is based on the thresholds that Moody's applies, as the start point. We have advised that S&P would be likely to apply a threshold of 1.5x for interest cover. Applying S&P's threshold as the start point would imply a threshold for the adjusted interest cover financial indicator of 2.6x.

indicator remain unchanged. The reverse outcome would also be shown where there is a reduction in inflation, namely that the increase in financeability suggested by the standard measure would be an overstatement of the true position.

A. Moody's ratings methodology

A.1 Moody's methodology vs Standard & Poor's

As discussed in the text, under the Standard & Poor's methodology (see Appendix B) the rating agency's judgments regarding volatility, business risk and financial risk regarding industry sectors are already made for the 'anchor' credit rating, so the translation of metrics to credit rating threshold is often straightforward. Departures from anchor ratings are not normally applied for a stand-alone single operation business single. Under the Moody's methodology, by contrast, the credit metrics are more generic inputs, together with other factors that determine credit rating. Hence, there is no neat translation of the observed credit metric to a credit rating threshold that is observed to be typical for regulated infrastructure businesses.

A.2 The Moody's methodology

The Moody's methodology centres around the preparation of a "scorecard" or "grid", that determines the initial credit rating based on weightings assigned to four broad risk factors:

- Business Profile
- Financial Policy
- Leverage and Coverage
- Uplift for structural considerations

1. The Scorecard factors

The scorecard factors are set out in Table B-1 below.[22] These factors are for water utilities but are very similar to those used for regulated energy (i.e. the same weightings on business profile and financial policy, and slightly different weightings on the leverage and coverage ratios).

[22] Moody's Financial Services (June, 2018), *Rating Methodology – Regulated Water Utilities*, p.4.

Table B-1: Scorecard for Regulated Water Utilities

Rating Factors	Factor Weighting	Sub-Factors	Sub-Factor Weighting
BUSINESS PROFILE	50%	Stability and Predictability of Regulated Environment	15%
		Asset Ownership Model	5%
		Cost and Investment Recovery (Sufficiency & Timeliness)	15%
		Revenue Risk	5%
		Scale and Complexity of Capital Programme & Asset Condition Risk	10%
FINANCIAL POLICY	10%	Financial Policy	10%
LEVERAGE AND COVERAGE	40%	Adjusted Interest Coverage OR FFO Interest Coverage	12.5%
		Net Debt / Regulated Asset Base OR Debt / Capitalisation	10%
		FFO / Net Debt	13%
		RCF / Net Debt	5%
Total	100%	Total	100%
UPLIFT FOR STRUCTURAL CONSIDERATIONS		Up to 3 notches	

It is noteworthy that in this framework the credit metrics account for a 40 per cent weighting of the total score.

2.Measurement or estimation of factors in the Scorecard

Each factor in the scorecard is addressed, with a dynamic forward-looking approach that forecasts these factors, including the financial metrics that are calculated.

3.Mapping Scorecard factors to the ratings categories

After estimating / calculating each sub-factor, the outcomes for each sub-factor are mapped to a broad Moody's rating category (Aaa, Aa, Baa, Ba, B, Caa, or Ca).

4.Assumptions, limitations and rating considerations not included in the Scorecard

Moody's then discusses the limitations of the scorecard, including consideration of factors that may not be included in the scorecard.

5.Determining the Overall Scorecard-Indicated Outcome

Each of the sub-factor scores is converted into a numeric value based on the following scale:

Aaa	Aa	A	Baa	Ba	B	Caa
1	3	6	9	12	15	18

An additional "overweighting" is applied by rating category as shown below:

Aaa	Aa	A	Baa	Ba	B	Caa
1	1	1	1.15	2	3	5

Moody's weights the lower rating scores more heavily than higher scores because:

- It wants to adjust for cases where an issuer exhibits weak characteristics across the first two factors, which are not usual in the ratings universe and would require more demanding thresholds for the credit metrics; and

- It recognises that a serious weakness in one of the areas can't always be completely offset by strengths in others (e.g. constraints associated with a high degree of leverage can increase risks).

The actual weighting that Moody's applies to each sub-factor is "the product of that sub-factor's standard weighting and its over-weighting, divided by the sum of these products for all the sub-factors (an adjustment that brings the sum of all the sub-factor weightings back to 100%)."

Moody's multiplies the numerical score it obtains for each sub-factor by the adjusted weight for that sub-factor. The results then summed to produce a composite weighted-factor score, which is mapped back to the alphanumeric rating shown by the ranges in Table B-2.

Table B-2: Mapping of indicated rating overall score to credit rating outcome

Indicated Outcome	Indicated Rating Overall Score
Aaa	$x < 1.50$
Aa1	$1.50 \leq x < 2.50$
Aa2	$2.50 \leq x < 3.50$
Aa3	$3.50 \leq x < 4.50$
A1	$4.50 \leq x < 5.50$
A2	$5.50 \leq x < 6.50$
A3	$6.50 \leq x < 7.50$
Baa1	$7.50 \leq x < 8.50$
Baa2	$8.50 \leq x < 9.50$
Baa3	$9.50 \leq x < 10.50$
Ba1	$10.50 \leq x < 11.50$
Ba2	$11.50 \leq x < 12.50$
Ba3	$12.50 \leq x < 13.50$
B1	$13.50 \leq x < 14.50$
B2	$14.50 \leq x < 15.50$
B3	$15.50 \leq x < 16.50$
Caa1	$16.50 \leq x < 17.50$
Caa2	$17.50 \leq x < 18.50$
Caa3	$18.50 \leq x < 19.50$

Source: Moody's Financial Services (June, 2018), p.6.

6. Uplift for structural considerations

Finally, notching adjustments are made based "structural enhancements where they are incorporated either in the company's corporate structure, its regulatory license or its financing arrangements".

A.3 Examples of Moody's rating methodology

A.3.1 Sydney Water

To provide an example of Moody's methodology, Moody's considers that "Sydney water's business and regulatory risks are comparable to those of rated Australian regulated transmission and distribution networks," and has a long term rating of Aa3.[23] Sydney Water's weightings for its credit metrics are mainly in the Ba credit rating band, but:

- its weighted sub-factor score places it in the Baa1 band (equivalent to BBB+); and
- it obtains a 4-notch uplift to Aa3 based on "a high likelihood of support from the state [of New South Wales]" due to its 100 per cent ownership, Sydney Water's primary role of water and wastewater services in its are of operations and the absence of a privatisation policy.

A.3.2 Australian Gas Networks (AGN)

AGN is headquartered in Adelaide and owns and operates gas networks in South Australia, Queensland and New South Wales. It was rated Baa1 / BBB+ by Moody's in 2015, which was assessed in two stages.[24] According to its scorecard, the key credit metrics were assessed at Ba, but were outweighed by factor weightings of Baa to Aaa for the remaining factors, which resulted in a weighted credit rating of Baa2. However, in additional analysis this rating was raised one notch to Baa1 / BBB+ on grounds that the Baa2 result was influenced by previously lower metrics. Being rated at Baa1 / BBB+, Moody's expressed an opinion that it could be downgraded to BBB if the Debt / RAB ratio increased above 80 per cent on a consistent basis. This raises the question of whether an upper threshold of 70 per cent for a regulated water business is appropriate to maintain a broad BBB credit rating.

A.3.3 Aurizon Network

Another example is provided by Aurizon Network, which as noted in Appendix A, owns and operates a regulated 2,670 kilometer below-rail network in Australia's Central Queensland Coal Network.

Moody's scorecard places most of Aurizon Network's credit risk metrics in the Ba credit rating band, but this is offset by the positive impact of the other factors (accounting for 60 per cent of the score), which have higher ratings assigned through the scoring process. As a result, Aurizon Network obtains an overall rating from the scorecard of Ba2. However, this is upward notched (adjusted upwards) in the final assessment to Baa1. As explained by Moody's:[25]

> *"The difference between this grid rating and the assigned rating recognizes the company's strong market position, the contractual and regulatory features of the network's business model, and our expectation that management will implement countermeasures to support the Baa1 rating if required".*

[23] Moody's Financial Services (10 October, 2017), *Sydney water Corporation*, p.5.
[24] Moody's Investor Services (19 January, 2015), *Australian Gas Networks Limited*.
[25] Moody's Investor Services (11 August, 2018), *Aurizon Network Pty Ltd*, p.7.

B. Standard & Poor's rating methodology

In this appendix we summarise the methodology that is employed by Standard & Poor's (S&P) to determine a credit rating.

B.1 Steps applied in a credit rating assessment

S&P's standard method comprises a number of steps, which are as follows.

B.1.1 Anchor credit rating (Step 1)

First, an "anchor credit rating" is calculated, which is the product of an assessment of the firm's "business risk profile" and its "financial risk profile". A matrix is applied that displays the anchor credit rating that results for a given combination of **business risk profile** and **financial risk profile**, was follows:

Table B-1: Anchor credit rating matrix

		Financial risk profile					
		1 Minimal	2 Modest	3 Intermediate	4 Significant	5 Aggressive	6 Highly leveraged
Business risk profile	1 Excellent	AAA / AA+	AA	A+ / A	A-	BBB	BBB- / BB+
	2 Strong	AA / AA-	A+ / A	A- / BBB+	BBB	BB+	BB
	3 Satisfactory	A / A-	BBB+	BBB / BBB-	BBB- / BB+	BB	B+

Source: S&P (19 November, 2013), p. 35.

Business risk profile

The "business risk profile" is expressed as a score from 1 to 6, ranging from "excellent" to "vulnerable". This assessment is based on an assessment of **country risk** (score of 1 to 6, although this is irrelevant for low levels of country risk) and the risk of the **industry** in which the firm operates (score of 1 to 6), as well as an assessment of the **competitive position of the firm** in question.

Our observation is that, for regulated utilities that undertake minimal non-regulated activities, the "business risk profile" is typically consistent (i.e., the same) across entities within the same sector. As an example, all of the regulated energy networks that are rated by S&P have an "excellent" business risk profile.

Financial risk profile

The "financial risk profile" is also determined on the basis of a score of 1 to 6, ranging from "minimal" to "highly leveraged". The financial risk profile is established from a consideration of financial indicators, which are discussed below.

The assessment of the financial risk profile is dependent in part on the risk of the industry within which the firm operates, with tougher thresholds applying for firms operating in a more risky industry. Standard and Poor's has three sets of financial ratios, which are as follows:

Table B-2: Cash Flow / Leverage Analysis Ratios - "Standard volatility" industries

	Core ratios				Supplementary coverage ratios				Supplementary payback ratios					
	FFO / debt (%)		Debt / EBITDA (x)		FFO / cash interest (x)		EBITDA / interest (x)		CFO / debt (%)		FOCF / debt (%)		DCF / debt (%)	
	From	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*
[1] Minimal	60+		< 1.5		> 13		> 15		> 50		40+		25+	
[2] Modest	45	60	2	1.5	9	13	10	15	35	50	25	40	15	25
[3] Intermediate	30	45	3	2	6	9	6	10	25	35	15	25	10	15
[4] Significant	20	30	4	3	4	6	3	6	15	25	10	15	5	10
[5] Aggressive	12	20	5	4	2	4	2	3	10	15	5	10	2	5
[6] Highly leveraged	< 12		> 5		< 2		< 2		< 10		< 5		< 2	

Table B-3: Cash Flow / Leverage Analysis Ratios - "Medial volatility" industries

	Core ratios				Supplementary coverage ratios				Supplementary payback ratios					
	FFO / debt (%)		Debt / EBITDA (x)		FFO / cash interest (x)		EBITDA / interest (x)		CFO / debt (%)		FOCF / debt (%)		DCF / debt (%)	
	From	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*
0	50+		< 1.75		10.5+		14+		40+		30+		18+	
[1] Minimal	35	50	1.75	2.5	7.5	10.5	9	14	27.5	40	17.5	30	11	18
[2] Modest	23	35	2.5	3.5	5	7.5	5	9	18.5	27.5	9.5	17.5	6.5	11
[3] Intermediate	13	23	3.5	4.5	3	5	2.75	5	10.5	18.5	5	9.5	2.5	6.5
[4] Significant	9	13	4.5	5.5	1.75	3	1.75	2.75	7	10.5	0	5	-11	2.5
[5] Aggressive	< 9		> 5.5		< 1.75		< 1.75		< 7		< 0		< -11	

Table B-4: Cash Flow / Leverage Analysis Ratios - "Low volatility" industries.

	Core ratios				Supplementary coverage ratios				Supplementary payback ratios					
	FFO / debt (%)		Debt / EBITDA (x)		FFO / cash interest (x)		EBITDA / interest (x)		CFO / debt (%)		FOCF / debt (%)		DCF / debt (%)	
	From	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*	*From*	*To*
[1] Minimal	35+		< 2		> 8		> 13		> 30		20+		11+	
[2] Modest	23	35	3	2	5	8	7	13	20	30	10	20	7	11
[3] Intermediate	13	23	4	3	3	5	4	7	12	20	4	10	3	7
[4] Significant	9	13	5	4	2	3	2.5	4	8	12	0	4	0	3
[5] Aggressive	6	9	6	5	1.5	2	1.5	2.5	5	8	-10	0	-20	0
[6] Highly leveraged	< 6		> 6		< 1.5		< 1.5		< 5		< -10		< -20	

Source: S&P (19 November, 2013), p. 35.

As noted above, the ratios that are applied when assessing the credit rating for a particular firm reflect the risk characteristics of the industry, and are identified in credit rating assessments. As noted in the case studies below, the "low volatility" table has been applied to regulated energy networks and transport infrastructure that is regulated on a building block basis (Aurizon Networks), and from our research the low volatility table has also been applied to regulated water businesses.

B.1.2 Stand Alone Credit Profile (Step 2)

Standard & Poor's then considers a range of factors that may affect the rating from the "anchor", which include such factors as diversification, quality of capital structure, financial policy, liquidity, management and governance. These factors may cause the rating to be raised, or lowered, or left unchanged. An overall check is then applied (with the opportunity for an overall judgement to be exercised), which may result in a rating being increased or decreased. The product of this assessment is the "stand-alone credit rating".

B.1.3 Issuer Credit Rating (Step 3)

Finally, where the firm exists as part of a wider group, then the effects of being part of the group are considered. This may cause the rating to be raised (for example, for firms with a government owner), or reduced (for example, if the parent has a lower rating than the issuer's stand-alone rating).

B.1.4 Comment – the anchor credit rating appropriate for benchmark regulation

In a benchmark regulation context, with the exception noted below, we consider there are no reasons to expect the second and third steps would necessarily change the credit rating, because such factors as diversification, quality of capital structure, financial policy, liquidity, management and governance are assumed constant in the benchmark. Relevantly, these factors do not typically result in a change to a rating (and any change may be up or down) – it is reasonable to a firm that is prudent and efficient firm would be unaffected by these steps. Furthermore, the benchmark business can be assumed to be stand-alone (i.e. not affected by having a parent or government owner).

Just to recap how the S&P method may be applied in the benchmark context:

- the business risk profile of a benchmark firm can be determined by comparison with the business risk profile that is assigned to rated entities, on the assumption that the benchmark entity will have the same business risk profile as other firms in the industry (for regulated water businesses, this is likely to be an "excellent" business risk profile, as with the regulated energy networks)

- the relevant matrix of financial target thresholds can be ascertained from credit rating reports, and as this choice depends on the industry risk, this will not vary across entities (the "low volatility" is likely to be applied to regulated water businesses, as with the regulated energy networks)

- the product of the two will determine an anchor credit rating and, with one exception, this can be assumed to be the expected credit rating.

As an example of the process that one would follow:

- a regulated water business can be assumed to have an excellent business risk profile

- for a BBB credit rating, it would be able to have an aggressive financial risk profile, and

- the lower limit for the FFO/debt financial indicator for an aggressive financial risk profile from the low volatility tables is 6%, which can be applied in the regulatory benchmark calculations.

The one exception noted in the text above reflects the fact that, for firms that have an "excellent" business risk profile, there is a gap in the anchor credit ratings when a firm moves from an "aggressive" financial risk profile to a "significant" financial risk profile (i.e., the anchor moves from BBB to A-). The practice of S&P in relation to Australian Gas Networks (see below) suggests that a firm whose ratios are at the lower end of the "significant" range will have their anchor rating reduced by one notch (i.e., to BBB+) so that a continuous spectrum of ratings will apply in practice.

B.2 Case studies of application of the S&P methodology

B.2.1 Jemena

Jemena owns and operates a portfolio of regulated monopoly and contracted energy distribution and transmission assets on the eastern seaboard of Australia. It is rated A- by Standard & Poor's, which has assessed it to have:[26]

- An "excellent" (score 1) business risk profile, "based on the company's position as the owner of a portfolio of regulated monopoly network businesses."
- Its financial risk profile was assessed against Standard & Poor's "low volatility" cash-flow financial metrics, and found to be "significant" (score 4).
- It was assessed to have an anchor credit rating of A- (as per Table B-5 below).

Table B-5: Jemena anchor credit rating assessment

		Financial risk profile					
		1 Minimal	2 Modest	3 Intermediate	4 Significant	5 Aggressive	6 Highly leveraged
Business risk profile	1 Excellent	AAA / AA+	AA	A+ / A	A-	BBB	BBB- / BB+
	2 Strong	AA / AA-	A+ / A	A- / BBB+	BBB	BB+	BB
	3 Satisfactory	A / A-	BBB+	BBB / BBB-	BBB- / BB+	BB	B+

- Standard & Poor's applied a one negative notch credit modifier based on a forecast of declining metrics from debt funding of capex, hence a stand-alone credit rating of BBB+.
- However, a positive notch was applied due to its majority owner being State Grid International Development of China (A+), resulting in a final credit rating of A-.

Standard & Poor's notes that to maintain its A- credit rating, Jemena needs to maintain "its FFO-to-debt ratio of more than 9.5%, FFO interest coverage of at least 2.5x, and total leverage of less than 65%." [27]

B.2.2 Australian Gas Networks (AGN)

AGN is headquartered in Adelaide and owns and operates gas networks in South Australia, Queensland and New South Wales. As shown in Appendix A, AGN was rated Baa1 / BBB+ by Moody's in 2015 through a one notch uplift relative to its assessed scorecard rating. At the same time, Standard & Poor's applied an equivalent BBB+ / Baa1 credit rating.[28]

- An "excellent" (score 1) business risk profile, based on a stable transparent regulatory regime and stable cash flows.

26 S&P, (5 October, 2016), SGSP (Australia) Assets Pty Ltd.
27 S&P, (5 October, 2016), SGSP (Australia) Assets Pty Ltd., p.7.
28 S&P (29 April, 2015), *Standard & Poor's Rating Services Presentation to Australian Gas Networks Ltd.*

- Its financial risk profile was assessed against Standard & Poor's "low volatility" cash-flow financial metrics, and found to be "significant" (score 4).

- It was assessed to have an anchor credit rating of A- (as per Table B-6 below).

The A- anchor rating was lowered by one notch to BBB+ because the "comparative rating analysis" was considered "negative". As discussed above, AGN's metrics were at the lower end of the "significant" range, and the one-notch reduction was applied to give effect to a continuous spectrum of credit ratings.

Table B-6: Australian Gas Networks anchor credit rating assessment

		Financial risk profile					
		1 Minimal	2 Modest	3 Intermediate	4 Significant	5 Aggressive	6 Highly leveraged
Business risk profile	1 Excellent	AAA / AA+	AA	A+ / A	A-	BBB	BBB- / BB+
	2 Strong	AA / AA-	A+ / A	A- / BBB+	BBB	BB+	BB
	3 Satisfactory	A / A-	BBB+	BBB / BBB-	BBB- / BB+	BB	B+

B.2.3 Aurizon Network

Aurizon Network owns and operates a regulated 2,670 kilometre below-rail network in Australia's Central Queensland Coal Network. It is rated BBB+ by Standard & Poor's, which has assessed it to have:[29]

- A "strong" (score 2) business risk position, "monopolistic position and supportive regulatory framework … solid market position and low business risk."

- Like Jemena, Aurizon Network has its financial risk profile assessed against Standard & Poor's "low volatility" cash-flow financial metrics, and found to be "intermediate" (score 3).

- It was assessed to have an anchor credit rating of BBB+ (as per Table B-7 below).

Table B-7: Aurizon Network anchor credit rating assessment

		Financial risk profile					
		1 Minimal	2 Modest	3 Intermediate	4 Significant	5 Aggressive	6 Highly leveraged
Business risk profile	1 Excellent	AAA / AA+	AA	A+ / A	A-	BBB	BBB- / BB+
	2 Strong	AA / AA-	A+ / A	A- / BBB+	BBB	BB+	BB
	3 Satisfactory	A / A-	BBB+	BBB / BBB-	BBB- / BB+	BB	B+

  – Note that the anchor credit rating could have been A- or BBB+. In cases where there are multiple possible ratings, the choice depends on the financial risk profile – if this is 4 or stronger, the anchor is based on the comparative strength of the business risk profile within its class, and if the financial risk profile is 5 or weaker, the anchor is based on the comparative strength of its financial risk profile within its class. In the case of Aurizon, the financial risk profile (score of 3) the choice depended on where Aurizon's business risk profile sat within

[29] S&P, (5 October, 2016), SGSP (Australia) Assets Pty Ltd.

the class of "strong", and this was assessed to be ayt the lower half of that range, hence the BBB+ rating was applied.

- Aurizon Network is a stand-alone business, with ring fencing from Aurizon Ltd's other rail operations, which do not provide credit support. Therefore, a final credit rating of BBB+ was applied.

Standard & Poor's expects "the company to operate with an FFO-to-total debt ratio of about 13%-14% over the next three years, slightly higher than the current rating downgrade trigger of 13%. [30]

B.2.4 Chorus Network

Chorus Network owns and operates a network of copper and fibre telecommunications infrastructure throughout New Zealand. In its last credit rating assessment,[31] Standard and Poor's made the following conclusions about Chorus Ltd:

- A "strong" (score 2) business risk profile.
- Its financial risk profile is assessed against Standard & Poor's "standard volatility" cash-flow financial metrics because it operates on an industry with intermediate risk, and was found to be "significant" (score 4).
- It has been assessed to have an anchor credit rating of BBB (as per Table B-8 below).

Table B-8: Chorus anchor credit rating assessment

		Financial risk profile					
		1 Minimal	2 Modest	3 Intermediate	4 Significant	5 Aggressive	6 Highly leveraged
Business risk profile	1 Excellent	AAA / AA+	AA	A+ / A	A-	BBB	BBB- / BB+
	2 Strong	AA / AA-	A+ / A	A- / BBB+	BBB	BB+	BB
	3 Satisfactory	A / A-	BBB+	BBB / BBB-	BBB- / BB+	BB	B+

- None of the modifiers led to a change to the credit rating, and there were no relevant group effects, and so a BBB credit rating was provided.

30 S&P, (5 October, 2016), SGSP (Australia) Assets Pty Ltd., p.7.
31 S&P, (30 May, 2017), Chorus Ltd.

C. Characteristics of Australian-issued CPI indexed bonds

Using the Bloomberg service, we undertook a search for extant AUD denominated CPI-linked bonds, which resulted in a total of 50 bonds (Using search "Underlying Reference Index" "AUCPI Index"). We arranged these bonds by industry, size and term at issuance, which provided a picture of this market and how it relates to Australian regulatory corporate benchmarks. This indicated the non-standard benchmark characteristics of this debt market:

- The average issue size was $116 million, which is materially below the benchmark bond issue size in the Australian markets ($250 million)
- The average term at issuance was 25 years, which is materially longer than the benchmark term of issuance (10 years)
- Only four of these bonds were issued by firms in the Utilities sector, and only one of these issues (by Australian Gas Networks / Envestra in 2006) is a regulated utility (the two other issuers being BOOT and energy generation projects).
- The vast majority of the CPI issues were made during the low market volatility period of 2000 to 2008 (i.e. prior to the Global Financial Crisis), with only one issue, by The University of Wollongong, since that time.

From Table C.1 it is apparent that the CPI-linked bonds market was active in the pre-Global Financial Crisis period but has completely dried up since 2008.

Table C.1: Current CPI-linked bonds issued in AUD

	Number of issues	Pre-2000	2000 to 2008	Post 2008	Ave. term at issue	Ave. issue size
Aerospace & Defense	1		1		14.0	52.0
Banks	2		2		13.3	25.4
Consumer Finance	3		3		21.8	25.4
Educational Services	5		4	1	26.9	58.3
Financial Services	21	1	20		26.4	72.0
Health Care Facilities & Services	3	1	2		27.4	105.7
Industrial Other	2		2		29.0	140.0
Railroad	2		2		29.1	150.0
Real Estate	2		2		27.3	46.3
Supranationals	1		1		13.9	50.0
Transportation & Logistics	4	2	2		26.5	238.8
Utilities	4	1	3		21.8	155.5
Average					**25.2**	**116.3**
Total	**50**	**5**	**44**	**1**		**5,814.4**

Source: Bloomberg and Incenta analysis

D. Moody's practice for the UK utilities

IPART's real interest cover metric draws upon the adjusted interest cover measure that Moody's applies to the regulated water and electricity businesses in the UK.

The adjusted interest cover measure that Moody's applies in those sectors is as follows.

- For the water businesses, the indexation component of any inflation-linked debt is removed from the measure of interest, which flows through into the top and bottom lines of the interest cover calculation. For the electricity sector, a broader concept is applied whereby any non-cash element that is included in interest expense that reflects escalation of the debt principal is excluded from funds from operations and interest.

- In addition, other adjustments are made for both sectors:

  – In water, capital maintenance (proxied by the regulatory allowance) is treated as an expense and so deducted from funds from operations, and

  – In the electricity sector, the allowance for capital maintenance is also removed from FFO. In addition, adjustments are made for the three "regulatory levers" that may distort the cash flow for a particular UK electricity distributor relative to the other UK electricity distributors, namely the rate of depreciation applied, the split between fast money and slow money (the totex equivalent of operating and capital expenditure) and the effect of any profiling of revenue within a regulatory period).

From our reading, the principal driver for Moody's application of the adjusted interest cover measures were to improve comparability across the relevant sector and with other relevant peers, for example, as follows:[32]

> *For regulated networks that utilize unconventional debt funding, such as zero-coupon, capital accretion, index-linked bonds or swap arrangements, we seek to make the appropriate adjustments to the ratio calculations to improve consistency and comparability to the peer portfolio.*

When calculating its adjusted measure, Moody's only adjusts the FFO for any accretion in debt that is reflected in the actual debt instruments of the businesses (i.e., any additional cash flow that is available through increasing fixed rate borrowings to match the growth in CPI is ignored). Moody's notes the potential for a firm to achieve a similar outcome to having inflation-indexed by raising additional debt to match the inflation escalation component as we discussed above.[33] Given this, it observed that having the debt accretion arrangements pre-arranged (i.e., through having indexed debt

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[32] Moody's Investors Service, (16 March 2017) *Rating Methodology – Regulated electric and gas networks*, p.29, n.8. Moody's was similarly explicit that its reason for including the capital charges adjustment for the water businesses was to derive a financial indicator that is sensitive to what it considered to be a material variation in capital maintenance requirements across the UK water sector: Moody's Investors Service, (March 2006) *Special comment – UK Water Sector: Key Ratios Used by Moody's in Assessing Companies' Credit Strength*, , p.6.

[33] Moody's Investors Service, (March 2006), p.9.

arrangements in place) would be particularly relevant to highly-geared firms for whom it may be difficult to raise new debt to match the inflation indexation component:[34]

> *… index-linked debt has the advantage of lower cash interest payments in the current period for a given level of leverage, which can be an important consideration for companies that are highly leveraged and would otherwise be highly dependent on their ability to continually re-borrow a percentage of the growth in the RAV to cover current interest payments.*

For this reason, Moody's suggested that the adjusted interest cover would be less relevant to companies that are not highly geared:[35]

> *Clearly, for companies that are not highly leveraged and show adequate levels of Adjusted ICR even with conventional fixed-rate debt, the benefit of index-linked debt is tantamount to that of liquidity. Accordingly, when assessing the financial profiles of water companies, Moody's regards the Net Debt to RAV ratio as the primary indicator, placing less weight on interest cover ratios for companies that maintain an overall good degree of financial flexibility, including strong liquidity.*

The target that Moody's applies for the adjusted interest cover measure is materially *lower* than the target for the standard FFO interest cover measure, although this would reflect the net effect of all of the adjustments described above.

Ofwat applies a test of financeability when setting price controls, and in this process has applied the Moody's adjusted interest cover measure as one of its critical ratios. In this assessment, Ofwat typically models the outcomes for a benchmark efficient business, and in this practice has assumed that such a business would have 33 per cent of their debt in inflation-linked terms (meaning that FFO and interest would be adjusted by 33 per cent of the maximum possible inflation-accretion).[36]

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34 Moody's Investors Service, (March 2006), p.8.

35 Moody's Investors Service, (March 2006), p.8.

36 See Ofwat, (July, 2015), *Towards Water 2020 – policy issues: regulating monopolies*, p.20, where it states that: "Water companies have a significant amount of long dated RPI-linked debt and our view of a notional company in PR14 assumed that 33% of debt was RPI linked."