



Review of Synergies WACC Analysis for ARTC

11 March 2016

1 Summary and Introduction

Castalia has been engaged by the Hunter Valley Rail Access Task Force (HRATF) to review the appropriateness of the assumptions applied by the Australian Rail Track Corporation (ARTC) in its WACC proposal for the 2016 HVAU. We also review the Synergies report which was presented in support of the ARTC proposal.

WACC is the most analysed and debated topic in regulatory policy. Empirical evidence and theoretical arguments on various components of WACC have been thoroughly ventilated in numerous regulatory settings in Australia on recent occasions. The approach in this report is to draw on the analyses and conclusions of Australian regulators. We have reviewed the analyses undertaken for comparable rail networks by the Queensland Competition Authority (QCA)—which regulates Aurizon Network and the Queensland Rail Network—and by the Economic Regulation Authority of Western Australia (ERA)—which regulates Brookfield Rail. We have also looked at the methodologies of the Australian Energy Regulator (AER) which is part of ACCC, and the NSW Independent Pricing and Regulatory Tribunal (IPART) as applied to regulated energy and water networks.

The purpose of looking at the methodologies used by other regulators is to identify the latest trends in regulatory thinking and to consider the intellectual debate on each WACC parameter.

The table below provides a high level comparison of Castalia’s analysis of WACC parameters to that provided by Synergies. We note that comparison of time-sensitive parameters, such as the risk free rate and the debt margin needs to distinguish between the effects of timing differences and of possible differences in approach.

Table 1.1: Synergies | Castalia Comparison of Conclusions

Parameter	Synergies	Castalia
Benchmark Credit Rating	BBB	A grade
Risk free rate	3.01%	2.45%—as at 04/03/16
Debt margin	3.57%	2.67%—as at 04/03/16
Debt Raising Costs	0.095%	0.095%

Market risk premium	7.9%	6.0%
Gamma	0.25	0.45
Tax rate	30%	30%
Gearing	52.5%	52.5%
Asset Beta	0.54	0.40
Equity beta	1.13	0.838
Inflation	2.5%	2.5%
Nominal Pre-tax WACC	10.81%	6.99%
Nominal Post-tax WACC	9.17%	6.29%
Pre-tax real WACC point estimate	8.11%	4.38%

2 Risk Free Rate and Debt Margin

At present, there is a degree of disagreement between Australian regulators on whether to use ‘on-the-day’ observations of risk free rates and debt margin, or to apply some form of averaging. The disagreement arises out of uncertainty over how to obtain the best prediction of future values over the regulatory period, and how best to ensure that the regulatory approach mirrors practical hedging and financing strategies available to the regulated companies.

The QCA and the AER use an ‘on-the-day’ approach to setting the risk free rate for the purpose of calculating the cost of equity. The QCA also uses the ‘on the day’ approach for the cost of debt, while the AER uses a ten year trailing average for the cost of debt.

Synergies have adopted the IPART approach for debt by using an average of ‘on the day’ and 10-year average cost of debt (of 10-year tenor). We note the ACCC has ruled out the IPART averaging approach in its recent decision on NSW State Water.

In Castalia’s view, the use of long-term averaging creates potential for significant distortions:

- There is no reason to believe that the average risk free rate over the past 10 years is a better predictor of future rates than the current ‘on-the-day’ observation. Locking-in historical averages may either accommodate past financing decisions that are no longer appropriate, or may force ARTC to underinvest during periods when the lagged long-term cost of debt is below the current cost of issuing debt
- The discount rate used to value ARTC’s future cash flows is based on current market rates. Historical averaging would lead to valuations that are not reflective of current market conditions; and

- Periods of higher interest rates are likely to be positively correlated with higher coal prices. Introducing an artificial wedge between the ARTC and user cash flow cycles could lead to allocative inefficiencies.

Consistent with the 2011 HVAU, and the current approach for the majority of regulators, Castalia believes that an ‘on-the-day’ approach to calculating the risk free rate and debt margin remains the most appropriate basis for determining the cost of debt and the cost of equity for the regulatory period.

Neither ‘on-the-day’ nor ‘averaged’ approaches are perfect predictors or entirely consistent with the hedging products available in the market. However, the conventional ‘on the day’ approach has a lower risk of creating distortions. We note that one of the arguments for the averaging approach is that any distortions it may introduce would work themselves out over repeated future regulatory cycles. This argument may not apply in the case of ARTC, since the relatively short asset life derived from the weighted average remaining mine lives may not allow for sufficient repeat regulatory periods.

In Castalia’s view, the appropriate (and conventional) methodology is as follows:

- **Risk-free Rate**—calculated using the 10-year tenor Commonwealth Government Bond (CGB) yields and averaged across 20 days immediately before the start of the regulatory period. As at 03/03/16 the risk-free rate is equal to 2.45 percent; and
- **Debt Premium**—calculated using the difference between the risk free rate and a twenty-day average of the 10yr yield on Australian nonfinancial corporation (NFC) bonds as published by the Reserve Bank of Australia (RBA)¹.

Given that the RBA publishes NFC bond data based on observations at the end of each month, a daily estimate of NFC bond yields will be interpolated (using the number of business days between month-end observations) for the purpose of calculating a twenty-day average. The twenty-day average should be based on the twenty business days prior to the most recent published month end NFC bond yield.

We agree with Synergies’ estimate of allowance for debt raising costs of 0.095 percent.

3 Market Risk Premium

The market risk premium (MRP) is the difference between the expected return on a market portfolio and the risk free rate. The MRP is not observable and, therefore, prone to estimation error. In the 2011 HVAU, ACCC applied a MRP of 6 percent. This was based on historical MRP estimates, current studies of Australian market practitioners, and regulatory precedents.

Synergies have proposed to increase the MRP from 6.0 percent in the 2011 HVAU to 7.9 percent. Synergies have used both historical and forward looking studies to derive their estimate, based on the approach used by IPART and the ERA. As Synergies explain:

¹ Aggregate Measures of Australian Corporate Bond Spreads and Yields, <http://www.rba.gov.au/statistics/tables/>

“In effect, it puts 50 per cent weight on historical averages and 50 percent weight on forward looking estimates, which is similar to the approach applied by IPART. This is also similar to the estimate proposed by the ERA in its Draft Determination for rail networks...”

While there is no perfect way to predict the MRP for the next regulatory period, we think it is necessary to ask which approach would be most likely to minimise error. Forward looking estimates are theoretically attractive, but because they require forecasts of cash flows of market participants, tend to suffer from very high estimation errors. Historical long-term averages have considerably lower margin of error, but may be less reflective of specific market conditions over the next regulatory period. However, whatever the weakness of either method, an arbitrary 50/50 application of both methods does not improve forecasting accuracy.

The value Synergies have proposed is not aligned with recent regulatory decisions, which range between 6.0 percent and 6.5 percent. The ACCC have used a value of 6.0 percent in its recent decisions on NSW State Water and Telstra (as well as the 2011 HVAU), while the AER have used an MRP of 6.5 percent in its last ten decisions². As the AER state in their Rate of Return Fact sheet in April 2015:

“Our point estimates for the market risk premium (MRP) and equity beta are derived after considering a range of evidence. We adopted a MRP of 6.5 per cent”

This is clearly a well-researched subject. The Synergies report does not add to the available empirical understanding of the topic, and Castalia is also not in a position to make a further contribution. Given the empirical uncertainties, the key question is what are the risks of accepting any given estimate of MRP as a predictor of MRP over the next 5 years?

In our view, there is sufficient evidence that the MRP used in the 2011 HVAU—6 percent—provided adequate remuneration for ARTC equity. ARTC performed well, and during the last 5-year period was both able to fund a substantial investment program and secure debt financing at low risk rating. We do not see any compelling reason to expect that the equity markets will be any further from their long-term equilibrium in the next 5 years than they were in the last 5 years. On this basis, the current estimate of the long-term MRP used in the 2011 HVAU remains a reasonable basis for setting ARTC’s cost of equity. It is within the reasonable range used by the ACCC and the AER. By definition, a long-run estimate of MRP which reflects the long-range value to which the market returns can be expected to have a stable value and should only be changed if compelling new evidence emerges. Synergies stated in their report:

“The range of estimates us usually between 6% and 8% although there is considerable variance in the estimates”

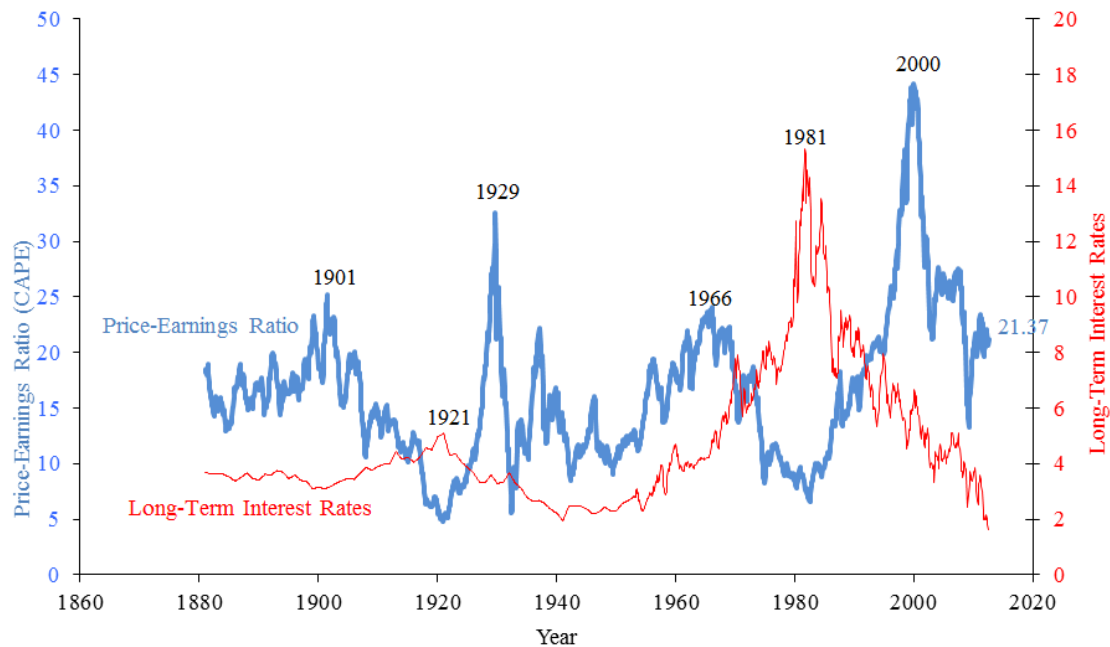
In fact, the range of estimates on using historical long-term averages is 5.5% to 6.5%³. Recent performance of equity markets, if anything, is consistent with the lower end of the long-term range. As the figure below shows, current price/earnings ratios—essentially, market assessment of future growth and risk—are broadly in line with the long-term averages and in line with the movements in risk-free rate. All other things being equal (including no change in the MRP, lower risk free rate should translate into higher company valuations: that is, higher price/earnings ratios). Current risk free rates are at historical lows, while price/earnings ratios are close to long-term averages. This

² Final decisions for each of the NSW electricity distribution businesses (Ausgrid, Endeavour and Essential Energy), TransGrid, Directlink and TasNetworks, and ‘preliminary’ decisions for Ergon, Energex and SA Power Networks.

³ See for example IPART Final Report: Review of Water Prices for Sydney Desalination Plant Pty Ltd, February 2012

indicates that investors are currently demanding less than the long-term risk premium for investment in equities.

Figure 3.1: Price/Earning Ratios and Long-term Interest Rates



Source: Standard and Poors

Since the estimate used in the 2011 HVAU remains within the range of reasonable estimates, and since there is no new information to suggest that a better estimate is possible, Castalia’s view is that MRP should remain at 6.0 percent.

4 Gamma

Gamma represents the value of imputation credits on company dividends. Imputation credits arise because Australian personal taxpayers receive a tax credit for the company tax paid that is embedded in company dividend distributions. Gamma is included in the WACC calculation because imputation credits are valued by investors as they can offset personal income tax liabilities.

In the 2011 HVAU, the ACCC applied a gamma of 0.45. This value remains consistent with the academic reviews from experts in the field, empirical evidence, and engagement with Australian Tax Office. Similarly, the QCA used a gamma of 0.47 in both the Aurizon and Queensland Rail decisions. As explained by the QCA:

“Combining the preferred (conservative) estimate of the utilisation rate of 0.56 with an estimate of 0.84 for the distribution rate gives a conservative (reasonable lower bound) estimate of 0.47 for gamma”

Synergies have recommended a gamma of 0.25, consistent with the IPART view, and more recently, confirmed by the Australian Competition Tribunal (ACT) decision for the NSW and ACT electricity distribution utilities. However, there is still considerable

uncertainty over the data, and it is not obvious that the ACT's analysis applied to the electricity distribution utilities provides compelling arguments for changing gamma applied to ARTC. ARTC operates in a different sector that has a different set of investors. Strategic investors in mining infrastructure are more likely to be Australian entities able to take advantage of imputation credits.

Again, given the considerable empirical uncertainty, the absence of compelling new evidence would suggest that the value used in the 2011 HVAU should be retained to ensure regulatory certainty. This value can be reconsidered during future 5-year reviews if new evidence emerges.

5 Gearing

Leverage and credit rating are closely related. In the 2011 HVAU, ACCC set a gearing level of 52.5 percent as appropriate given operational risks.

Synergies recommend that ARTC's current benchmark gearing ratio should be retained.

We agree that the 52.5 percent gearing ratio is prudent and should continue to be used. We note that this low level of gearing is consistent with a low risk rating for ARTC debt. For example, in December 2010, ARTC issued a \$200 million 7-year unsecured bond for which Moody's applied an Aa2 rating, citing ARTC's strong financial profile among other matters. This rating is equivalent to a Standard & Poor's rating of AA, seven notches above the BBB rating used in the 2011 HVAU.

However, given ARTC has issued A-grade debt, it may be prudent to lower the benchmark gearing ratio to 50 percent (to reflect an A-rated regulated business) and thus raise its benchmark credit rating to A-grade—resulting in a lower debt margin.

6 Tax Rate

Consistent with the 2011 HVAU, the tax rate proposal by Synergies is 30 percent. This is the standard regulatory tax rate.

7 Asset Beta

The setting of the asset beta in the 2011 HVAU is an example of the art, rather than the science, of determining an appropriate asset beta.

In its Draft Decision **on the 2011 HVAU**, the ACCC accepted 0.5. However, the ACCC changed its view in the subsequent Position Paper, lowering the asset beta to 0.45. In its final determination, the ACCC settled back on a value 0.5.

At the time the ACCC noted that ARTC was embarking on a \$2 billion capital expenditure program. The ACCC was concerned about the effect a lower beta could have on ARTC's willingness to invest, and ability to obtain funding to invest. ARTC's own consultants (Synergy) opined with respect to the 2009 WACC Review:

"The firm with the greater portion of growth opportunities would have the higher equity beta. Overall, their empirical results strongly support this hypothesis. ARTC has a significant capital investment program over the next five years that could be regarded as growth opportunities."

Synergies report argues for an increase in the asset beta from the 0.5 used in the 2011 HVAU to 0.54—leading to an equity beta above 1.2, a higher risk than the market.

In fact, there are four compelling reasons to apply a lower beta in the 2016 HVAU:

- First, **ARTC has much lower risk now** that it has completed the bulk of the capital expenditure program—one of the main arguments for keeping its asset beta higher than the comparable regulated rail companies in Australia
- Second, the proposed equity beta of 1.13 is an outlier compared to regulated businesses that like ARTC have a similar **mix of long term commercial contracts combined with regulated prices**. The Sydney Desalination Plant (SDP) is such an entity and has an equity beta of 0.7
- Third, there is no reason why ARTC would be riskier than Aurizon or Queensland Rail which have an asset beta of 0.45 applied by the QCA. If anything, ARTC is less risky given the high level of diversification across different mining operations and higher quality of integration of the supply chain through the operation of the Hunter Valley Coal Chain Coordinator
- Fourth, ARTC are proposing to estimate a remaining mine life based on an economic assessment of each mine. This leads to a **very conservative estimate of the expected rail asset lives and thus accelerated depreciation**. This would substantially reduce ARTC's asset stranding risks and the variability of its revenues. Aurizon and Queensland Rail have longer asset lives.

All of these factors combine to ensure that ARTC has highly stable cash flows that are resilient to economic downturns and should lead to an equity beta that is lower than the market.

We expand on these four reasons in the remainder of this section. We also compare the proposed ARTC equity beta with electricity and gas businesses, and Telstra. Finally, we note the effect of the use of different approaches to the re-levering formula on the final equity beta.

7.1 Completion of investment program

With the completion of ARTC's major investment program, ARTC's asset beta now overstates its current operational risks. This is because in the 2011 HVAC, the ACCC explicitly acknowledged that the equity beta was a significant determinant of ARTC's willingness to undertake the capital expenditure program and its ability to raise finance.

Given that the program is now complete, there is no basis for the current equity beta to be higher than that in the 2011 HVAC.

7.2 Comparison with SDP

While comparisons with similar businesses are useful, for regulated businesses, many of the commercial risks are defined by the regulatory framework rather than by the nature of the business that the company is in. To a significant extent, regulations mute business risks, while the framework itself may introduce some new risks. As an example, a business regulated within a revenue cap framework has a very low risk of a revenue shortfall compared to an unregulated business, regardless of how variable the level of demand may be.

ARTC is likely to be one of the least risky regulated assets in Australia, with low non-diversifiable risks underpinned by:

- Long-term take-or-pay contracts with investment grade off-takers
- Considerable level of discretion over OPEX spending
- Negligible asset stranding risk (including accelerated depreciation through a conservative approach to the remaining mine life).

In this context, it may be useful to compare ARTC risks to the Sydney Desalination Plant (SDP) risks. SDP operates on a long-term contract with Sydney Water. In its 2012 Determination, IPART assessed SDP as having equity beta of between 0.6 to 0.8, with a midpoint of 0.7. The equity beta of 0.7 was assessed at 60 percent gearing ratio, significantly above the level of ARTC. This makes SDP a useful low-risk regulatory benchmark.

In setting up regulatory frameworks, policy makers face a large array of design choices and thus all frameworks are a complex interaction of many design features and trade-offs, and need to be considered as an overall whole and not as a series of unrelated components.

In all frameworks, the key risks are either:

- Allocated to the regulated business
- Allocated to customers; or
- Shared between the business and customers.

All Australian regulatory frameworks aim to enable the service provider to recover the full reasonably efficient cost of the service. Hence, many of the risks are some type of forecast risk. These arise because regulatory frameworks usually involve limiting—for a period of time—regulated firms from adjusting prices, inputs and outputs to adjust to changing circumstances. For example, a regulator may set prices for a period to recover forecast cost levels whereas in a competitive environment a firm is free to adjust prices to respond to competition, changes in demand or changes in costs.

ARTC faces none of the risks described above. More specifically, key risks for regulated businesses may be categorised as:

- **Revenue risk**—that demand for the service and thus revenue is different to that forecast
- **Expenditure risk**—that the required service levels and outputs need more or less capital expenditure or operating expenditure than forecast arising from either volume or price variations
- **Inflation risk**—that actual inflation varies from that forecast
- **Stranding or bypass risks**—that demand for certain services falls to zero or users switch to alternative options
- **Regulatory risk**—that the regulator makes an inappropriate decision, for example, on the level of costs or returns required by an efficient firm to perform the service
- **Political risk**—that Government actions increase costs or decrease revenues; and
- **Force majeure risks**—that major unforeseen events outside of the control of the service provider and customers arise, for example natural disasters.

The risk allocation under the proposed 2016 HVAU is such, that almost all of the above risks rest with the customers rather than ARTC.

Careful comparison with the risks faced by SDP is instructive in understanding the risk faced by ARTC. Sydney Desalination Plant (SDP) is a private sector water utility that provides water security and water production services to Sydney Water under a long term contract. However, the prices under the contract are regulated by IPART but not the contract itself. In many ways this is similar to ARTC's long term contracts with its customers.

IPART as a regulator operates under a non-prescriptive framework and has a high degree of discretion. A unique feature of the framework is that the relevant Minister can issue IPART with terms of reference (TOR) for a regulatory review that IPART must have regard to, but cannot override IPART's statutory objectives. By contrast, ARTC's undertaking is assessed by the ACCC within a politically independent policy framework. Moreover, given the voluntary nature of the undertaking, the ACCC has limited powers to force ARTC to accept unfavourable outcomes.

Revenue risks

SDP is regulated under a price cap but actually has almost no revenue risk from volume fluctuations. This arises because the tariff structure has a fixed component—an availability charge—that recovers all fixed costs of SDP and a usage charge that recovers all of the variable costs of water production. This arrangement stems from the TOR which asks IPART to make SDP financially indifferent to whether it produces water or not—important as its main role is water security in prolonged periods of low rainfall.

This is an example of how the tariff structure can be used to reduce or eliminate revenue risk from volume fluctuations by careful design of the fixed and variable components. SDP's revenue risk is similar to the risk faced by ARTC. Both are, in effect, close to zero.

Expenditure risks

SDP capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for unforeseen increases.

There is a small risk sharing mechanism for electricity costs where SDP can pass costs increases above a certain threshold to customers. However, SDP must bear the first 5 per cent of cost increases and can only pass 90 per cent of any further cost increase to customers.

SDP's expenditure risks are significantly higher than ARTC, as with the exception of a small pass through of energy costs, SDP takes all of the risk for all other operating and capital expenditure that actual costs will be higher (or lower) than forecast. By contrast, ARTC faces no CAPEX expenditure risk due to the process of CAPEX approval by the RCG, while OPEX expenditure is currently a pass-through, and any OPEX incentive arrangement is going to provide handsome remuneration for ARTC.

Inflation risk

Similar to ARTC, SDP is fully protected against inflation risks. SDP's prices are expressed in real terms and prices and the RAB are escalated by actual inflation. ARTC's RAB is similarly escalated by inflation.

Stranding or bypass risks

SDP doesn't face any stranding or bypass risks for the duration of the current long term take or pay contract with Sydney Water. However, since the economic life of the plant is

greater than the term of the contract, there is a hypothetical stranding risk in the longer term. Similarly, ARTC faces no stranding risk for the duration of the current Access Holder Agreements. However, since the economic life of the rail assets is higher than the term of the contract, there is a similar hypothetical stranding risk at the end of the period. However, ARTC enjoys accelerated depreciation of its assets compared to SDP.

Stranding or bypass risk assessment

While SDP's stranding or bypass risks are about the same as ARTC's over the next regulatory period, they are higher in the long run.

Regulatory risk

SDP is regulated by IPART under a framework that is more stringent than the oversight of ARTC by the ACCC under a voluntary undertaking. There is no merits review available to Sydney Water for IPART decisions, while ARTC effectively has the power to delay submission.

There is nothing in the legislation to prevent IPART, for example, optimising SDP's assets and setting a lower RAB—except common sense and regulatory precedents. The legislation does allow the relevant Minister to issue a TOR for any regulatory review that IPART must have regard to in its determinations but these do not override the statutory matters that IPART must take into account.

SDP's regulatory risks are greater than ARTC's as a result of the potential uncertainty created by the Minister's ability to influence the process through the issuance of terms of reference.

Political risk

In contrast to the ARTC voluntary access undertaking, the SDP determination contains no explicit review events or reopeners or pass-through provisions. As a result, events such as a general increase in corporate tax would have to be specifically considered on a case by case basis by IPART. Logically, IPART should approve such a request, but its discretion to even consider the matter is unfettered. They would also have complete discretion over any materiality limits or processes that might apply although they would be expected to follow precedents from other regulators.

We also note that the ability of the Minister to issue a TOR to IPART might be seen as a political risk although we have treated it as a regulatory risk.

The lack of any review events, even for increases in Government charges, means that the political risks facing SDP are slightly greater than those faced by ARTC.

Force majeure risks

Unlike the ARTC access arrangement, there is no review for a force majeure event in the SDP determination by IPART. If such an event happened, IPART as a matter of logic might well agree to vary the determination but would be under no obligation to even consider the matter. They would also have complete discretion over any materiality limits or processes that might apply although they would be expected to follow precedents from other regulators.

The lack of any explicit force majeure provisions means that the risks facing SDP are slightly greater than that faced by ARTC.

Summary

In Table 7.1 we summarise our comparison of the risks of ARTC and SDP.

Table 7.1: Risk Comparison of ARTC with SDP

Business Risk	ARTC	SDP
Revenue Risk	ARTC is regulated under a revenue cap which protects ARTC from volume risk	SDP is regulated under a price cap but actually has almost no revenue risk from volume fluctuations due to its tariff structure.
Expenditure Risk	Operating expenses are passed through to network users with considerable discretion and little oversight	SDP capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or prescribed pass thru mechanism for unforeseen increases.
Stranding or bypass Risks	ARTC faces no stranding risk for the duration of the current Access Holder Agreements	SDP doesn't face any stranding or bypass risks for the duration of the current long term take or pay contract with Sydney Water.
Regulatory risk	ARTC is regulated under a voluntary access undertaking that may be revoked	SDP is regulated by IPART under a framework that is more stringent than the oversight of ARTC by the ACCC under a voluntary undertaking
Equity Beta	1.13 (Synergies) 0.63 - 0.83 (Castalia)	0.6 – 0.8 (accepted range)

Overall, we conclude that the equity beta range of 0.6 to 0.8 identified for the SDP is likely to be equally appropriate, or even high, for the range to be applied to ARTC given the similarity of the commercial risks that arise through the regulatory framework.

7.3 Comparison with Aurizon and QR

We now turn to a comparison with two regulated businesses—Aurizon and QR—that have similar characteristics to ARTC but some differences in the regulatory framework. All three are owners and operators of below rail infrastructure.

Queensland Rail is regulated under a price cap which exposes it to movements in the economy. Although ARTC and Aurizon are regulated under a revenue cap, which ensures revenue certainty within the regulatory period, there are a number of mitigating factors that substantially reduces ARTC's risk

In Table 7.2 we summarise the differences in risks faced by ARTC, Aurizon and QR. We use the key risks defined in the previous section to assess the way in which the commercial risks arise through the regulatory frameworks

Table 7.2: Risk Comparison of ARTC with Aurizon and QR

Business Risk	ARTC	Aurizon	Queensland Rail
Revenue Risk	<ul style="list-style-type: none"> ▪ ARTC is regulated under a full revenue cap which protects against volume risk ▪ ARTC has no obligation to invest ▪ The bulk of volumes in ARTC’s network are under Long Term Take or Pay Agreements ▪ ARTC has evergreen 10 year contracts which must be renewed every year to keep the renewal right alive—effectively the contract term with operating mines is almost always 10 years ▪ There is a high level of customer diversification (50 mining operations) which are concentrated within a relatively small network ▪ ARTC is supported by the HVCCC to help maximise network throughput and optimise the supply chain ▪ ARTC is given the flexibility to adjust tariffs annually to reflect expected changes in costs, capex, depreciation, and volumes ▪ 	<ul style="list-style-type: none"> ▪ Aurizon is given a rolling 20-year life for setting depreciation and for certain assets actual useful life—QCA has rejected an onerous weighted mine life approach ▪ Aurizon’s revenue cap operates on a per coal system basis with less cross guarantee of revenue ▪ Aurizon manages a much larger network, with longer distances and its users face higher transport costs ▪ Aurizon has an obligation to invest, but can negotiate charges with users ▪ Aurizon has much shorter contracts—that only need to be renewed by application between 1 and 3 years prior to the expiry of the contract ▪ Certain Aurizon access agreements provide a discount for early relinquishment of access rights—this is not the case with ARTC 	<ul style="list-style-type: none"> ▪ Regulated under a price cap that exposes revenues to movements in the economy ▪ Lower diversification—production concentrated across 25 mines ▪ Longer network distances and much higher network charges
Expenditure Risk	<ul style="list-style-type: none"> ▪ No cap on operating expenditures ▪ Operating expenses are passed through to network users with considerable discretion and little oversight ▪ Receives significant economy of scale benefits from its Interstate network ▪ ARTC seeking to allocate more overhead costs onto Hunter Valley 	<ul style="list-style-type: none"> ▪ Operating expenditures capped over the regulatory period under the CPI minus X approach ▪ Operating cost allowance subject to stringent benchmarking 	<ul style="list-style-type: none"> ▪ Under a price cap, operating costs are capped ▪ As with Aurizon, the QCA subjects the cap to a stringent efficiency review

Business Risk	ARTC	Aurizon	Queensland Rail
Stranding or Bypass Risks	<ul style="list-style-type: none"> Conservative mine life assessment based on an economic assessment of remaining mine life Operates a small integrated network ~ 350kms—with significant cross system traffic There is no feasible way to reach the Port of Newcastle except via the ARTC network—this will continue to be the case for new mine developments 	<ul style="list-style-type: none"> Operates a much larger rail network (over 2500kms)—with a number of different networks, but with limited cross system traffic Aurizon’s network is more regional and remote Aurizon’s revenue cap operates on a per coal system basis and provides less cross guarantee of revenue—exposing each network individually to stranding risk Aurizon faces the risk that future coal developments in new Queensland coal basins do not use its network—there are plans among coal producers to build and own a new rail line to Abbot Point 	Operates a long skinny network, in a rural area with high costs
Regulatory Risk	<ul style="list-style-type: none"> If capital expenditure has been endorsed by the RCG, the ACCC will not undertake an ex post assessment of whether the expenditure was prudent. ARTC’s undertaking is silent on future RAB optimisations ARTC is regulated under a voluntary access undertaking that may be revoked 	<ul style="list-style-type: none"> Exposed to the risk that the QCA does not approve the full amount of any new capital expenditure for inclusion in the Regulatory Asset Base (RAB) QCA maintains the right to reduce the RAB on the basis of a lack of utilisation or on the basis of a condition assessment. QCA uses a less favourable re-levering formula than the ACCC that for a comparable asset beta results in an equity beta some 20% lower 	
Inflation Political Risk	There is little difference in these risks		
Force Majeure Risk	There is little difference in this risk between Aurizon, the relevant part of the QR network and ARTC		
Equity Beta	1.13 (Synergies) 0.63 - 0.83 (Castalia)	0.8	0.8

A number of network users have argued—quite persuasively—that Aurizon’s equity beta of 0.8 was too high when compared to similar entities in the energy, water and telecom sectors.

Our comparison suggests that the equity beta applied to Aurizon should be the absolute “ceiling” for ARTC and that an appropriate range for the asset beta would be in the range of 0.3 to 0.4 (or an equity beta of 0.63 to 0.83)—consistent with the stable returns given to regulated utilities.

Further, QCA considered that the asset beta given to Aurizon was sufficiently high to compensate them for the risks of operating the West Moreton system—including the risks associated with having just two customers connected.

7.4 Comparison with Electricity Networks and Telstra

In this section we compare the proposed ARTC equity beta with other regulated businesses in Australia, using use the latest decisions and approvals for:

- Electricity networks regulated by the AER under the National Electricity Act. We use the latest decision for Ausgrid, a NSW electricity distributor made in April 2015 for the period 2015 to 2019 as representative of recent decisions made by the AER; and
- Telstra’s fixed line services regulated by the ACCC under Part XIC of the Competition and Consumer Act. The ACCC made a final access determination in October 2015 for a three-year period ending June 30, 2019.

For the two businesses we assess their relative risk compared to ARTC.

In Table 7.3 we summarise our results:

Table 7.3: Relative risks—Ausgrid, Telstra and ARTC

Risk	Ausgrid	Telstra
Revenue	-	++
Expenditure	++	++
Inflation	-	+
Stranding and Bypass	-	+
Regulatory	-	+
Political	-	+
Force Majeure	-	+
Summary	+	++

† = greater risk than ARTC, †† = significantly greater risk

- = Case study less risk than ARTC, -- = significantly less risk

* = No significant difference with ARTC

While our analysis is high level, we see no grounds for arguing the risk embedded in the regulatory framework that applies to RTC is materially higher than in the Australian electricity regulatory framework or that applying to Telstra.

In fact, on the basis of the risks allocated by the regulatory framework, ARTC is at least less risky than Ausgrid and Telstra, and is certainly no riskier than any of them. Despite this, ARTC have proposed an equity beta of 1.13, while the AER and ACCC have determined Ausgrid and Telstra's equity beta to be 0.7.

7.5 Ausgrid

Electranet is an electricity business that owns and operates a large electricity distribution network in NSW. It is regulated by the AER under the National Electricity Law (NEL) and National Electricity Rules (NER). The NER is highly prescriptive and detailed and considerably limits the discretion of the AER. All AER regulatory decisions are subject to a merits review by the Australian Competition Tribunal.

The Ausgrid April 2015 determination is the latest from the AER and all recent electricity transmission and distribution decisions use a common equity beta 0.7. This was reduced from 0.8 in 2009⁴.

7.5.1 Revenue risks

The AER has determined that Ausgrid (and all electricity transmission and distribution businesses) are regulated by a revenue cap with a full true-up mechanism that is NPV neutral.

As such, Ausgrid has no risk of revenue variations arising from volume fluctuations and the level of risk is similar to ARTC—which is effectively zero.

7.5.2 Expenditure risks

Ausgrid's capital and operating expenditure allowances are set at the beginning of each regulatory control period. There is no explicit provision for variation or a prescribed pass thru mechanism for unforeseen increases (or decreases) in operating or capital expenditure. There is a provision for the capital expenditure allowances to be increased for contingent projects that are triggered by certain events such as an above forecast increase in demand or connection request from a major load or generator.

There is an efficiency benefit scheme that allows operating cost savings to be shared between Ausgrid and its customers.

Thus Ausgrid's expenditure risks are significantly higher than ARTC given that it assumes all the risk in the event that its actual costs are higher than forecast. By contrast ARTC has considerable discretion to adjust its reference tariffs to pass on such costs.

⁴ AER (2013) Better Regulation—Equity beta issues paper, page 7

7.5.3 Inflation risk

Similar to ARTC, Ausgrid is fully protected against inflation risks as their prices are expressed in real terms and the prices and the RAB are escalated by actual inflation.

7.5.4 Stranding or bypass risks

Ausgrid faces some commercial bypass risk—for example, major loads that are located near major generators could elect to connect to the transmission grid. This is because electricity networks have a high degree of common costs that are allocated to customers. However, Ausgrid can mitigate this risk, through its price structure—for example using cost reflective prices for large users.

Ausgrid does not face any significant stranding risks. The regulatory framework does not allow for assets to be optimised out of the RAB. Thus stranding and bypass risks are similar.

7.5.5 Regulatory risk

Ausgrid is regulated by the AER under the prescriptive NER framework and the AER is subject to a merits review, as is the ACCC.

There isn't clear evidence that a more prescriptive framework necessarily lowers regulatory risk although a well-designed prescriptive framework that limits regulatory discretion should do so. Further it is also likely that a merits review—even the NEL limited merits review—has a role to play in correcting regulatory error.

Ausgrid's regulatory risks are essentially the same as ARTC.

7.5.6 Political risk

In a similar manner to the ARTC access undertaking, the Ausgrid determination contains explicit cost pass mechanisms for a number of events. These provide a high degree of protection from political risks—that is, Government actions that increase costs through changes to regulatory frameworks, service standards, or taxation.

For this reasons, the political risks of Ausgrid and ARTC are similar.

7.5.7 Force majeure risks

The Ausgrid determination contains explicit pass through provisions for force majeure events such as terrorism or natural disasters. These provisions are similar to those in the ARTC access undertaking and thus we see these risks as equivalent.

7.6 Telstra

Telstra's fixed line services are regulated by the ACCC under Part XIC of the Competition and Consumer Act. We have also included an analysis of the risk allocation in the regulatory framework for the 2015 access determination by the ACCC for Telstra's declared fixed line services. Telstra's access determinations have very different characteristics to ARTC as they determine the terms and conditions for access to only part of the infrastructure of a vertically integrated business with both retail and network services. Further, the declared fixed line services are clearly subject to competition to a far greater degree than ARTC. However, it is instructive to look at Telstra's risks precisely because the equity beta requested by ARTC (1.13) is greater than the beta (0.7) determined by the ACCC for Telstra's declared fixed line services.

7.6.1 Revenue risks

Telstra is fully exposed to revenue risk given that it is subject to a price cap and further that the ACCC—and not Telstra—sets the actual prices. This means that Telstra cannot even protect itself against revenue risk from competition by changes to the price

structure such as the fixed and variable split or Ramsey pricing for less demand sensitive services. Further the services are subject to competition so Telstra takes all of the forecast risk.

Clearly Telstra has a significantly greater exposure to revenue risk than ARTC

7.6.2 Expenditure risks

Telstra is significantly more exposed to expenditure risk when compared to ARTC as the operating and capital expenditure allowances are set in advance and there is no adjustment or pass through mechanism.

7.6.3 Inflation risk

Unlike ARTC, Telstra is only partially protected from inflation risks in that while the RAB is rolled forward using actual inflation, prices are fixed in nominal terms for the three year determination period.

7.6.4 Stranding or bypass risks

Telstra has a significantly greater risk of bypass and asset stranding than ARTC as its fixed lines services are fully exposed to competition from mobile voice and data services, the Optus HFC network, and other fibre networks.

7.6.5 Regulatory risk

Telstra's risk is significantly greater under the telecommunications regulatory framework than under the CCA, given that the Minister can override an ACCC determination.

7.6.6 Political risk

Telstra's risk is greater than ARTC as the determination does not contain pass through provisions for such Government actions as a change in taxation or service standards.

7.6.7 Force majeure risks

There is no specified treatment of force majeure events in the Telstra determination so it faces greater risks than ARTC.

7.7 Asset lives

The framework used to set regulatory depreciation under the building block methodology is substantially different to the actual useful life of ARTC's assets. For example, under the proposed economic mine life calculation proposed by ARTC, the remaining asset life is 16 years, this is much lower than the actual useful life of the rail network which if adequately maintained would operate almost indefinitely.

This substantially reduces ARTC's stranding risks and acts as a subsidy for future network users once the RAB has been fully depreciated. We note, that the approach proposed by ARTC is lower than what was already a conservative mine life assessment. For example, using current production rates, only marketable reserves, and including only current mines gives a mine life of 20 years. This excludes any investments made to expand the reserves of existing mines and also rules out any new mine developments. This is despite a number of public announcements for new mine investments

7.8 Impact of Re-levering Formula

We note under the Monkhouse re-levering formula (used by the ACCC) any given asset beta results in a higher equity beta than would be derived from other, equally valid re-levering formulas. For example, the QCA uses a more conservative re-levering formula, that leads to a much lower equity beta. For example, the QCA used an asset beta of 0.45 for Aurizon and QR, leading to an equity beta of 0.8.

This difference between two equally valid approaches, suggests that the ACCC should be cautious in adopting one translation approach over the other. It also suggests that—given the fine art of judging risk and deriving asset betas and equity betas from limited empirical evidence—the ACCC would be justified in using a lower value for the asset beta to ensure that the equity beta remains plausible. Given the low debt equity ratio and the low level of operating risk, equity invested in ARTC intuitively should be considerably less risky than the equity invested in the overall Australian market. This indicates that equity beta should be considerably less than one. Certainly, the Queensland experience allows us to observe that setting an equity beta for below-rail operators at 0.8 does not appear to cause any funding issues for those businesses.

7.9 Summary

There is considerable evidence that the proposed asset beta and equity beta for the 2016 HVAC are overstated.

- The large capital expenditure program that influenced the ACCC’s 2011 decision has been completed
- Comparisons with businesses with a similar contractual and regulatory structure (SDP) and in a similar industry (Aurizon and QR), and with electricity networks and Telstra’s fixed line network all show ARTC to be an outlier.
- ARTC’s commercial asset stranding risks are mitigated by the use of accelerated depreciation; and
- The material differences that arise from use of two equally valid re-levering formulas suggest that the ACCC should be cautious in adopting an upper value

Finally, it is implausible that ARTC, with its low commercial and operating risk, and low debt gearing should have an equity beta greater than the market as a whole.

8 Inflation

Inflation is used to translate a nominal WACC to a real WACC. ARTC’s rate of return calculation uses a real WACC and a nominal RAB—where the same inflation assumption for WACC is used in index the RAB.

The standard regulatory approach has been to set inflation at the mid-point of the RBA inflation target of between 2 and 3 percent. This was applied used 2011 HVAU and has also been suggested in Synergies report.

In its submission, ARTC suggested using actual inflation (excluding housing). Based on the latest quarterly CPI index, this equates to 1.65 percent. Lower inflation leads to a higher real WACC, but as long as the RAB is indexed at the same rate, upholds financial capital maintenance. In other words, using lower inflation rate will front-load cash flows for ARTC, without affecting the overall return on and of capital. Using actual inflation rather than expected inflation is a non-standard regulatory approach. We are in agreement with the view expressed by Synergies that 2.5 percent remains the appropriate forward-looking forecast.