A Comparison between the WACC Proposed for Aurizon Network and Normalised Comparators

2017 Aurizon Network DAU

August 2018

NineSquared

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NineSquared is a specialist economic consulting and commercial advisory firm focused on helping governments and companies make great decisions and achieve your goals and objectives.

Our principals and staff are experienced, senior level practitioners who have worked in and advised government and private sector clients about a range of commercial and economic issues, primarily relating to transportation. Broadly, our expertise lies in the fields of transport and regulatory economics, policy development and analysis and advising on commercial arrangements between government and the private sector as well as arrangements between companies operating within regulated environments.

Our combined public and private sector experience means that we are well placed to provide our clients with deep understanding of both the public and private sectors and the interface between them.

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1. Introduction

1.1 Background

In December 2017, the Queensland Competition Authority (QCA) published its draft decision responding to Aurizon Network's 2017 draft access undertaking (DAU) for the Central Queensland Coal Network. The QCA's draft decision was to not approve the DAU and sets out its preliminary assessment of the DAU including its reasons for non-approval.

Amongst other things, the QCA's reasons included a materially different assessment of an appropriate weighted average cost of capital (WACC) to be used in reference tariff and allowable revenue calculations.

Aurizon Network's subsequent response to the QCA draft decision included a detailed analysis of the QCA's WACC assessment. Amongst other things, it considered that the QCA's WACC was an outlier when compared with other regulatory decisions. Aurizon Network considered that a consistent approach (across regulators) is important to ensure a proper allocation of capital occurs and capital distortion is minimised.

Following the release of its draft report, Aurizon Network, in presentations to its investors, has further criticised the QCA's WACC estimate by comparing these with the (higher) WACCs derived by a number of different regulators in Australia[1]. The WACC comparators used by Aurizon were not normalised for timing differences and included entities which were not assessed as relevant comparators in the QCA's draft decision.

1.2 Purpose and Scope of this Study

NineSquared has been engaged by the QCA to re-estimate the WACC calculations used by other regulators for regulated entities with similar characteristics as Aurizon Network. The re-estimation is based on the assumption that each of the regulators were estimating its WACC using a proposed averaging period up to and including 30 June 2017. The task involved:

- Identifying relevant Australian regulated firms that may be considered to be comparators for Aurizon Network;
- Examining recent regulatory decisions for the relevant comparators;
- Undertaking analysis to 'normalise' WACC estimates obtained from recent regulatory decisions to account for specific factors that affect the overall WACC estimates that are not part of the underlying WACC estimation methodology applied by the relevant regulator; and
- Comparing the normalised WACC estimates of recent regulatory decisions with Aurizon Network's 2018 Response to the Draft Decision proposal and the QCA's recommended WACC estimate.

[1] Aurizon Network's comparison is presented in Attachment 1.

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The analysis is not intended to revisit the methodological basis of the claims of either Aurizon Network or the QCA. It is intended to compare the QCA's WACC estimate with that of other relevant regulatory decisions at the same period in time (June 2017). It focuses on comparing the key elements of the WACC proposed by QCA with comparable regulatory decisions to test the reasonableness of the QCA draft decision.

To facilitate the comparison of WACC estimates from comparable entities, WACC estimates have been 'normalised' to account for the impact of any timing differences on the:

- Risk free rate; and
- Debt risk premium.

This normalisation process has been undertaken with the intent of mirroring the methodology used by the individual regulators with the goal of replicating, to the best extent possible, the decision that regulator would have made at that time using its own WACC methodology.

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2. WACC parameter Normalisation

NineSquared's assessment of the WACCs (as estimated by Aurizon Network and the QCA) has been undertaken in four steps.

1	Selection of regulated Australian entities as comparators
2	Normalisation of time variant WACC components by applying uniform dates for the risk free rate and debt margin calculations
3	Comparison of the debt and equity WACC components of selected entities' and Aurizon Network's WACC component
4	Comparison of the revised WACC estimates between the selected entities and Aurizon Network (both QCA and Aurizon Network estimates)

2.1 Choice of comparators

This study is to compare the WACC estimated by the QCA for Aurizon Network with that of other relevant regulatory decisions. A comparator sample has been developed with reference to the QCA's Draft Decision which considered that Aurizon Network and regulated energy and water businesses share common attributes that will result in these firms having similar levels of exposure to systematic risk[2].

As outlined in the QCA's draft decision, Aurizon Network and regulated energy and water businesses are monopoly service providers, have a 'captured' customer base with resilient demand for the service, and are subject to cost-based regulation for pre-set periods, which largely insulates their cash flows.

Consideration has also been to the type of business operated, noting that, as illustrated in Figure 1, Aurizon Network operates a network business which links the coal producers to the ports and their customers.

Ideally a comparator company will have the following characteristics:

- regulated with a track record of regulated decisions allowing a comparative analysis to be performed
- large Australian regulated network infrastructure entities
- monopoly service providers with a resilient demand for the service
- subject to a regulatory decision within the last two years.

[2] Queensland Competition Authority, Aurizon Network's 2017 draft access undertaking, December 2017, p88.

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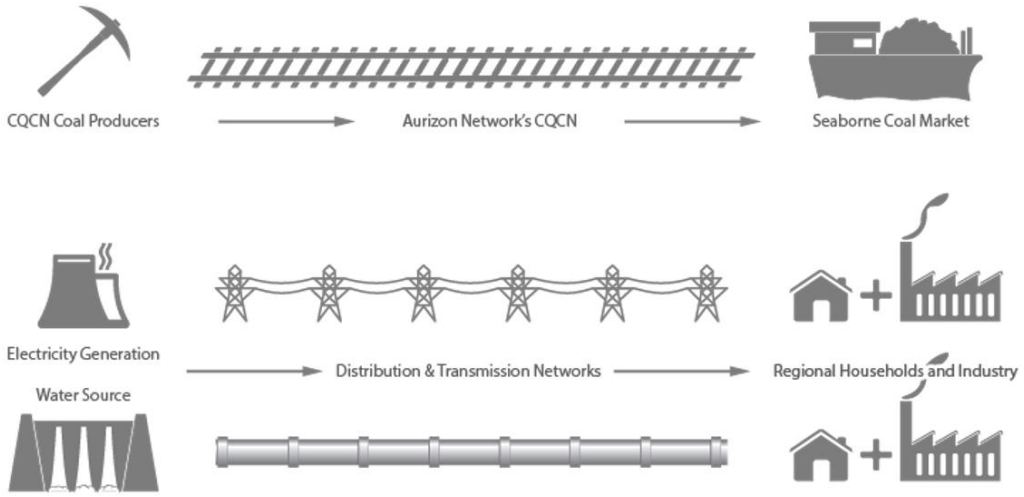
Figure 1 Underlying drivers for demand for Aurizon Network and other network industries



Source: QCA draft decision.

A total of 18 organisations were identified as potential comparators because they met three or more of the criteria identified, these organisations are summarised in Table 1.

Table 1: Potential Comparator Organisations and their Characteristics

Organisation	Regulator	Major Assets
Aurizon Network	QCA	Below rail network
ElectraNet	AER	Electrical distribution/transmission
DBCT	QCA	Port
DBNG Pipeline	ERA	Gas pipelines
AusNet Gas Services	AER	Gas pipelines
Powerlink	AER	Electrical distribution/transmission
ARTC – Hunter Valley	ACCC	Below rail network
TransGrid	AER	Electrical distribution/transmission
APA VTS Gas	AER	Gas pipeline
Water NSW - Murray Darling	IPART	Water pipelines and storage
SA Water	ESCOSA	Water pipelines and storage
Sydney Desalination Plant	IPART	Desalination plant
Water NSW - Coastal Valleys	IPART	Water pipelines and storage
Melbourne Water	ESC	Water pipelines and storage
Seqwater	QCA	Water pipelines and storage
Water Corp, Aqwest, Busselton	ERA	Water pipelines and storage
ARTC – Interstate Network	ACCC	Below rail network
Arc. Infrastructure	ERA	Below rail network
Pilbara Railway	ERA	Below rail network

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ARC infrastructure, Pilbara Railways and the ARTC interstate network have been excluded from the analysis because in the case of ARC and ARTC's interstate network they are subject to significant competition from road and in the case of Pilbara railways they are reliant on a single customer and therefore the demand for their services is not as resilient as the other comparators.

There is also some uncertainty as to the extent to which the seven water organisations meet the network infrastructure criteria. These entities own and operate water supply infrastructure, in addition to network services, to varying extents. Additionally, these entities operate within a government ownership model, Seqwater, for example, has its cost of debt set as part of the government's terms of reference for the price determination. We have not sought to isolate relevant business parts or undertake an in-depth risk assessment (as this was not part of the scope of work) and have included these organisations in the analysis. Based on this high-level analysis 15 organisations were selected for comparison purposes; the organisations and the most recent decisions are listed in Table 2.

Table 2: Selected Regulated Entities and Relevant Decision Date

Regulated firm	Regulator	Decision	Decision Date
Aurizon Network	QCA	UT5 Draft	Dec-17
ElectraNet	AER	2018-23 Draft	Oct-17
DBCT	QCA	UT3 Final	Nov-16
DBNG Pipeline	ERA	2016-20 Final	Jun-16
AusNet Gas Services	AER	2018-22 Final	Nov-17
Powerlink	AER	2017-22 Final	Apr-17
ARTC Hunter Valley	ACCC	2017 AU Draft	Apr-17
TransGrid	AER	2018-23 [3]	May-18
APA VTS Gas	AER	2018-22 Final	Nov-17
Water Corp, Aqwest, Busselton	ERA	Final Dec	Nov-17
SEQ Water	QCA	2018-21 Final	Mar-18
Water NSW - Murray Darling	IPART	Final Dec	Jun-17
SA Water	ESCOSA	2016 Determination Final	Jun-16
Sydney Desalination Plant	IPART	2017-22 Final	Jun-17
Water NSW - Coastal Valleys	IPART	Final Dec	Jun-17
Melbourne Water	ESC	Final Dec	Jun-16

NineSquared notes that broad assumptions have been used to identify appropriate comparators for this exercise. The identified comparators are not intended to reflect whether these entities are appropriate, or replace the in-depth analysis undertaken by the QCA, for estimating Aurizon Network's beta, and resulting WACC.

[3] The components on Transgrid's WACC were source from the Transgrid PTRM model dated May 2018.

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2.2 WACC Normalisation

Calculating a WACC for an organisation requires a detailed assessment of a number of components including:

- The debt equity ratio;
- The risk profile of the company from a debtor's perspective (debt rating) and associated debt margin;
- Risk profile of the industry within which the company operators (asset beta);
- The risk free rate;
- The proportion of the asset likely to be owned by people who can make use of franking credits (gamma);
- The expected tax rate; and
- The market risk premium (difference between the expected return on a market portfolio and the risk free rate).

These variables are then combined to determine the cost of equity, cost of debt and using a gearing model that can vary by regulator, the WACC.

For the purposes of this assessment, it has been assumed that all of the WACC elements will remain unchanged, including the calculation methodology, except for differences in the risk free rate and debt risk premium (or 'debt margin') to account for variances resulting from the timing of estimation. Changes to these variables flow through to both the cost of equity and cost of debt.

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2.2.1 Normalising the Risk Free Rate

To facilitate the comparison of the risk free rate (RFR) component of the WACC, the RFRs for each of the selected entities were 'normalised' to account for the impact of any timing differences. To achieve this, the analysis replicated the WACC estimation approach used by the relevant regulator when they made their decision assuming they had made their decision to be applicable using a proposed averaging period up to, and including, 30 June 2017. As detailed in the table below, this adjustment reduced the majority of the RFR estimates.

Table 3: Normalisation of Risk Free Rates

Regulated firm	Original Risk Free Rate	Normalised Risk Free Rate	Difference
Aurizon Network	1.90%	1.90%	N/A
ElectraNet	2.68%	2.44%	-0.24%
DBCT	1.82%	2.00%	0.18%
DBNG Pipeline	1.80%	1.97%	0.17%
AusNet Gas Services	2.73%	2.44%	-0.29%
Powerlink	2.85%	2.44%	-0.41%
ARTC- Hunter Valley	2.12%	2.44%	0.32%
TransGrid	2.85%	2.44%	-0.41%
APA VTS Gas	2.73%	2.44%	-0.29%
Water Corp, Aqwest, Busselton	2.25%	2.05%	-0.20%
SEQ Water	2.14%	1.78%	-0.37%
Water NSW - Murray Darling	2.60%	2.51%	-0.09%
SA Water	2.53%	2.44%	-0.09%
Sydney Desalination Plant	3.40%	3.35%	-0.05%
WaterNSW - Coastal Valleys	3.40%	3.35%	-0.05%
Melbourne Water	2.92%	2.98%	0.07%
AN response to DD	2.76%	2.76%	N/A

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2.2.2 Normalising the Debt Margin

As was the case for the RFR adjustments described earlier, the debt margins from each of the original regulatory decisions were 'normalised' to account for the impact of any timing differences by assuming the regulator was making a decision using a proposed averaging period up to, and including, 30 June 2017.

In addition to the debt risk premium normalisation detailed above, an adjustment to the debt margin (and WACC) was also made to take into account the allowance provided for debt raising costs in the cashflows of the entities regulated by AER. To calculate this adjustment, debt issuing costs included in the opex allowance were converted into a debt raising cost by dividing them by the debt on issue. The calculated percentage was then added to the cost of debt estimate for these entities.

The results are shown in Table 4.

Table 4: Normalisation of Debt Margins

Regulated firm	Original Debt Margin	Normalised Debt Margin	Difference
Aurizon Network – Draft Decision	2.23%	2.23%	-
ElectraNet	2.11%	2.22%	0.11%
DBCT	2.89%	2.42%	-0.47%
DBNG Pipeline	2.96%	3.01%	0.05%
AusNet Gas Services	2.39%	2.29%	-0.10%
Powerlink	2.24%	2.29%	0.05%
ARTC	2.85%	2.23%	-0.61%
TransGrid	3.20%	N/A	N/A
APA VTS Gas	2.00%	2.22%	0.22%
Water Corp, Aqwest, Busselton	3.00%	3.02%	0.01%
SEQ Water	3.41%	N/A	N/A
Water NSW - Murray Darling	2.20%	2.03%	-0.17%
SA Water	4.82%	4.56%	-0.26%
Sydney Desalination Plant	2.73%	2.63%	-0.10%
WaterNSW - Coastal Valleys	2.73%	2.63%	-0.10%
Melbourne Water	3.58%	3.41%	-0.17%
AN response to Draft Decision	1.84%	1.84%	-

Having determined the comparator entities and normalised the time variable components of their WACCs in the first two steps, the subsequent three stages of the analysis compare both the Aurizon Network proposal and the QCA draft decision with selected entities. These are discussed in the remainder of this report.

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3. Results

3.1 Normalising the Cost of Debt

The normalisation of both the RFR and the debt margin allows the recalculation of each of the comparator entities' cost of debt to allow a more accurate comparison with the cost of debt calculated by the QCA for Aurizon Network.

The normalised cost of debt for each of the entities is outlined in Table 5. The difference between the original and normalised cost of debt varies from 0.24% to -0.39%, despite all the original decision being made over a period of only 18 months between May 2016 and February 2018.

Table 5: Normalisation of Cost of Debt

Regulated firm	Original Cost of Debt	Normalised Cost of Debt	Difference
Aurizon Network – Draft Decision	4.13%	4.13%	-
ElectraNet	4.79%	4.66%	-0.13%
DBCT	4.72%	4.42%	-0.29%
DBNG Pipeline	5.06%	5.29%	0.24%
AusNet Gas Services	5.12%	4.73%	-0.39%
Powerlink	5.09%	4.73%	-0.36%
ARTC – Hunter Valley	4.96%	4.67%	-0.30%
TransGrid	6.05%	N/A	N/A
APA VTS Gas	4.73%	4.66%	-0.07%
Water Corp, Aqwest, Busselton	5.50%	5.38%	-0.12%
SEQ Water[1]	5.55%	N/A	N/A
Water NSW - Murray Darling	4.70%	4.43%	-0.27%
SA Water	7.35%	7.00%	-0.35%
Sydney Desalination Plant	6.13%	5.98%	-0.15%
Water NSW - Coastal Valleys	6.13%	5.98%	-0.15%
Melbourne Water	6.49%	6.39%	-0.10%
AN response to Draft Decision	4.60%	4.60%	-

[1]Seqwater's cost of debt does not vary because the cost of debt was set outside of the regulatory process

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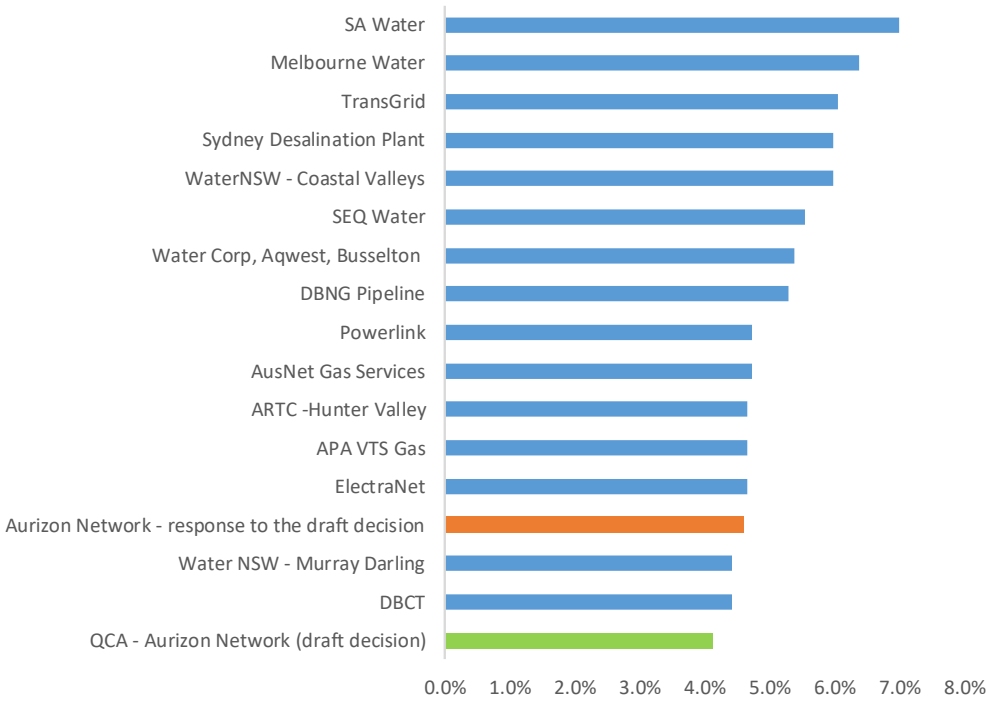
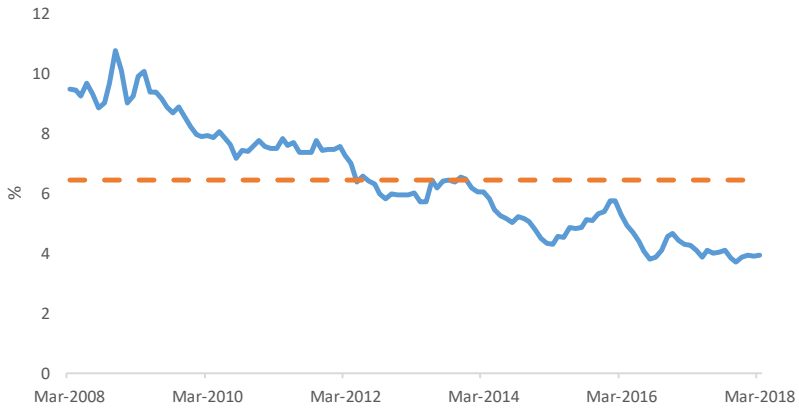
Figure 2 Comparison of Normalised Cost of Debt Estimates



As illustrated in Figure 2, the QCA Draft Decision is at the lower end of the comparator set. However, this comparison is distorted to some extent by the inclusion of debt estimates from entities which use long-term trailing averages to estimate the cost of debt in contrast to the point in time estimates used by other regulators. A long-term trailing average is designed to provide the regulated entity with a relatively smooth cost of debt across business cycles. It will produce a higher estimate when the current cost of debt is lower than the long-term average and a lower value when current the cost of debt is higher than the average. As illustrated in the figure below BBB bond rates, a proxy used for the cost of debt, are currently at a 10 year low and as result cost of debt estimates which are based on a long term trailing average debt estimates will be higher than those using a current market estimate.

Figure 3 Non-financial corporate BBB-rated bonds – Yield – 7 year target tenor, 10 year to March 2018



Source: RBA Statistical Database

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The entities which use the long-term average in their debt calculations are:

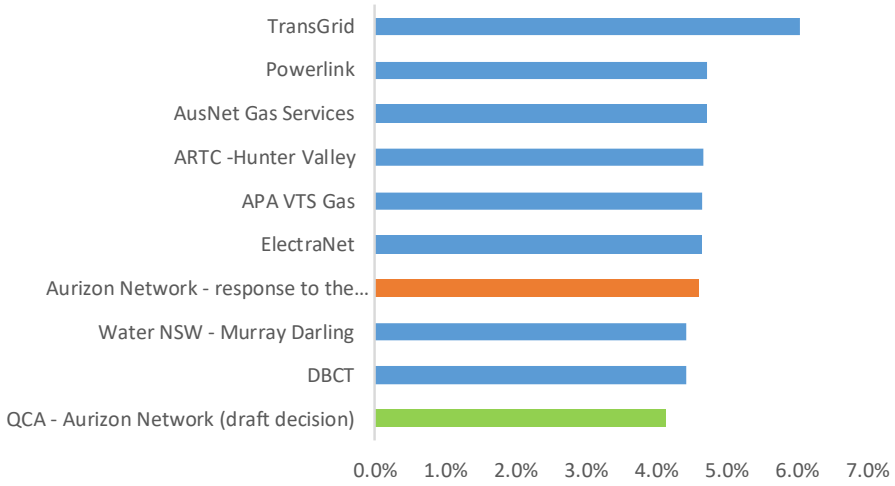
- SA Water
- Melbourne Water
- Water Corp, Aqwest, Busselton
- Sydney Desalination Plant
- Water NSW - Coastal Valleys
- DBNG Pipeline

It is also noted that the entities regulated by the AER are also moving towards a long term trailing average approach to the calculation of the cost of debt. The AER is, however introducing this change incrementally. The AER incorporates transitional arrangements in moving to a trailing average approach, which have been adopted for the purposes of this normalisation exercise.

Relevantly for this normalisation exercise, TransGrid's cost of debt estimate incorporates historical trailing averages, weighted 60% to the 2014–15 observations and 10% to each year thereafter. Since the most recent 2018/19 observation is only weighted 10% and information on this observation is not publicly available this estimate has not been normalised.

Figure 4 presents a comparison between Aurizon debt estimates and a comparator set which excludes those entities which have cost of debt estimates derived using long term averages. This comparator set also excludes Seqwater on the basis that its cost of debt was not set by the regulator but by the government as part of the terms of reference for the price determination. TransGrid is included for completeness.

Figure 4 Normalised Cost of Debt (excluding Seqwater's estimate and estimates based on long term averages)



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3.2 Normalising the Cost of Equity

The normalised cost of equity for each of the entities is also outlined in Table 6. On average the normalised estimates are around -0.11% less than the original estimates.

Table 6: Normalisation of Cost of Equity

Regulated firm	Original Cost of Equity	Normalised Cost of Equity	Difference
Aurizon Network – Draft Decision	6.99%	6.99%	Na
ElectraNet	7.23%	6.99%	-0.24%
DBCT	7.48%	7.66%	0.18%
DBNG Pipeline	6.98%	7.15%	0.17%
AusNet Gas Services	7.28%	6.99%	-0.29%
Powerlink	7.40%	6.99%	-0.41%
ARTC – Hunter Valley	7.78%	8.10%	0.32%
TransGrid	7.40%	6.99%	-0.41%
APA VTS Gas	7.28%	6.99%	-0.29%
Water Corp, Aqwest, Busselton	7.08%	6.88%	-0.20%
SEQ Water	7.50%	7.14%	-0.37%
Water NSW - Murray Darling	6.80%	6.71%	-0.09%
SA Water	6.73%	6.64%	-0.09%
Sydney Desalination Plant	8.83%	8.78%	-0.05%
Water NSW - Coastal Valleys	8.83%	8.78%	-0.05%
Melbourne Water	6.81%	6.88%	0.07%
AN response to Draft Decision	10.01%	10.01%	Na

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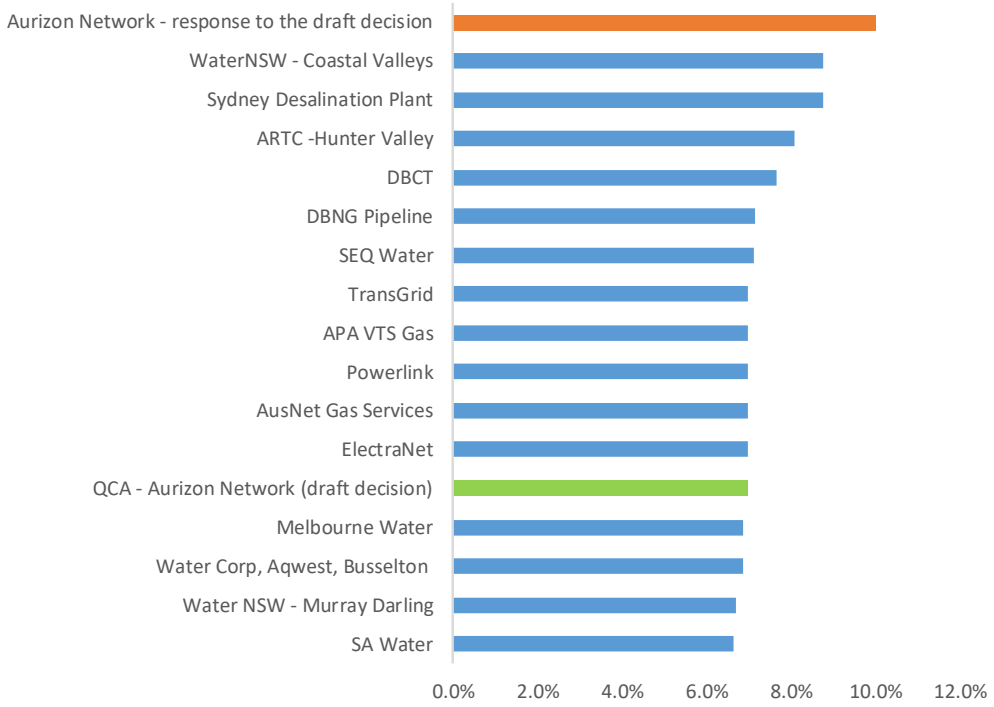
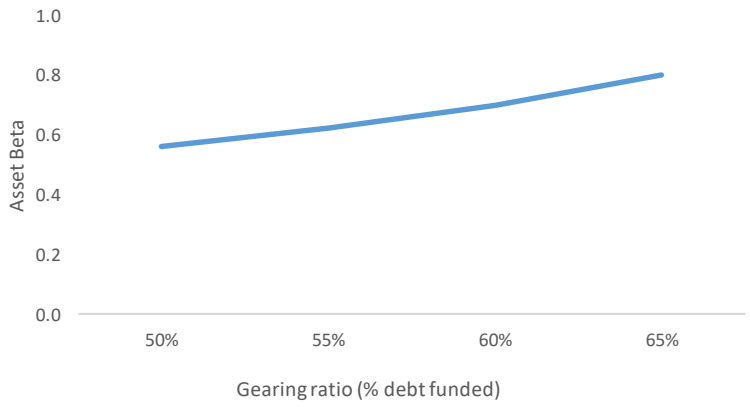
As illustrated in Figure 5, the cost equity component of QCA's Draft Decision WACC estimates is consistent with the majority of the comparators.

Figure 5 Comparison of Normalised Cost of Equity Estimates



It is noted that different benchmark gearing levels for the regulated entities could also be considered as part of a normalisation exercise particularly when making cost of equity comparisons. The level of gearing has implications when estimating the re-levered equity beta (Figure 6), as well as the relative weighting of the cost of debt and equity. A comparison which used a common debt equity ratio across all comparator organisations would perhaps provide a more accurate comparison but given the uncertainty over how regulators would adjust their beta estimates for a change in gearing this element of the normalisation process has been excluded from the analysis.

Figure 6 Relationship between Asset Beta and Gearing Ratio



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3.3 Normalising the WACC

The normalised WACCs for each of the entities are listed in Table 7. The normalised WACC estimates are on average -0.14% lower than the original estimates.

Table 7: Normalisation of WACCs

Regulated firm	Original WACC	Normalised WACC	Difference
Aurizon Network – Draft Decision	5.41%	5.41%	Na
ElectraNet	5.77%	5.59%	-0.18%
DBCT	5.82%	5.72%	-0.10%
DBNG Pipeline	5.83%	6.03%	0.21%
AusNet Gas Services	5.99%	5.63%	-0.35%
Powerlink	6.02%	5.63%	-0.38%
ARTC – Hunter Valley	6.30%	6.30%	0.00%
TransGrid	6.59%	6.43%	-0.16%
APA VTS Gas	5.75%	5.59%	-0.16%
Water Corp, Aqwest, Busselton	6.21%	6.05%	-0.16%
SEQ Water	6.33%	6.18%	-0.15%
Water NSW - Murray Darling	5.54%	5.34%	-0.20%
SA Water	7.10%	6.85%	-0.25%
Sydney Desalination Plant	7.21%	7.10%	-0.11%
Water NSW - Coastal Valleys	7.21%	7.10%	-0.11%
Melbourne Water	6.62%	6.59%	-0.03%
AN response to Draft Decision	7.03%	7.03%	Na

Figure 7 highlights the difference in the Aurizon Network's proposed WACC (responding to the QCA draft decision) relative to the selection of Australian regulated infrastructure businesses.

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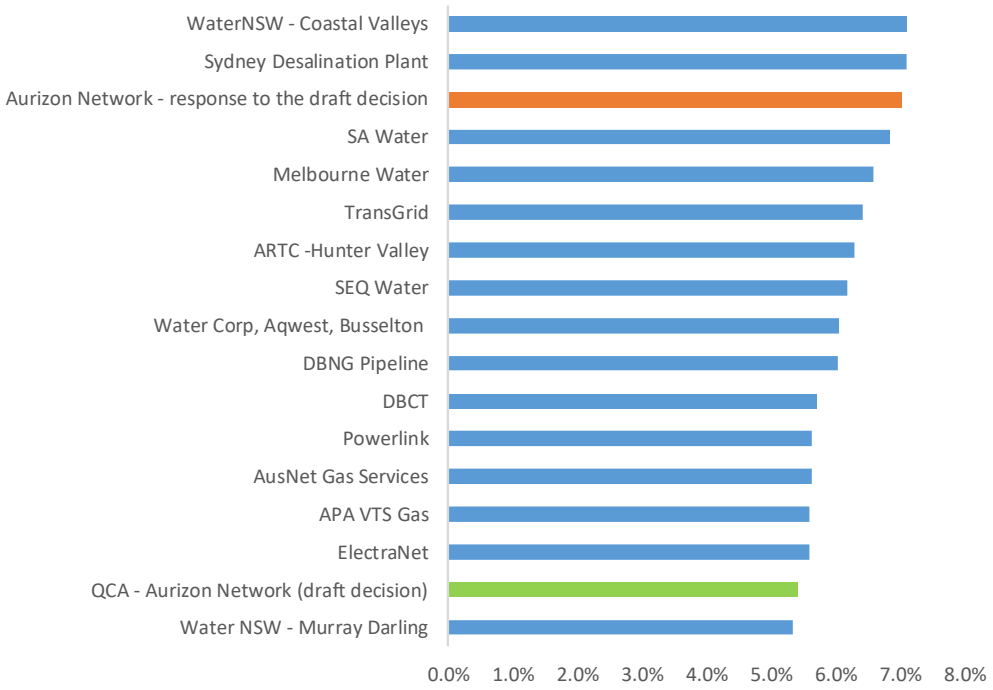
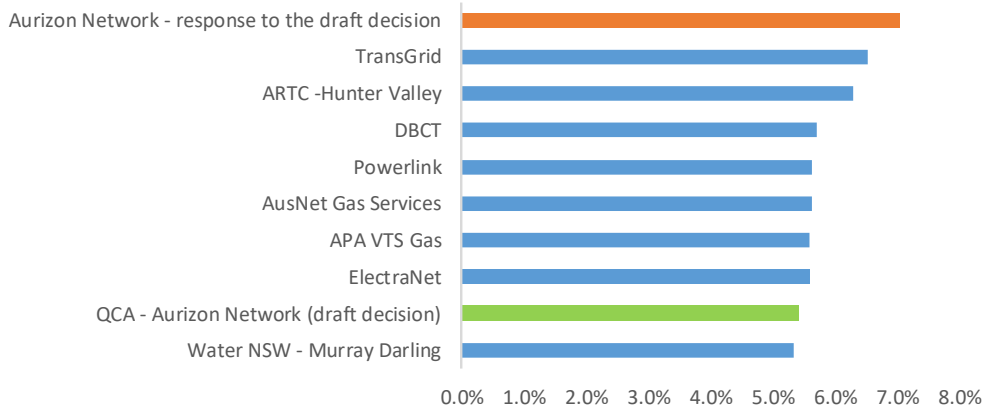
Figure 7: Normalised WACC Estimates



This chart shows how, after the normalisation adjustment, the QCA estimated WACC is at the low end of the comparator group, while the WACC proposed by Aurizon in their response to the draft decision is at the high end. The QCA estimate is, however, more similar to the majority of comparators when those organisations which use a long-term average in their debt and risk free rate calculations are excluded (Figure 7).

Figure 8: Normalised WACCs, Seqwater and long-term average debt and RFR estimates Excluded



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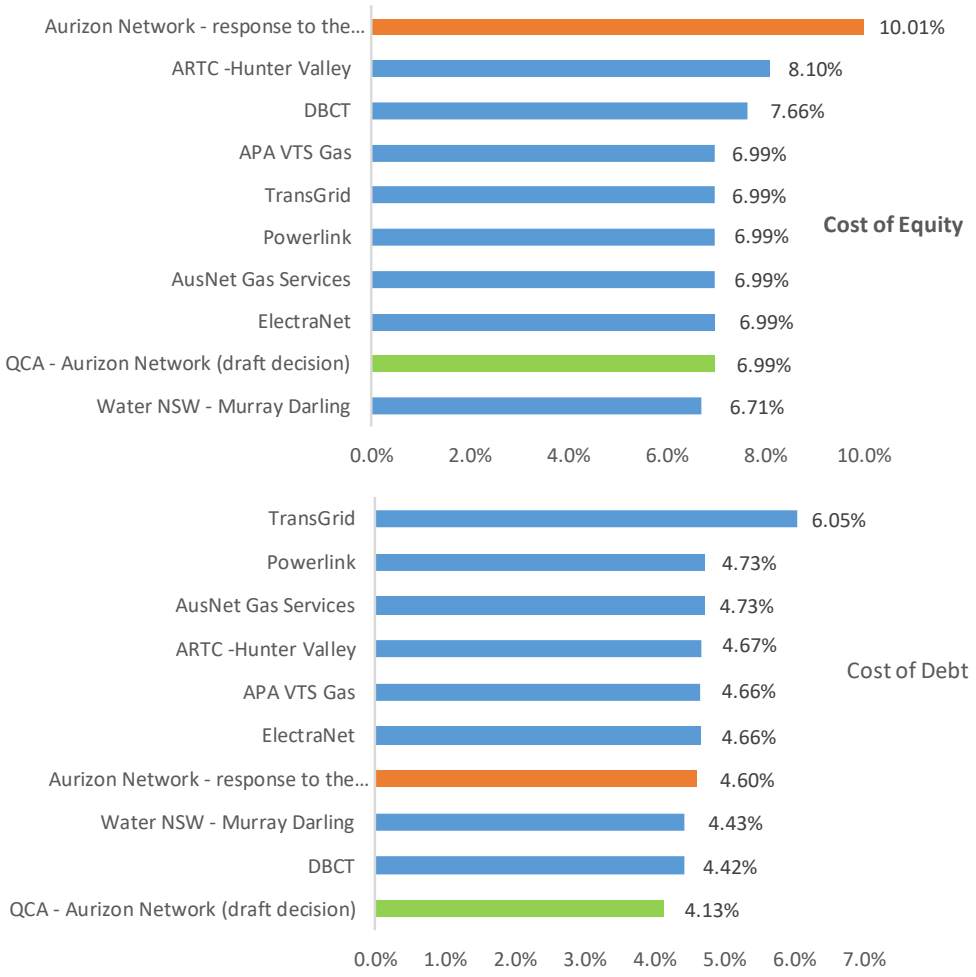
3.4 Contribution of Debt and Equity to WACC Differences

Having undertaken the normalising of debt cost impacts to the various entities' WACCs, it is possible to more accurately dissect the cost of debt and cost of equity return contributions to the difference between the Aurizon WACC estimates and the average WACC for the selected comparator entities.

Figure 9 compares the normalised cost of debt and cost of equity with the comparator set which excludes Seqwater[4] and those entities where a regulator bases the cost of debt on long term averages. It highlights that the cost of equity calculated in the QCA's draft decision is comparable to the cost of equity derived for the majority of the comparable entities. In contrast, the cost of equity calculated by Aurizon Network in its response to the draft decision is materially higher.

Figure 9: Cost of Debt and Cost of Equity (Normalised), long-term average debt and RFR estimates Excluded



[4] This sample also excludes Seqwater on the basis that its cost of debt was set outside the regulatory process.

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4. Findings

This study has compared the results of 15 regulatory decisions of regulated entities within Australia that are broadly comparable with Aurizon network and have had recent regulatory WACC determinations. The time variant components of these WACCs have been re-estimated to facilitate a more accurate comparison with the QCA WACC estimate for Aurizon Network published in their draft decision in December 2017. This WACC normalisation process resulted in the comparator sample's

- average risk free rate reducing by 0.12% from 2.59% to 2.47%
- average debt margin reducing by 0.07% from 2.93 to 2.86%
- average cost of debt reducing by 0.16% from 5.49% to 5.33%
- average cost of equity reducing by 0.12% from 7.43% to 7.31%
- average WACC reducing by 0.14% from 6.28% to 6.14%

Comparing the normalised WACC components with the WACC components estimated by QCA in its draft decision indicated that the cost of equity component estimated by the QCA was similar to the majority of comparators but the cost of debt is the lowest of the sample.

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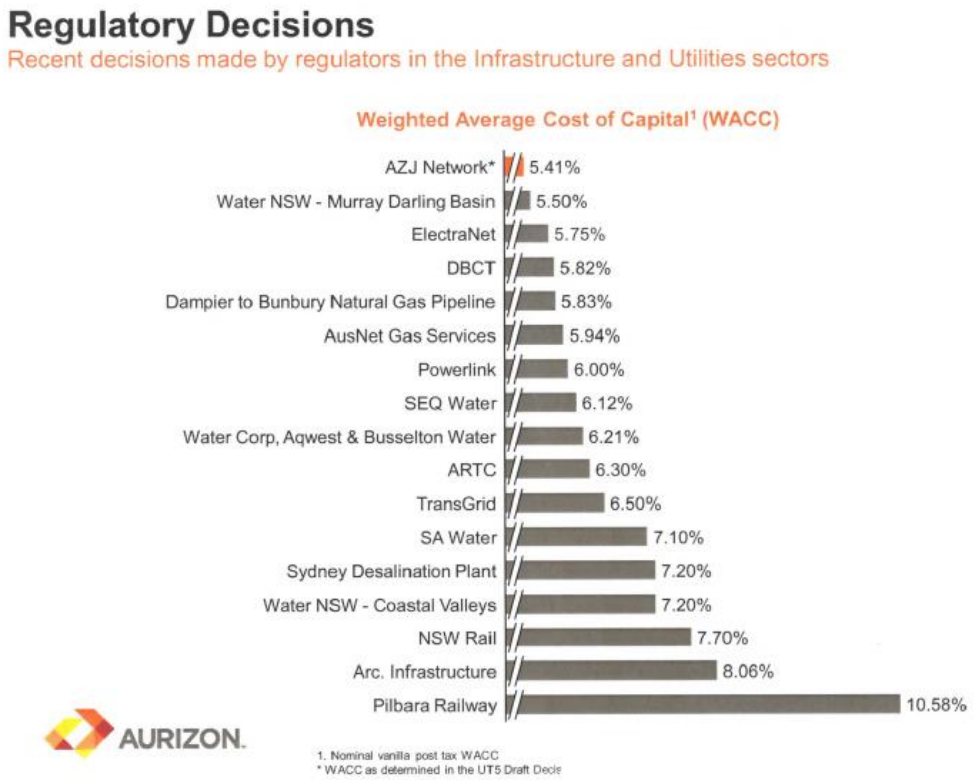
Attachment 1: Aurizon Network WACC Comparison Graph



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