

The background of the cover is a photograph of a high-voltage electrical substation at sunset. The scene is dominated by a complex network of metal structures, including overhead power lines and support towers. The sun is low on the horizon, casting a warm, golden glow over the entire scene. The sky is a mix of orange and light blue. In the distance, there are silhouettes of hills or mountains. The overall atmosphere is industrial and serene.

Aurizon Network
2017 Access Undertaking
Reset Schedule F Values

31 July 2023

Table of Contents

1.	Executive Summary	3
2.	Introduction	8
3.	System Forecasts	11
4.	Allowable Revenue Components.....	12
5.	Allowable Revenues and Reference Tariffs	49
	Appendix 1: Allowable Revenue Waterfall Charts.....	52
	Appendix 2: Bond Data for the Reset DRP	55
	Appendix 3: Amended 2017 Access Undertaking (clean).....	63
	Appendix 4: Amended 2017 Access Undertaking (mark-up)	64

1. Executive Summary

1.1 Overview

This submission is provided to the QCA in accordance with Part 6A of the 2017 Access Undertaking (UT5). It sets out the Reset Schedule F Values that have been used to establish Reference Tariffs, Allowable Revenues and GtK Forecasts for each Coal System and for each year of the UT5 Reset Period (i.e. FY2024 to FY2027).

The Reset Schedule F Values outlined within this submission reflect:

- the methodologies that were agreed with Customers during the development of UT5;
- the Queensland Competition Authority's (QCA) decision to approve the Reset Schedule F Preliminary Values (Preliminary Values)¹; and
- the amendments to the Limited Update Inputs that are required to give effect to clause 6A.5.

The System Forecasts, Allowable Revenues and Reference Tariffs for each Coal System, and for each year of the Reset Period are summarised below.

Please note that capitalised terms within this submission have the meaning given to those terms in UT5, unless the context otherwise requires.

1.2 System Forecasts

In establishing the Reset Schedule F Values, Aurizon Network has applied the System Forecasts that were approved by the QCA in their decision on the Preliminary Values.²

Aurizon Network notes that:

- the System Forecasts for FY2024 were established following engagement with End Users. These forecasts have been applied to determine the FY2024 Reference Tariffs for each Coal System; and
- while System Forecasts for FY2025 – FY2027 are consistent with the FY2024 values, the UT5 Annual review of Reference Tariff process (Schedule F, Clause 4.1) provides an opportunity for further engagement and an update of these forecast prior to the commencement of each year.

The System Forecasts for each year of the Reset Period reflect the aggregate of all Origin / Destination pairings in each Coal System. These are summarised in Table 1 and Table 2 below as both million Net Tonnes (mnt) and Gross Tonne Kilometres (GTK) respectively.

Table 1 Net Tonnes - System Forecasts – FY2024 to FY2027

System	FY2024	FY2025	FY2026	FY2027
Blackwater	54.3	54.3	54.3	54.3

¹ QCA (2023), Decision Aurizon Network's reset Schedule F preliminary values, May 2023.

² Ibid, page 39.

System	FY2024	FY2025	FY2026	FY2027
Goonyella	108.0	108.0	108.0	108.0
Moura	11.8	11.8	11.8	11.8
Newlands	16.4	16.4	16.4	16.4
GAPE	17.2	17.2	17.2	17.2
Total	207.8	207.8	207.8	207.8

Table 2 GTK'000 - System Forecasts – FY2024 to FY2027

System	FY2024	FY2025	FY2026	FY2027
Blackwater	31,564,059	31,564,059	31,564,059	31,564,059
Goonyella	34,710,988	34,710,988	34,710,988	34,710,988
Moura	3,100,730	3,100,730	3,100,730	3,100,730
Newlands	3,563,898	3,563,898	3,563,898	3,563,898
GAPE	8,991,152	8,991,152	8,991,152	8,991,152
Total	81,930,826	81,930,826	81,930,826	81,930,826

1.3 Allowable Revenues

The methodology for determining the Reset Schedule F Values for each year of the Reset Period reflects the process that was agreed with Customers and approved by the QCA in their December 2019 decision on UT5.

While most of the allowable revenue inputs have already been approved as part of the QCA's decision on the Preliminary Values, the Reset Schedule F Values outlined in this submission reflect updates to two key time-sensitive inputs. Specifically, the:

- Reset Weighted Average Cost of Capital (**WACC**) of 8.51%, calculated in accordance with the methodology defined in UT5, and outlined in section 4.1 below; and
- Reset Inflation Rate of 2.90%, outlined in section 4.2 below.

Aurizon Network has presented the aggregated Allowable Revenue for the CQCEN, for each year of the Reset Period in Table 3.

Table 3 CQCEN System - Allowable Revenues (\$m)

CQCEN (\$m)	FY2024	FY2025	FY2026	FY2027
Return on Capital*	510.9	515.5	520.9	523.9
Return of Capital minus Inflation	256.5	272.4	303.7	316.6
Direct Maintenance Costs	164.1	174.9	175.8	179.5
Indirect Maintenance Costs	18.2	18.0	17.4	17.1
Electric Operating Expenditure~	72.0	72.0	72.0	72.0
Non-Electric Operating Expenditure	135.1	135.1	135.1	135.1
Tax Allowance	52.2	53.4	57.7	58.3
Adjustments^	62.7	31.6	32.3	33.1
Allowable Revenue	1,271.8	1,272.9	1,314.9	1,335.5

* Includes Working Capital.

~ Recovers costs levied by electrical transmission and distribution entities and the cost of insuring electrical feeder stations.

^ Adjustments include the UT4 Capital Carryover, reconciliation of FY18 and FY19 transitional arrangements, recovery of approved APS capital expenditure, FY22 Capital Expenditure Allowable Revenue Adjustment and FY22 Revenue Cap.

Aurizon Network has outlined the Allowable Revenues for each Coal System and for each year of the Reset Period in the tables below.

Table 4 Blackwater System - Allowable Revenues (\$m)

Blackwater (\$m)	AT1	AT2-4	AT5	Total
FY2024	32.7	427.3	96.3	556.3
FY2025	33.6	422.7	99.2	555.6
FY2026	34.6	440.0	100.6	575.2
FY2027	35.6	458.7	102.9	597.2

Table 5 Goonyella System - Allowable Revenues (\$m)

Goonyella (\$m)	AT1	AT2-4	AT5	Total
FY2024	24.9	327.8	87.8	440.5
FY2025	25.6	351.3	77.8	454.7
FY2026	26.4	365.8	79.6	471.8
FY2027	27.1	376.8	81.9	485.8

Table 6 Moura System - Allowable Revenues (\$m)

Moura (\$m)	AT1	AT2-4	AT5	Total
FY2024	6.0	65.8	--	71.7
FY2025	6.1	63.5	--	69.6
FY2026	6.3	66.2	--	72.6
FY2027	6.5	67.2	--	73.7

Table 7 Newlands System - Allowable Revenues (\$m)

Newlands (\$m)	AT1	AT2-4	AT5	Total
FY2024	7.1	37.0	--	44.2
FY2025	7.4	38.4	--	45.8
FY2026	7.6	41.5	--	49.0
FY2027	7.8	45.5	--	53.2

Table 8 GAPE - Allowable Revenues (\$m)

GAPE (\$m)	AT1	AT2-4	AT5	Total
FY2024	14.5	144.5	--	159.0
FY2025	14.9	132.3	--	147.2
FY2026	15.4	131.0	--	146.4
FY2027	15.8	109.8	--	125.6

Aurizon Network has provided further comment on Allowable Revenue variations in Section 4 of this submission.

1.4 Reference Tariffs

The combination of the System Forecasts and Allowable Revenues results in the following Reference Tariffs for each Coal System and for each year of the Reset Period.

It should be noted that the Preliminary Values approved by the QCA in May 2023 will form the basis of the Reference Tariffs that will be applicable in FY2024. In circumstances where the QCA issues a decision on the Reset Schedule F Values during FY2024, this would see:

- the Preliminary Values continue to be billed during FY2024 (subject to any variations that may be approved by the QCA during the year);
- Reset Schedule F Values forming the basis of estimated allowable revenues and tariffs for FY2025 to FY2027; and
- any Allowable Revenue difference between the FY2024 Preliminary Values and Reset Schedule F Values will be reconciled through the Revenue Adjustment Amounts (Revenue Cap) process, which is outlined in UT5.

Please note that the rate of escalation applied to the AT1 and AT2 Reference Tariffs for each year has been updated to reflect the Reset Inflation Rate.

Table 9 Blackwater System – Reference Tariffs

Blackwater	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.04	2,563.21	10.51	3.40	4.25	1.66~	0.0063	0.0164
FY2025	1.07	2,633.70	10.66	3.45	4.46	1.66	0.0063	0.0164
FY2026	1.10	2,710.08	11.10	3.59	4.52	1.66	0.0063	0.0164
FY2027	1.13	2,788.67	11.59	3.75	4.62	1.66	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

~ Reflects the updated EC Tariff for FY2024 approved by the QCA on 21 June 2023.

Table 10 Goonyella System – Reference Tariffs

Goonyella	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	0.72	1,623.94	6.41	1.33	2.61	1.66~	0.0063	0.0164
FY2025	0.74	1,668.60	7.11	1.47	2.34	1.66	0.0063	0.0164
FY2026	0.76	1,716.99	7.41	1.53	2.40	1.66	0.0063	0.0164
FY2027	0.78	1,766.79	7.62	1.58	2.47	1.66	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

~ Reflects the updated EC Tariff for FY2024 approved by the QCA on 21 June 2023.

Table 11 Moura System – Reference Tariffs

Moura	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.93	759.15	15.96	2.60	--	--	0.0063	0.0164
FY2025	1.98	780.03	15.78	2.58	--	--	0.0063	0.0164
FY2026	2.04	802.65	16.48	2.69	--	--	0.0063	0.0164
FY2027	2.10	825.93	16.71	2.73	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

Table 12 Newlands System – Reference Tariffs

Newlands	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	2.01	343.28	8.87	1.21	--	--	0.0063	0.0164
FY2025	2.06	352.72	9.50	1.29	--	--	0.0063	0.0164
FY2026	2.12	362.95	10.18	1.39	--	--	0.0063	0.0164
FY2027	2.18	373.48	11.06	1.51	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

Table 13 GAPE – Reference Tariffs

GAPE	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.62	15,464.32	1.55	3.22	--	--	0.0063	0.0164
FY2025	1.66	15,464.32	1.44	2.73	--	--	0.0063	0.0164
FY2026	1.71	15,464.32	1.39	2.67	--	--	0.0063	0.0164
FY2027	1.76	15,464.32	1.41	1.43	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

2. Introduction

2.1 Overview of the Regulatory Process

In December 2019, the QCA approved Aurizon Network's UT5 Draft Amending Access Undertaking which included a range of financial and operational modifications that were developed in consultation with its Customers. Those changes included an extension to the UT5 Term from four (4) to ten (10) years.

To provide greater certainty for all stakeholders (including Aurizon Network), the UT5 DAAU provided Allowable Revenues and Reference Tariffs for the first six (6) years of the extended UT5 Term (i.e. FY2018 to FY2023). For the remaining years (i.e. FY2024 to FY2027), a defined process was negotiated with Customers to reset the Weighted Average Cost of Capital (**WACC**), inflation and a limited number of other Allowable Revenue inputs from 1 July 2023 (FY2024). Part 6A and Schedule F sets out the data, methodology and supporting information that Aurizon Network must submit to the QCA.

Aurizon Network submitted the Preliminary Values to the QCA on 29 July 2022, with the QCA issuing a draft decision in November 2022. In February and March 2023, Aurizon Network submitted updated information to the QCA to account for known outcomes and regulatory decisions that were made after the Preliminary Values were submitted to the QCA. The QCA approved the Preliminary Values on 25 May 2023, thereby establishing the Gtk Forecasts, Allowable Revenue and Reference Tariffs that are applicable for FY2024.

This submission of the Reset Schedule F Values is made in accordance with clause 6A.5 of UT5, and seeks QCA approval of the Reference Tariffs, Allowable Revenues and Gtk Forecasts for each Coal System and for each year of the UT5 Reset Period.

Next Steps

In accordance with clause 6A.7 of UT5, following submission of the Reset Schedule F Values, the QCA will invite stakeholder submissions prior to making its decision to approve (or refuse to approve) Aurizon Network's proposal.

The reader should note that QCA approval of the Reset Schedule F Values will not immediately result in an amendment to the FY2024 Allowable Revenues and Reference Tariffs that were established when the QCA approved the Preliminary Values. Rather, the reconciliation of any difference between the Preliminary Values and the 'final' Limited Input Updates will take place as part of the FY2024 Revenue Adjustment Amounts process at the end of the year.³

2.2 Amendments to Schedule F and Schedule K

Aurizon Network has amended Schedule F to provide:

- Allowable Revenues;
- System Forecasts; and

³ Aurizon Network, 2017 Access Undertaking, Schedule F, Clause 4.3 (ca).

- Reference Tariffs,

for each Coal System and for each year of the Reset Period. Schedule K has also been amended to outline the relevant Allowable Revenue values for each Coal System.

The inputs required to determine the Reset Schedule F Values are summarised in Table 14 below.

Table 14 Inputs that vary from the approved Preliminary Values

Component	Description
Reset WACC	<p>The Reset WACC has been set at 8.51% and is a function of:</p> <ul style="list-style-type: none"> • the Reset Risk Free Rate (Rf), which has been set at 3.87%; and • the Debt Risk Premium (DRP), which has been set at 2.48%. <p>All other WACC inputs remain consistent with the QCA's 2018 Decision and the Preliminary Values.</p>
Reset Inflation Rate	<p>The Reset Inflation Rate has been set at 2.90%.</p> <p>The approach to setting the Reset Inflation Rate is defined in UT5 and reflects the arithmetic average of the midpoint of short-term Reserve Bank of Australia (RBA) inflation rate forecasts for FY24 and FY25 obtained from the May 2023 Statement of Monetary Policy, and the midpoint of the RBA target band for inflation for FY26 and FY27.</p>
Regulatory Asset Base (RAB) values	<p>Consistent with the approved Preliminary Values, the forecast value of the RAB for each year of the Reset Period is determined using:</p> <ul style="list-style-type: none"> • QCA-approved RAB Roll forward to FY22; and • Capital expenditure forecasts that: <ul style="list-style-type: none"> – for FY23, reflect the approved FY23 MRSB; and – for FY24-FY27, reflect the approved FY24 MRSB. <p>The forecast RAB values have been updated to reflect actual CPI outcomes for FY23, and the updated Reset Inflation Rate. For clarity, inflation for:</p> <ul style="list-style-type: none"> • FY23 is 6.33%, reflecting the values published by the Australian Bureau of Statistics on 26 July 2023; and • FY24 – FY27, reflects the updated Reset Inflation Rate of 2.90%.
Indirect Maintenance Cost Allowance	<p>The Indirect Maintenance Cost Allowance is comprised of a 'Return on Plant' and a 'Return on Inventory'. Aurizon Network has updated this allowance to reflect the Reset WACC of 8.51%. All other aspects of this allowance remain consistent with the approved Preliminary Values.</p>
Depreciation Allowances	<p>The depreciation allowance has been updated to ensure consistency with the RAB values and Reset Inflation Rate. All other aspects of this allowance remain consistent with the approved Preliminary Values.</p>
Tax Allowance	<p>The tax allowance is a computation of Aurizon Network's post-tax revenue model and has been updated to reflect the Reset Schedule F Values included within this submission.</p>
Working Capital Allowance	<p>The working capital allowance is a computation of Aurizon Network's post-tax revenue model and has been updated to reflect the Reset Schedule F Values included within this submission.</p>
Electric Energy (EC) Charge	<p>The EC Tariff for FY24 has been updated to reflect the value approved by the QCA on 22 June 2023; \$1.66 per eGTK'000.</p> <p>For FY25 – FY27, the Preliminary Values were set at \$2.82. Aurizon Network has updated the EC Tariff for all years to reflect the latest approved value (\$1.66).</p> <p>Aurizon Network notes that the EC Tariff will be updated prior to the commencement of each year in accordance with UT5, Schedule F.</p>

Component	Description
Allowable Revenue Adjustments	Values associated with the Revenue Adjustment Amounts and the Capital Expenditure Allowable Revenue Adjustment for FY2022 have been updated to reflect the Reset WACC of 8.51%.

The following Allowable Revenue Inputs are consistent with the approved Preliminary Values:

- System Forecasts;
- Direct Maintenance Costs;
- Capital Indicator;
- Non-Electric Operating Expenditure Allowance;
- Electric Operating Expenditure Allowance;
- IE Pass Through Cost; and
- QCA Levy.

2.3 Form of Submission

This submission outlines all matters that are relevant to the UT5 Reset process for FY2024 – FY2027:

Section 3	Sets out the System Forecasts for each Coal System. Despite being consistent with the approved Preliminary Values, the forecasts have been restated in this submission as a key determinant of Reference Tariffs for the Reset Period.
Section 4	Outlines the Allowable Revenue inputs used to determine the Reset Schedule F Values.
Section 5	Outlines the proposed Allowable Revenues and Reference Tariffs for each Coal System and for each year of the Reset Period.
Appendices	<p>Appendices to this submission include:</p> <ul style="list-style-type: none"> • Graphs showing Allowable Revenue movements between the Preliminary Values and the Schedule F Reset Values for FY24; • Bond Data for the Reset DRP; and • Clean and marked-up versions of UT5.

Aurizon Network has prepared detailed financial models (**the Models**) in support of this submission and has provided these to QCA staff in electronic form. The Models contain Confidential Information relating to individual Train Services and accordingly Aurizon Network requests that the Models are not published.

3. System Forecasts

The System Forecasts for the UT5 Reset Period are consistent with the Preliminary Values, but as a key input in determining Reference Tariffs, they have been restated here for clarity.

For further information on how the System Forecasts were derived, please refer to Section 3 of Aurizon Network's February 2023 submission; 'Updates to Reset Schedule F Preliminary Values'. Available [here](#).⁴

The System Forecasts for each Coal System are provided in Table 15 below. The forecasts are expressed in terms of both Net Tonnes and Gross Tonne Kilometres (**GTK**).

Table 15 Annual Volume Forecasts – Reset Period - FY2024 – FY2027

System	Net Tonnes (million)	GTK'000
Blackwater	54.3	31,564,059
Goonyella	108.0	34,710,988
Moura	11.8	3,100,730
Newlands	16.4	3,563,898
GAPE	17.2	8,991,152
Total	207.8	81,930,826

⁴ <http://www.qca.org.au/wp-content/uploads/2023/03/an-submission-update-to-ut5-preliminary-reset-values.pdf>

4. Allowable Revenue Components

The approach for setting the Reset Schedule F Values is outlined within clause 6A.5 of UT5. Clause 6A.5(b) requires Aurizon Network to submit values that reflect the Limited Update Inputs, specifically:

- the Reset WACC;
- the Reset Inflation Rate;
- the Indirect Maintenance Cost Allowance; and
- the Non-Electric Operating Expenditure Allowance.

While most of the Allowable Revenue inputs are consistent with the QCA's decision on the Preliminary Values, some revenue inputs are also dependent on the Reset WACC and Reset Inflation Rate. These include:

- forecast RAB values and the associated Depreciation allowance (both of which are impacted by the Reset Inflation Rate);
- Working Capital Allowance;
- Tax Allowance; and
- the approved Revenue Adjustment Amounts and the Capital Expenditure Allowable Revenue Adjustment for FY2022.

Aurizon Network submits the following Allowable Revenue components of the Reset Schedule F Values to the QCA for approval.

4.1 Reset WACC

Aurizon Network submits a Reset WACC of 8.51% for the UT5 Reset Period, reflecting both:

- the Reset Debt Risk Premium; and
- the Reset Risk Free Rate.

The relevant components of the Reset WACC are outlined in Table 16 below.

Table 16 Reset WACC

	QCA 2018 Decision	Preliminary Value	Reset Value	Reset WACC
Approved WACC (FY2023)				6.30%
Δ Debt Risk Premium	2.04%	2.60%	2.48%	+0.24%
Δ Risk Free Rate	1.90%	3.47%	3.87%	+1.97%
Reset WACC		8.18%		8.51%

4.1.1 Methodology

UT5 defines the Reset WACC as follows:

$$WACC_{Reset} = WACC_{Approved} + \Delta Rf + \Delta DRP$$

where:

$$WACC_{Approved} = 6.30\%$$

$$\Delta Rf = Reset Rf - 1.90\%$$

$$\Delta DRP = (Reset DRP - 2.04\%) \times 0.55$$

In accordance with UT5, the Reset WACC is calculated by updating the following parameters:

- Reset Risk Free Rate (Rf); and
- Reset Debt Risk Premium (DRP).

The methodology applied to calculate both parameters is outlined below.

4.1.2 Reset Risk Free Rate

In calculating the Reset Risk Free Rate, Aurizon Network has applied the defined methodology, as outlined in UT5. Specifically, the average of the Risk Free Rate at the close of business on each of the 20 Business Days up to (and including) 30 June 2023.

UT5 defines the Risk Free Rate as being:

“The rate for Commonwealth of Australia Government nominal bonds using the RBA indicative mid-rate with a term of 4 years.”⁵

Aurizon Network notes that from 31 March 2023 the RBA ceased publication of the indicative mid rates for Australian Government Securities (AGS) [Table F16] that was used in the QCA’s 2018 Decision. Following consultation with the Chair of the Rail Industry Group, and consistent with clause 6A.6(b) of UT5, on 19 May 2023 Aurizon Network proposed⁶ to the QCA that the required AGS data for the bonds either side of the target maturity of 4 years be sourced from Bloomberg. Aurizon Network noted the proposal involved only a change in how the data was sourced and did not change the methodology.

On 22 June 2023, the QCA accepted⁷ Bloomberg as the replacement source for the AGS data. As outlined in the QCA decision notice, the approved data source is outlined in Table 17.

Table 17 Source data for Reset Risk Free Rate

	AGS Bond 1	AGS Bond 2
Bloomberg Ticker (CUSIP)	EI8492650 Corp	JV3198662 Corp
RBA Series ID	FCMYAPR27D	FCMYNOV27D
Bond maturity date	21 April 2027	21 November 2027

⁵ Aurizon Network (2023), 2017 Access Undertaking (UT5), Part 12: Definitions and Interpretation, page 350.

⁶ Aurizon Network (2023), Proposal to use Bloomberg for Australian Government Securities Mid-Rates, Letter to QCA, 19 May, <https://www.qca.org.au/wp-content/uploads/2023/06/aurizon-network-letter-to-qca-alternative-data-source-for-the-risk-free-rate.pdf>

⁷ Queensland Competition Authority (2023), Aurizon Network reset Schedule F values—Proposed alternate index for the calculation of the risk-free rate, Letter to Aurizon Network, 22 June, <https://www.qca.org.au/wp-content/uploads/2023/06/an-alternative-data-source-risk-free-rate-qca-letter-to-an-final.pdf>

The inputs used for determining the Reset Risk Free Rate are outlined in Table 18.

Table 18 Data set for determining the Reset Risk Free Rate

Averaging Date	Maturity Date	EI8492650 Corp 21-Apr-27	JV3198662 Corp 21-Nov-27	4 Yr AGS YTM	Effective Annual Rate
2-Jun-23	2-Jun-27			3.420	3.450
5-Jun-23	5-Jun-27			3.558	3.590
6-Jun-23	6-Jun-27			3.621	3.654
7-Jun-23	7-Jun-27			3.671	3.705
8-Jun-23	8-Jun-27			3.848	3.885
9-Jun-23	9-Jun-27			3.797	3.834
13-Jun-23	13-Jun-27			3.809	3.845
14-Jun-23	14-Jun-27			3.885	3.922
15-Jun-23	15-Jun-27			3.963	4.002
16-Jun-23	16-Jun-27			3.965	4.005
19-Jun-23	19-Jun-27			3.943	3.981
20-Jun-23	20-Jun-27			3.931	3.969
21-Jun-23	21-Jun-27			3.892	3.930
22-Jun-23	22-Jun-27			3.919	3.958
23-Jun-23	23-Jun-27			3.961	4.000
26-Jun-23	26-Jun-27			3.886	3.924
27-Jun-23	27-Jun-27			3.864	3.901
28-Jun-23	28-Jun-27			3.805	3.841
29-Jun-23	29-Jun-27			3.862	3.899
30-Jun-23	30-Jun-27			3.979	4.019
Reset Risk Free Rate					3.866

The application of the UT5 methodology results in a Reset Risk Free Rate of 3.866%.

4.1.3 Reset Debt Risk Premium

The Reset Debt Risk Premium is defined in UT5 as:

A forecast debt risk premium for the Reset Period calculated by applying the methodology referred to in Appendix F of the QCA's 2018 Decision (including the simple portfolio econometric estimation methodology (PwC methodology)) for BBB+ rated corporate bonds. This is calculated in a manner consistent with the way in which the debt risk premium was calculated in the QCA's 2018 Decision by an expert appointed by the QCA, using criteria consistent with that adopted to calculate the debt risk premium in the QCA's 2018 Decision, and using an average over the 20 Business Day period up to (and including) 30 June 2023.

The Reset Schedule F Values require the averaging period to apply over the 20 Business Day period up to (and including) 30 June 2023. In evaluating the Reset Debt Risk Premium, Aurizon Network has had regard to the following reference documents within the above definition:

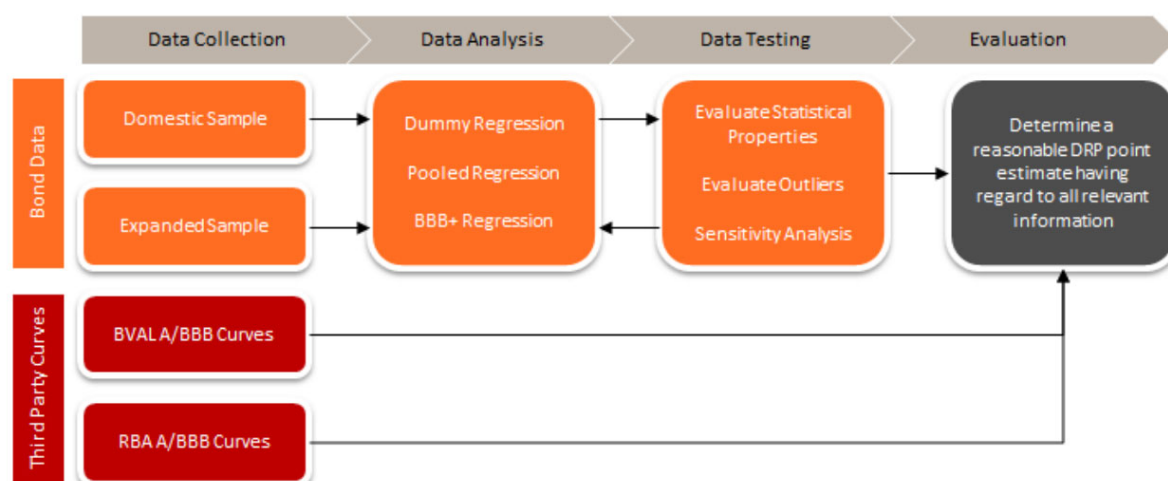
- Appendix F of the QCA's 2018 Decision;

Aurizon Network / Reset Schedule F Values

- Incenta (2017) Aurizon Network's WACC for the 2017 DAU, Report prepared for the Queensland Competition Authority, December; and
- Incenta (2018) Addressing responses to Incenta's debt risk premium estimate for the 2017 draft access undertaking, Report prepared for the Queensland Competition Authority, June.

The manner in which the debt risk premium was calculated in the QCA's 2018 Decision by an expert appointed by the QCA can be summarised graphically in Figure 1.

Figure 1 DRP Estimation Methodology



Aurizon Network notes the primary determinant of the debt risk premium in the QCA's 2018 Decision was the dummy intercepts regression model of the 'Domestic Sample'. The 'Expanded Sample' and the 'Third-Party Curves' were used as cross-checks on the reasonableness of the DRP estimate obtained from the dummy intercepts model of the domestic sample. As shown in Table 19, given the consolidation of the cross-check DRP estimates around the DRP estimate obtained from the dummy intercepts model of the domestic sample, the QCA's 2018 Decision applied a DRP of 2.04.

Table 19 QCA's 2018 Decision DRP Estimates

	Domestic	Expanded	BVAL	RBA
DRP Estimate	2.04	2.00	1.99	2.06

In addition, the DRP estimation methodology requires the bond sample data to be obtained from Bloomberg's bond search facility for each of the credit ratings agencies (Standard & Poor's, Moody's and Fitch) using the search criteria in Table 20⁸:

Table 20 Domestic Bond Sample Search Criteria

Bond Sample Search Criteria	
Security Status	include active bonds
Country of Risk	include Australia
Credit Rating	between A1 and BBB (or equivalent)
Currency	include AUD

⁸ Incenta (2017) Aurizon Network's WACC for the 2017 DAU, Report prepared for the Queensland Competition Authority, December, Appendix D, p.130

Bond Sample Search Criteria

Maturity	greater than or equal 30 June 2024 (greater than 1 year)
Maturity Type	exclude perpetual, callable and converted
Market of Issue	Domestic
Security Type	exclude inflation linked note
BIS Classification	Exclude: Financial Include: Real estate

Furthermore, the core sample of domestic bonds are also filtered to exclude bonds with a remaining term to maturity greater than 20 years.

The credit rating applied to the relevant bond is also determined based on the following criteria:

- adopt the single credit rating if only one was available;
- adopt the predominant credit rating if there were three credit ratings;
- adopt the lower credit rating if there were two divergent ratings one notch apart; and
- averaging the credit ratings if the divergence in the credit ratings was more than one notch.

The QCA's 2018 Decision also relied primarily on the dummy intercept regression (parallel slopes) where:

- the composition of the sample was not balanced between A-, BBB+ and BBB bonds to avoid statistical bias; or
- there was an insufficient number of BBB+ bonds to undertake a single ratings regression for BBB+.

Furthermore, the inclusion of bonds and the applied regression method should also have regard to ensuring⁹:

- there is no material asymmetry in the DRP's of credit rating bands (i.e. there is consistent spread between notches);
- the sample does not include influential bonds materially out of line with the DRP / term relationship for that credit rating band, which becomes more important the smaller the sample size; and
- the sample does not include bonds which are influential relative to the number of bonds in the sample with that rating.

Finally, a mechanistic approach should not be applied with the methods being flexibly implemented based on the information and data applicable to the relevant average period as affirmed by the QCA¹⁰:

the regression methods are considered in line with the results of the other regressions; shortcomings are considered; and the cross-checks are performed, to increase the confidence of those estimates.

⁹ QCA (2018) Final Decision: Aurizon Network 2017 Draft Amending Access Undertaking, Appendix F, December, p. 148

¹⁰ Ibid, p.149.

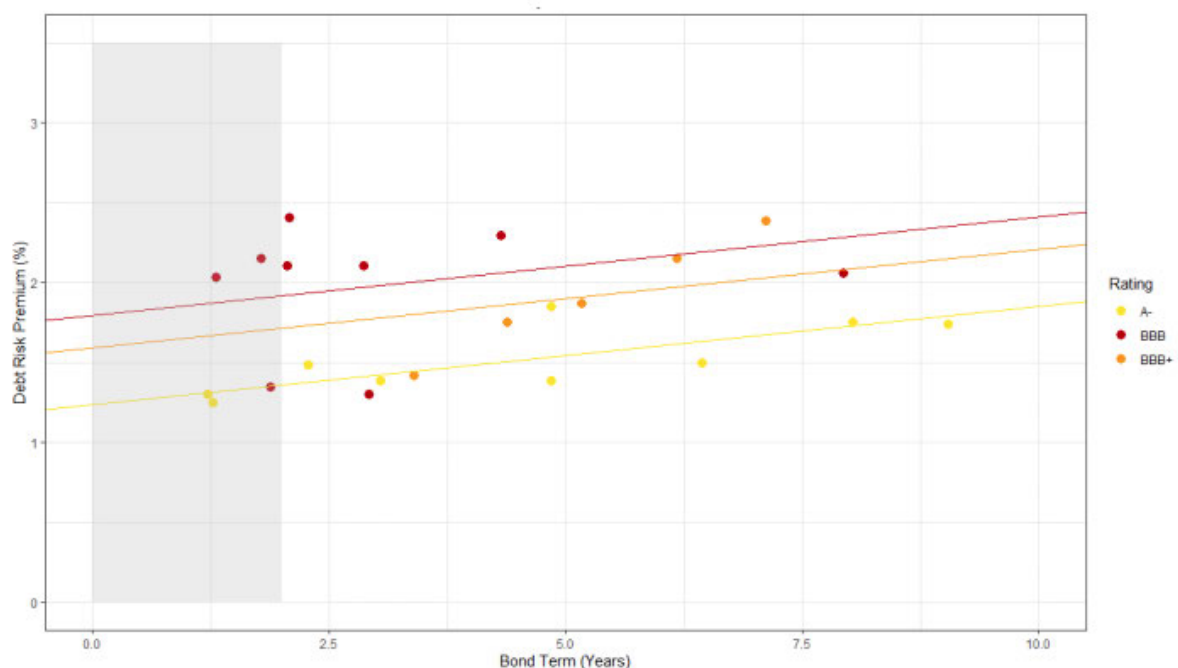
Issues Arising in the Determination of the Preliminary Reset Debt Risk Premium

The core bond sample (inclusive of only bonds without embedded options) for the Preliminary Reset Debt Risk Premium for the averaging period of 20 Business Days up to (and including) 30 June 2022 comprised 23 bonds as shown in Figure 2.

Aurizon Network noted the DRP estimate obtained from the core bond sample was not statistically reliable due to:

- the small sample size;
- the inclusion of bonds materially out of line with their rating; and
- the asymmetry in the DRPs of the credit rating bands.

Figure 2 Core Domestic Bond Sample June 2022 Averaging Period



The shaded area in Figure 2 represents those bonds which will have a term to maturity of less than 12 months in the June 2023 averaging period and will therefore fall out of the core sample. Consequently, without further issues of domestic at maturity non-financial corporate bonds with the required rating band, the sample size of the core domestic sample was expected to further reduce.

Aurizon Network's proposed Preliminary Reset Debt Risk Premium sought to overcome this small sample problem by including domestically issued bonds with make-whole-call options exercisable only within the last 6 months of the bond's maturity. Aurizon Network noted that the issuance of make-whole call options exercisable in the last three months of a bond term had become normal practice to allow corporate Treasuries to manage cash flow timing and flexibility in refinancing. Make-whole-call options are rarely exercised and are typically out of the money due to the effective penalty in the discount rate (reference rate plus premium). As the cost of exercising the option is expected to exceed the par value, they are not expected to influence the pricing, and therefore, the yield on the relevant bond. For these reasons, bonds with make whole call options are included in:

- the Reserve Bank of Australia's Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3 (using the simple yield to maturity where the make-whole-call option is the only option);

- the Bloomberg BVAL series¹¹; and
- the Thomson Reuters AUD BBB curves BBBAUDBMK ('blended' curve) and BBBAUDDBMK ('domestic' curve).

In respect of this approach, the QCA's final decision on the Reset Schedule F Preliminary values concluded that:

We do not consider it is consistent with the approach outlined in our 2017 DAU investigation, as it did not specifically consider this additional sample as a cross-check. In any case, the expanded sample that is to be used as a cross-check for the reset debt risk premium includes bonds with optionality.

For the June 2022 averaging period, the QCA Decision on the Preliminary Values included the DRP estimates summarised in Table 21.

Table 21 QCA Preliminary Reset Debt Risk Premium Estimates

	Domestic	Expanded	BVAL	RBA
DRP Estimate	2.20	2.43	2.31	2.76

Due to the disparity between the DRP estimates and the statistical deficiencies of the core sample, the QCA also decided that:

From the information available, we consider it may be appropriate to apply judgement to increase the preliminary reset debt risk premium beyond the point estimate obtained for the averaging period up to 30 June 2022. The case for increasing the preliminary reset debt risk premium is supported by:

- *the small size of the core sample of bonds obtained for this averaging period*
- *the estimates obtained from other relevant sources are all higher than our derived 2.20% point estimate.*

Aurizon Network recognises that should similar circumstances prevail in the June 2023 averaging period, it will also be necessary to apply judgement to obtain a point estimate for the DRP. However, for reasons of both practicality and prudence, the QCA Decision on the Preliminary Values did not specify how that judgement is to be exercised and what matters can and should be considered for forming that judgement. In this regard, Aurizon Network will seek to apply judgement where necessary by having regard to the reference documents listed above as appropriate.

Core Domestic Bond Sample

Consistent with prior expectations of issuances primarily embedding make whole call options, the core domestic bonds sample has reduced to a sample size of 18 bonds with:

- 1 new issue;
- 5 bonds removed due to maturity of less than 12 months; and

¹¹ Moore, Y (2017) Thomson Reuters Credit Curve Methodology: A note to the AER, Australian Competition and Consumer Commission, April. https://www.aer.gov.au/system/files/ACCC%20-%20Thomson%20Reuters%20Credit%20Curve%20Methodology%20-%20Note%20for%20the%20AER%20-%20April%202017_1.pdf

- the Telstra bond being excluded due to rating criteria (adopting the lower credit rating if there were two divergent ratings one notch apart).

Table 22 Composition of Core Domestic Bonds Sample

Rating	A-	BBB+	BBB	Total
Frequency	7	5	6	18
Number of issuers	4	2	5	11

In addition to the overall small sample size, Table 22 also indicates a small proportion of bonds within each rating with a small number of issuers present in the BBB+ rating. This suggests yields for the BBB+ rating is more likely to be representative of the respective industry risk rather than providing a statistical benchmark for all non-financial corporate BBB+ bonds.

The dummy intercept regression of the core domestic sample obtained an estimate for the 10-year BBB+ DRP of **2.27%**. Table 23 summarises the coefficients and statistical parameters for the dummy intercept regression model for the core domestic sample.

The regression coefficients are not statistically significant, and the regression model has low explanatory power. Consequently, the core domestic bond sample does not provide a statistically reliable or robust estimate for the 10-year BBB+ DRP. Importantly, the intercepts for each rating show little separation and are inverted in respect of ratings order (A- being the highest and BBB being the lowest).

Table 23 Core Domestic Bond Sample Dummy Intercept Coefficients

Statistic	Estimate	Std Error	T Stat	P val
Intercept (A-)	1.3717	0.3103	4.437	<0.001
BBB+	-0.0301	0.2673	-0.113	0.9119
BBB	-0.0631	0.2775	-0.227	0.8235
Slope	0.0922	0.0528	1.746	0.1028
Adjusted R-Squared	0.065			

As evident from the plot in Figure 3, the DRP for several bonds is materially inconsistent with their ratings and unduly influence the regression outcomes. A few of the BBB rated bonds with less than 2 years to maturity are suppressed and the A- rated real estate bond is also priced at a substantial discount to its rating; a material shift relative to the June 2022 averaging period. Removing these bonds would further reduce the size of the core domestic sample.

For example:

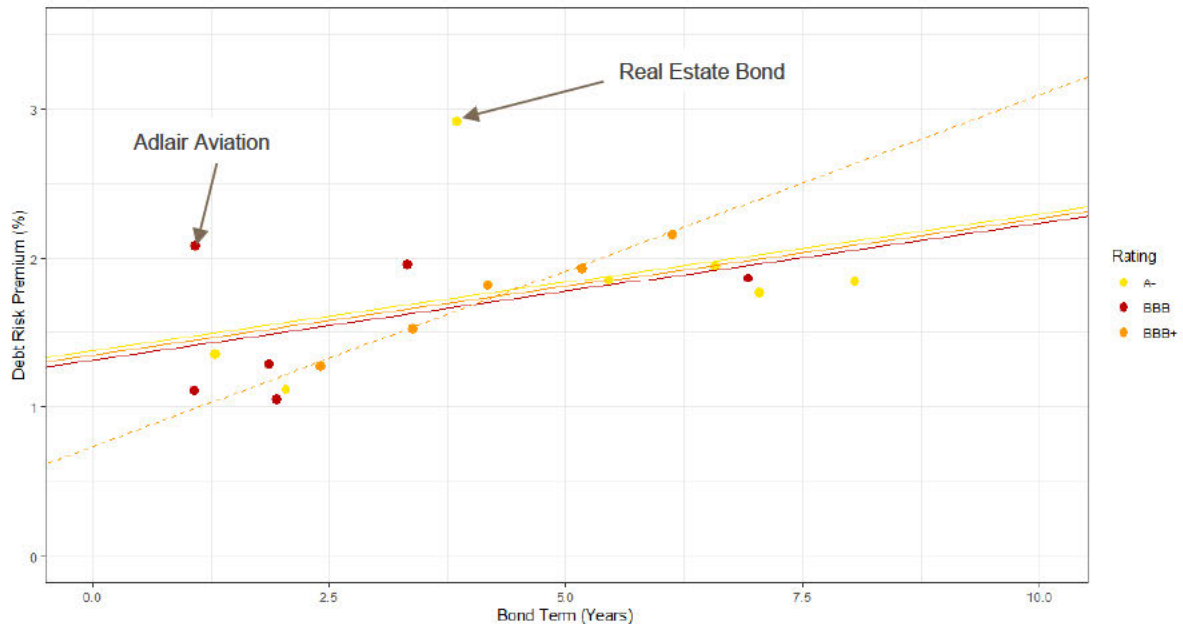
- marginally increasing the term to maturity threshold from 1 year to 1.1 year would increase the DRP estimate by 8-9 basis points to 2.35%¹²;
- the Adlair Aviation bond has a materially high DRP for its tenor. In the absence of other bonds by this issuer at other tenors, it is difficult to determine whether this bond is mispriced for its rating. If this issuer had additional bonds on issue with a range of tenors, then any one of these bonds would be unlikely to have a material impact on the 10 year BBB+ DRP estimate. Consequently,

¹² For comparison under the RBA's approach, the impact of a bond with term to maturity of 1.1 years has 0.00059% of the weight of a bond with 5 year maturity to estimate the 10 year DRP.

the inclusion of Adlair Aviation bonds would tend to influence the regression by simply raising the BBB intercept rather than changing the (common across credit ratings) slope of the regression.

These examples show that the removal of some A- or BBB bonds in the domestic bond sample would have a material impact on the regression results which substantially diminishes the statistical reliability of the dummy intercept or pooled regression estimates.

Figure 3 June 2023 Core Domestic Bond Sample

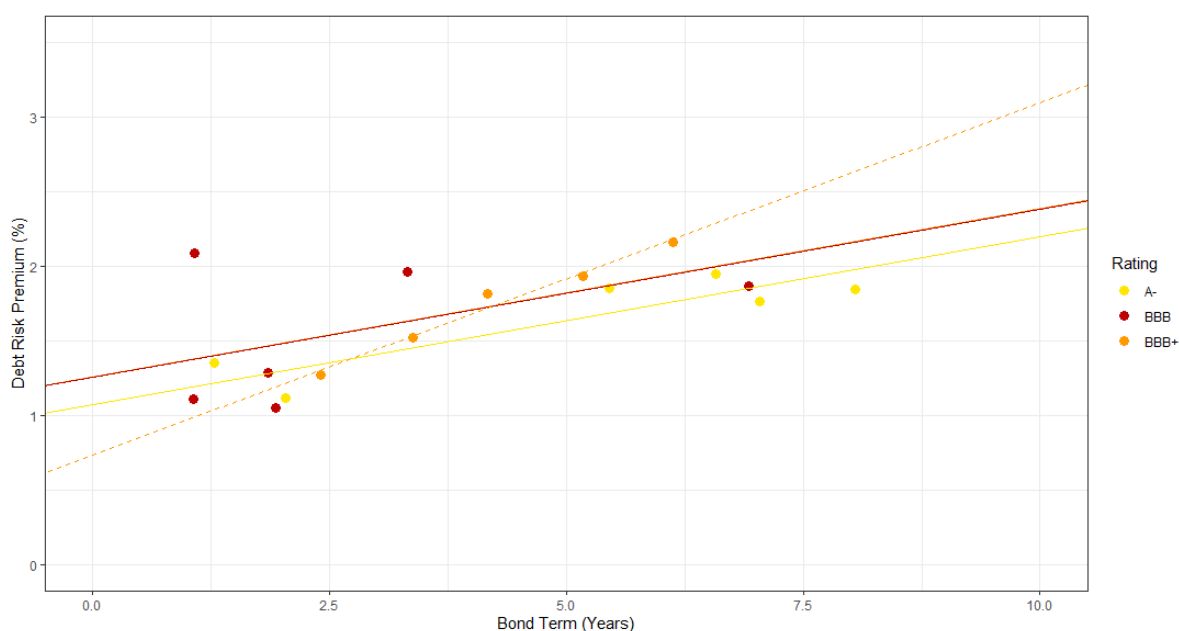


Applying a single regression to the 5 BBB+ bonds in the core domestic sample results in a 10-year DRP estimate of 3.10%. As the BBB+ bonds included issuers with multiple bond issues with differing maturities, the regression has a high degree of statistical confidence with no single bond being unusually influential (i.e., the 10-year DRP would not be materially different if any one of the five BBB+ observations was removed).

It is likely that the explanation for this is, at least in part, that of the five BBB+ observations, three bonds are from the same issuer (AusNet Services) and these span tenors from 4.2 to 6.1 years. Moreover, the other issuer (Melbourne Airport) is also an infrastructure asset and, therefore, appears to have similar risk perceptions to AusNet Services. In summary, it happens that the BBB+ only sample is made up of a very homogenous group of issuers. It is therefore free from the sort of bias associated with mixing heterogeneous issuers in the regression (i.e., more heterogeneous than simply reflected in their credit ratings). Further, these bonds are a logical comparator to Aurizon Network (also an infrastructure provider and subject to a comparable regulatory regime as AusNet).

As noted above, the DRP for the A- real estate bond has materially increased relative to the June 2022 averaging period and is highly influential in determining the rating intercepts. As shown in Figure 4, excluding the A- rated real estate outlier obtains a 10-year BBB+ DRP estimate of 2.39% and increases the adjusted R-Square of the regression model to 0.33.

Figure 4 June 2023 Core Domestic Bond Sample excluding bond ICPF Finance Pty Ltd (AU3CB0243889)



Considering the:

- small sample size,
- the material disparity between the BBB+ only regression, the insignificance of the regression coefficients, and
- the lack of separation of the BBB and BBB+ coefficients,

Aurizon Network considers that a dummy intercept or pooled regression 10 year BBB+ DRP estimate obtained from the core domestic bond sample suffers from significant bias and has limited informational value towards estimating the DRP consistent with the QCA's 2018 Decision. There is an extremely low level of confidence in the BBB+ DRP dummy intercept estimate for the core domestic bonds sample with some confidence in the BBB+ only regression DRP estimate.

Expanded Bond Sample

The QCA's Decision on the Preliminary Values confirmed the QCA's approach to undertaking the Expanded Bond sample. This approach requires:

- expanding the bond search criteria to include:
 - » callable bonds; and
 - » bonds with currency: AUD or USD or GBP or EUR,
- obtaining the AUD equivalent yields for each day of the averaging period for foreign bonds and bonds with options using Bloomberg's OAS function using the procedures outlined in pages 9–16 of Appendix 6 (version 3) to ERA's Explanatory Statement for the Rate of Return Guidelines 2018¹³.

The expanded bond sample comprises 196 bonds distributed between the ratings shown in Table 24. Aurizon Network also notes that an additional four bonds were issued during the term of the

¹³ ERA, Final: Gas Rate of Return Guidelines Explanatory Statement, December 2018

averaging period. These have been excluded based on the criteria applied by the QCA expert and referenced by:

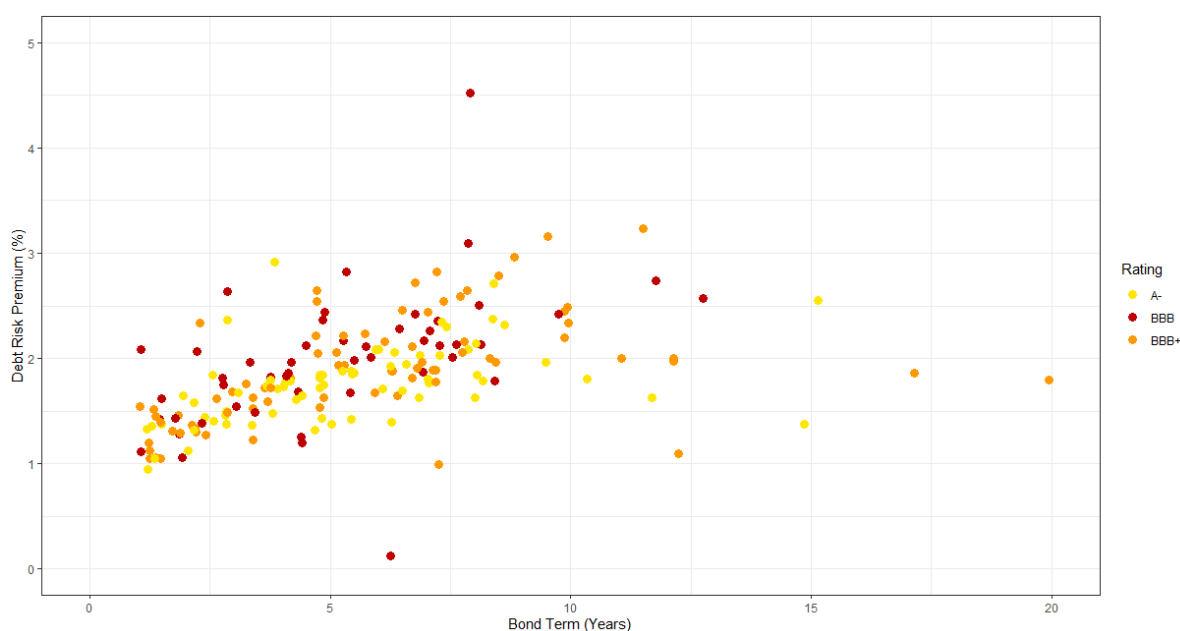
The Aurizon bond (AN7512055) was issued on 21/06/2017, which was half way through the relevant 20-day averaging period that ended on 30 June 2017. As it did not have a full period of observations, it was excluded. This is a BBB+ bond¹⁴.

Table 24 Expanded Bonds Sample Composition

Rating	A-	BBB+	BBB	Total
Frequency	69	78	49	196

As the sample does not comprise an equivalent number of A- and BBB bonds, the regression results from a pooled regression will be downward biased. Consequently, only the dummy intercepts and single BBB+ rating regression approaches are evaluated. The initial unfiltered expanded bond sample is shown in Figure 5.

Figure 5 June 2023 Unfiltered Expanded Bond Sample



The plot for the expanded sample displays significant variance between the dependent variable (Debt Risk Premium) and the independent variable (Term). This can be contrasted with the expanded bond sample for the QCA's 2018 Decision in Figure 6 which shows lower variance and greater degrees of linear and spatial (ratings position) separation. Due to the lower variance and data conformity, there was little or no change to the DRP regression estimates from removal of bonds with disputed ratings. In addition, Aurizon Network notes there was some dispute as to the inclusion of 6 bonds. The QCA's expert noted:

while we note that these bonds were validly excluded based on our criteria for inclusion, we observe that their presence does not have a material effect on the estimated 10-year BBB+ debt risk premium:

¹⁴ Incenta (2018) Addressing responses to Incenta's debt risk premium estimate for the 2017 draft access undertaking, A report for the Queensland Competition Authority, June, p. 6 https://www.qca.org.au/wp-content/uploads/2019/05/34318_Incenta-Addressing-responses-to-Incenta-s-DRP-estimate-for-the-2017-DAU-1.pdf

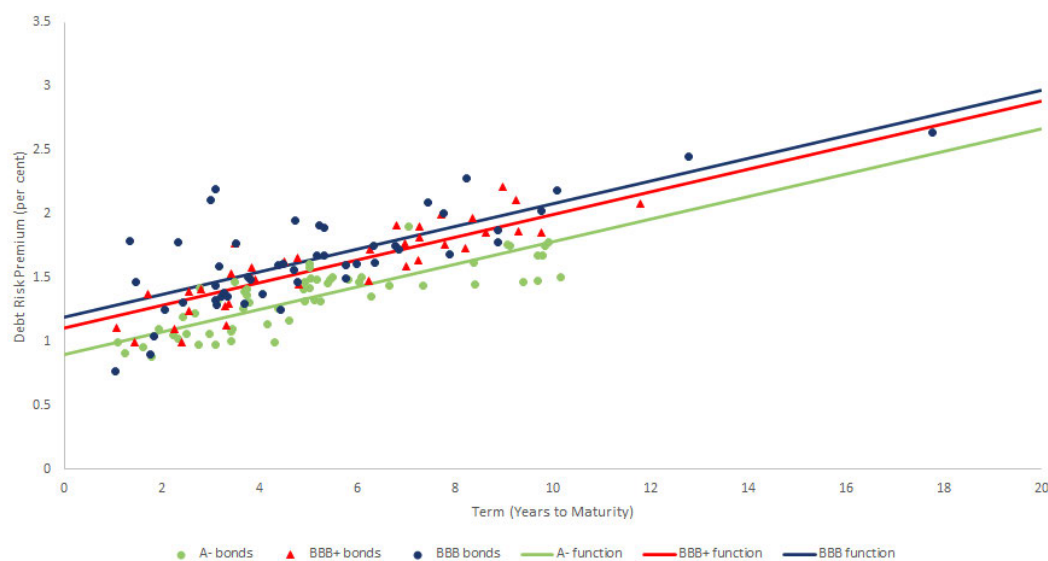
- the debt risk premium based on BBB+ only bonds increases from 2.04 per cent to 2.05 per cent; and
- the debt risk premium estimated based on the full sample and intercept dummies remains at 2.00 per cent.

The expanded bond sample in the QCA's 2018 Decision did not include bonds which:

- were influential relative to the number of bonds in the sample with that rating¹⁵; or
- were influential bonds materially out of line with the DRP / term relationship for that credit rating band.

As such, the QCA's expert for the QCA's 2018 Decision did not specify the procedures or thresholds for determining whether a bond should be excluded from the sample based on the above criterion.

Figure 6 UT5 Expanded Bond Sample



Source: Incenta Economics (2017) Aurizon Network's WACC for the 2017 DAU, Figure 5.6.

Aurizon Network has applied the following procedures to remove bonds from the bond sample:

1. Bond is influential relative to the number of bonds in the sample with that rating.

Aurizon Network considers this criterion as the most important because the inclusion or exclusion of a bond from the sample should not materially influence the regression results. The most direct measure of an observation's influence is its leverage as points with high leverage can exert a lot of influence on the parameter estimates (particularly the slope).

The leverage for each observation is typically represented by its value in the diagonal of the **hat** matrix. While there are no specified rules as to the value for hat, it is generally considered reasonable to closely scrutinise values which are 2 to 3 times the average hat value.

While the typical cut-off for the identification of outliers using leverage is average leverage multiplied by 2,¹⁶ Aurizon Network has also evaluated a conservative value of 3 times the

¹⁵ Note that while the bond with the tenor of ~ 18 years is a high leverage observation its inclusion or removal did not materially change the regression results.

¹⁶ See Belsey, Kuh and Welsch (2004) "Regression Diagnostics – Identifying Influential Data and Sources of Collinearity," Wiley Series in Probability and Statistics, 2nd Edition, p. 17

average hat value, such that the threshold values for exclusion from the bond sample is obtained from:

$$h_{ii} > \frac{3p}{n} \quad \text{and} \quad h_{ii} > \frac{2p}{n}$$

Where:

p is the number of estimated parameters in the regression model; and

n is the number of observations.

2. Bonds materially out of line with the DRP / term relationship for that credit rating band.

Bonds which are materially out of line with the DRP / term relationship for its credit rating are classified as outliers. The removal of an outlier may not substantially change the estimated slope parameters but may affect the intercepts and will materially improve the explanatory power of a model.

As we are primarily interested in whether an outlier is material to estimated coefficients, once leverage bonds are removed from the sample, the regression model is re-estimated and the standardised residuals are calculated. Again, it is generally considered reasonable to closely scrutinise values which have a standardised residual above 2¹⁷.

Aurizon Network has also evaluated a conservative threshold for the standardised residual of above 3 for the removal of a bond as evidence the DRP is materially influential and out-of-line for its credit rating and term.

Aurizon Network recognises other approaches may be applied which evaluate leverage and influence simultaneously. Nevertheless, Aurizon Network does not consider a simultaneous assessment to be appropriate in this instance due to the differing intentions of the above criteria. As a result, leverage and influence should be assessed independently consistent with the specification of the above criteria as individual tests. Similarly, evaluating for outliers using the standardised residuals, either before or simultaneously testing from leverage would result in a substantially biased bond sample where the leveraged observations materially change the intercept and slope coefficients in a dummy intercept regression model and therefore the determination of the standardised residuals.

The dummy intercepts regression without the removal of influential bonds returns a 10-year BBB+ DRP estimate of 2.21%.

Statistical analysis of the hat values from this regression model identifies three bonds with hat values above the threshold of 3 and six bonds with hat values above the threshold of 2 as shown in Figure 7. These bonds are represented by the bonds with terms exceeding 12 years as shown in Figure 8.

¹⁷ Greene (2003), "Econometric Analysis," Prentice Hall, 5th Edition, p. 61

Figure 7 Expanded Sample Leverage: Density Plot and Histogram

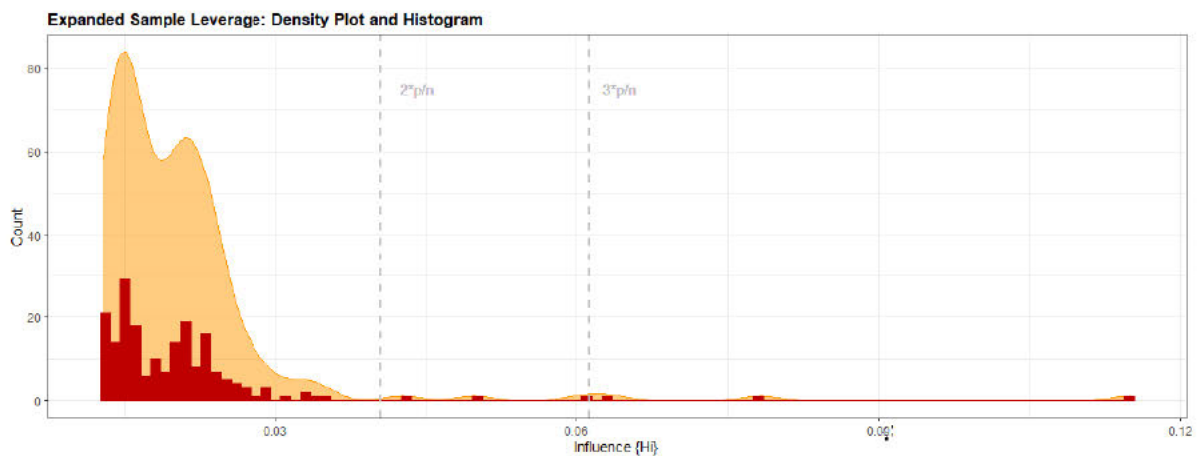
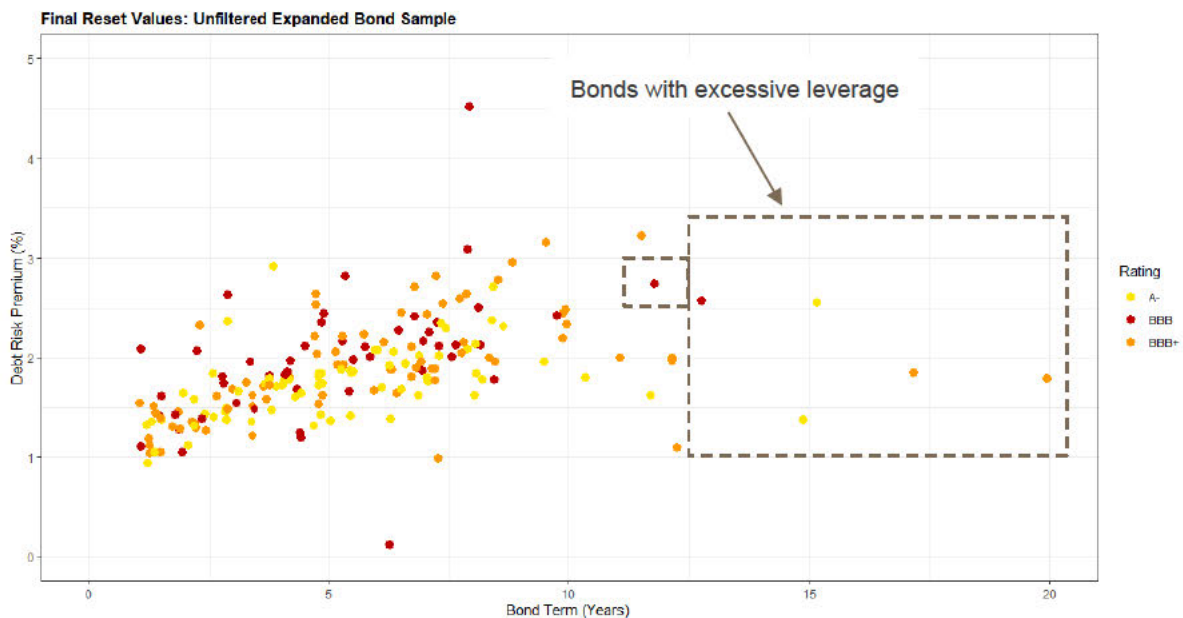


Figure 8 Expanded Bond Sample: Excluded Influential Bonds



The dummy intercepts regression for the expanded bond sample excluding influential high leverage bonds returns a 10-year BBB+ DRP estimate of 2.37%. The profound impact of the leverage exerted by six bonds in a sample of 196 is demonstrated by the material change in the DRP estimate¹⁸.

Prior to removing bonds with a DRP being materially out-of-line with the rating and term, a comparison was made of ratings on the bond and ratings on the issuer for the same rating agencies to assess any variances which might explain any material misalignment. This search did not identify any variances between bond and issuer rating for the same ratings agency.

Statistical analysis of the standardised residuals from the regression model on the sample excluding influential bonds identified a further seven bonds exceeding the exclusion threshold of 2 for standardised residuals as shown in Figure 9. The sample with the removed seven bonds is shown in Figure 10. This reduces the sample to 183 bonds distributed as shown in Table 25.

¹⁸ The Adjusted R-Squared value also increases from 0.24 to 0.31.

Figure 9 Expanded Bond Sample Dummy Intercept Regression Outliers

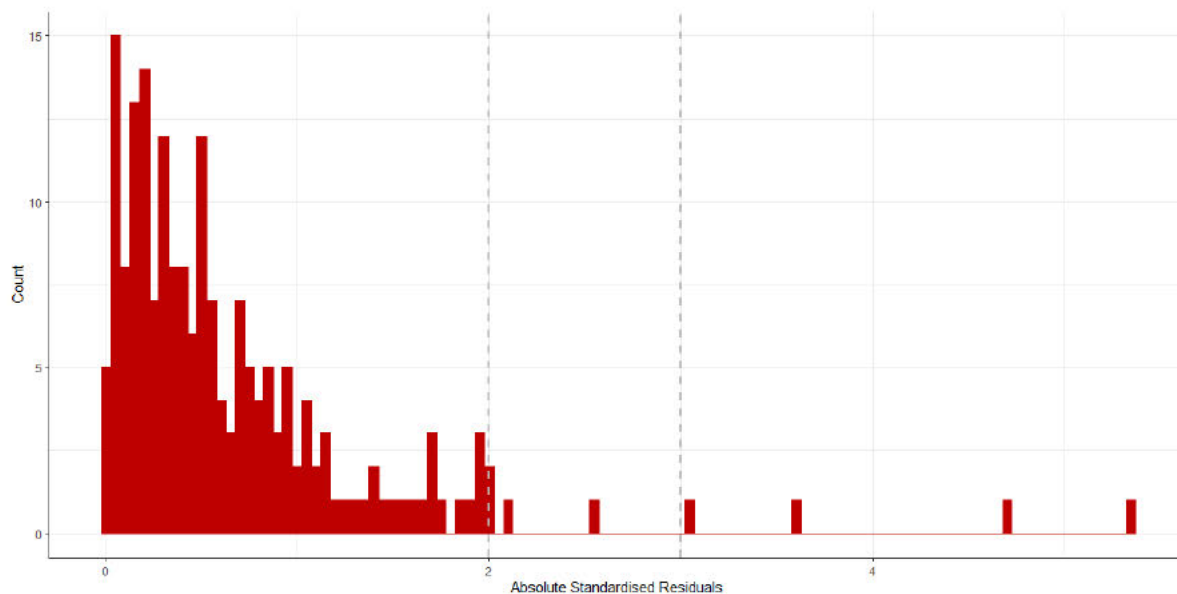
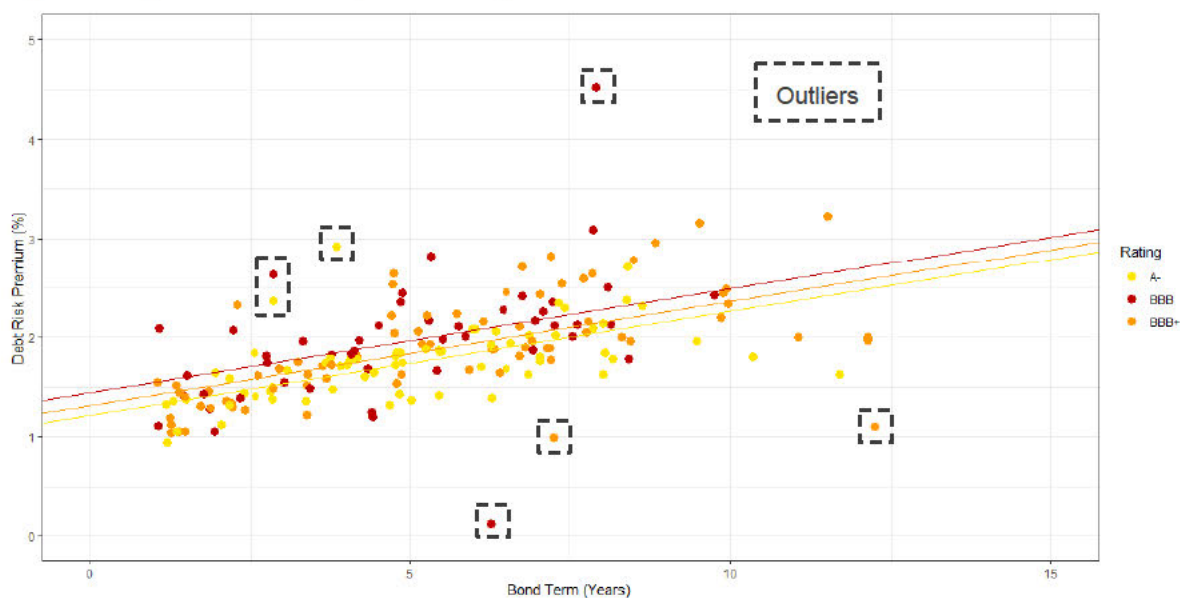


Table 25 Applied Expanded Bond Sample

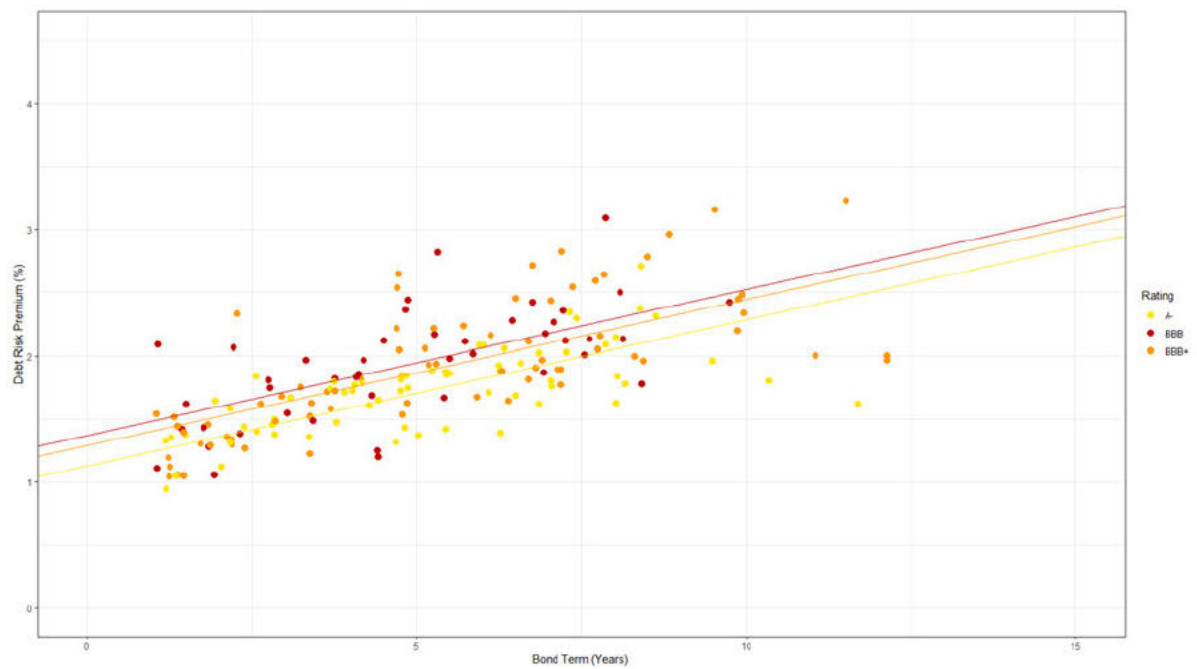
Rating	A-	BBB+	BBB	Total
Frequency	65	74	44	183
Weighted	65	148	132	345
Average				1.88

Figure 10 Expanded Bond Sample Excluding Outliers



The dummy intercepts regression for the expanded bond sample, excluding influential high leverage bonds and bonds materially out of line with their terms and ratings, returns a 10-year BBB+ DRP estimate of 2.45%. All coefficients in this regression are statistically significant. The resultant sample and regression lines is shown in Figure 11 which provides a more ordered sample relative to the UT5 sample in Figure 6.

Figure 11 Final Expanded Sample and Dummy Intercepts Regression

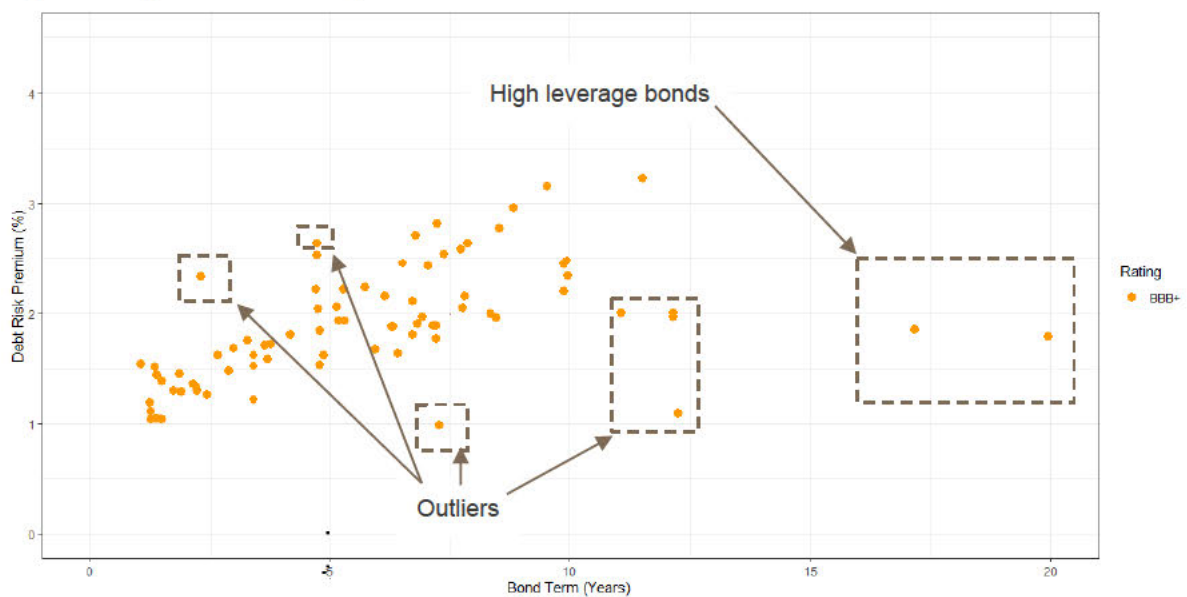


As the average of the weighted observations in Table 25 is biased towards the A- rated bonds, the sample is not suitable for pooled regression. There are, however, sufficient BBB+ rated bonds to apply a single rating regression. Similar steps are applied to obtain the BBB+ bonds sample:

- Subset the initial expanded bond sample to include only BBB+ bonds (78 bonds);
- Fit a regression model and remove high leverage observations (75 bonds); and
- Run a further regression model and remove outliers (69 bonds).

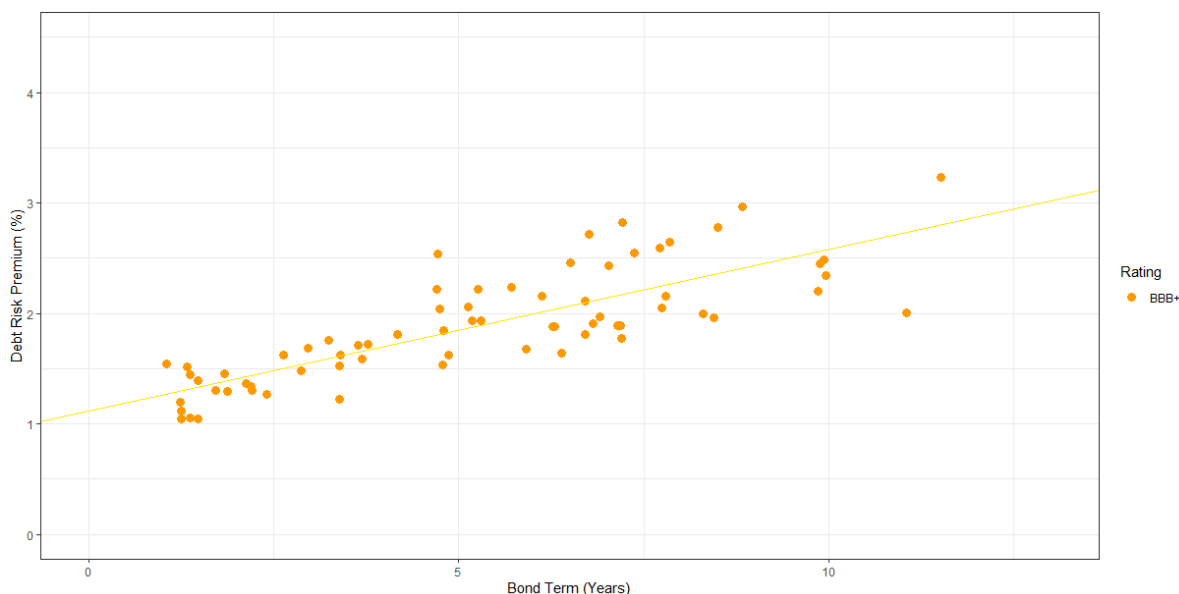
The high leverage and outlier bonds are shown in Figure 12.

Figure 12 Expanded bond sample BBB+ Excluded Bonds



The single rating regression on BBB+ sample of bonds, exclusive of influential high leverage bonds and those bonds materially out of line with their terms and ratings, returns a 10-year BBB+ DRP estimate of **2.58%**. The final sample and regression function is shown in Figure 13.

Figure 13 Expanded Sample BBB+ Bonds and Regression Line



Sensitivity of DRP Estimates to Statistical Thresholds

It was noted above that typical cut-off thresholds for leverage (as a multiple of the sample average) and standardised residuals is two and that Aurizon Network has also evaluated a higher threshold to increase the confidence that only bonds which are highly influential are being removed.

Aurizon Network has undertaken sensitivity analysis of the DRP estimates resulting from the more conservative cut-off threshold. As shown in Table 26, applying a more conservative cut-off threshold increases the DRP estimates.

Table 26 Sensitivity of 10-year DRP to outlier statistic cut-offs

Leverage cut-off (multiple of average)	3	2	3	2
Standardised residual cut-off	3	3	2	2
Expanded Sample	2.41	2.41	2.41	2.45
Expanded Sample BBB+ only	2.47	2.50	2.46	2.58

The midpoint 10-year DRP under different outlier cut-off assumptions is 2.42 for the expanded sample and 2.50 for the expanded BBB+ only sample.

Domestic Bonds in Expanded Sample

As previously discussed, the domestic bonds sample is not of sufficient size or quality to be given any weight in the application of judgement to the determination of point estimate for the 10-year BBB+ DRP. This gives rise to a substantive inconsistency with other components of the cost of debt in the QCA's 2018 Decision, including transaction costs. In its UT5 proposal, Aurizon Network sought to include an allowance for cross-currency swaps in its cost of debt estimate on the basis that:

cross-currency swap costs are incurred in managing the exchange rate risk associated with foreign debt issues, and is a standard and efficient commercial practice¹⁹.

The QCA's 2018 Decision did not accept this proposal and rejected the inclusion of an allowance for cross-currency swaps on the following grounds²⁰:

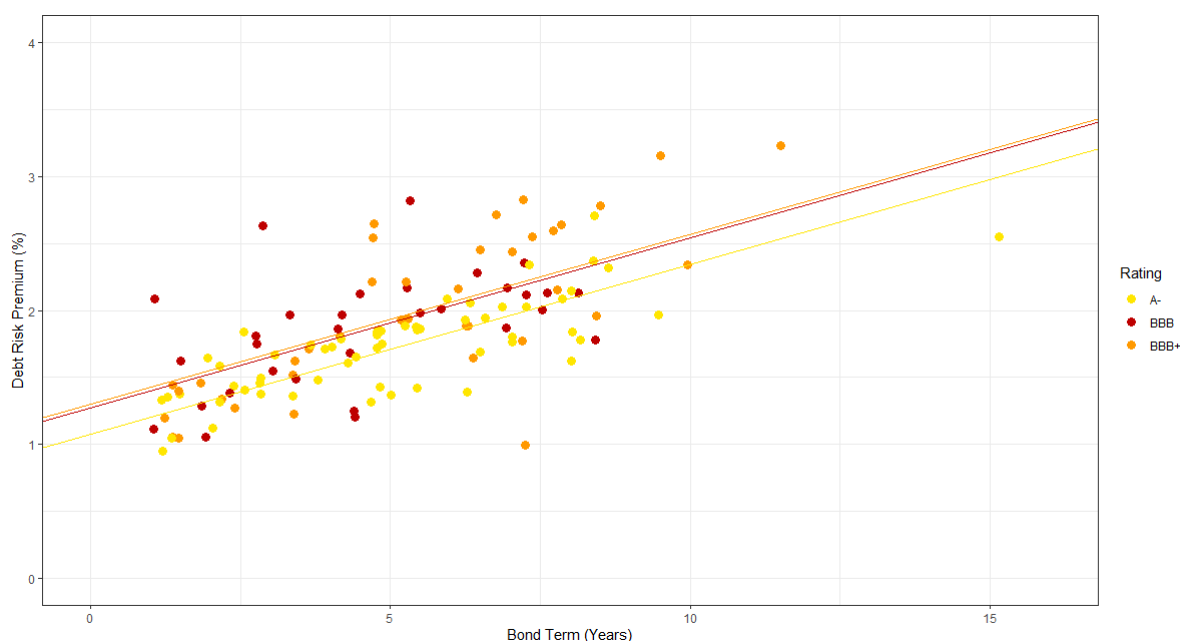
Given that the simple portfolio approach is based on the Australian corporate bond market, benchmark debt-financing transaction costs should only be derived with reference to domestic bond issues. It is not appropriate that benchmark debt-financing transaction costs incorporate transaction costs associated with foreign bond issues. As such, the debt-issuing costs should be derived with reference to domestic bond issues, and the QCA does not consider it appropriate to provide an allowance for cross-currency swap costs.

Consequently, relying on measures for the DRP derived primarily from the expanded sample and the RBA non-financial corporate bonds yields and spreads comprising foreign currency and issued bonds may underestimate a DRP consistent with a domestic only bonds sample and cost of debt exclusive of cross-currency swaps.

As a result, Aurizon Network has also evaluated a subset of the expanded bond sample which includes only domestically issued Australian dollar denominated bonds. The domestic bonds sample is obtained by:

- Fitting a dummy intercept regression model and removing observations with standardised residuals above 3 (removes the A- real estate bond, an A- bond with a term of 14.9 years and a BBB+ bond with a term of 12.5 years); and
- Fit a dummy intercept regression model to the reduced sample size of 128 bonds.

Figure 14 Domestic Bonds in the Expanded Bond Sample (Thresholds >3)



As shown in Figure 14, the dummy intercepts regression for the domestic bonds in the expanded bond sample excluding bonds materially out of line with their terms and ratings returns a 10-year

¹⁹ QCA (2018) Final Decision: Aurizon Network 2017 Draft Amending Access Undertaking, Appendix F, December, p. 166

²⁰ Ibid, p. 167

BBB+ DRP estimate of **2.57%**, which exceeds the 2.45% obtained from the whole sample of domestic and foreign bonds²¹.

Third Party Curves

Consistent with the QCA 2018 Decision, Aurizon Network has estimated a 10-year DRP from the following third-party data sources:

- Bloomberg's BVAL indices for A and BBB broad rated bonds; and
- The RBA's Reserve Bank of Australia's Aggregate Measures of Australian Corporate Bond Spreads and Yields – F3 for A and BBB broad rated bonds.

For the BVAL 10-year DRP estimate, Aurizon Network constructed a BBB+ index from interpolating between the annualised rates for the A index (1/3 weighting) and the BBB index (2/3 weighting) and deducted the effective annual rate of the GACGB10 Index as per the methodology described in the QCA Decision on the Preliminary Values.

Aurizon Network has estimated 10-year BBB+ DRP from the BVAL A and BBB indices of **2.25%**.

Table 27 BVAL Interpolated BBB+ 10 Year DRP

	A-Rating (1/3)	B-Rating (2/3)	BBB+ Rating
BVAL DRP	1.754	2.498	2.250
% Financial Bonds	75%	37%	
Included in Expanded Sample	11	24	

Aurizon Network has also evaluated the bond composition of the BVAL A and BBB indices for the influence of financial bonds and alignment with expanded bonds sample as summarised in Table 27.

Regarding the 10-Year BBB+ DRP obtained from RBA non-financial corporate yields and spreads, the QCA's Decision on the Preliminary Values noted that Aurizon Network had not applied the methodology applied in the QCA's 2018 Decision. As the RBA series is not a continuous series over the averaging period and only publishes end of month values, it is necessary to interpolate between the two end of month observations.

Aurizon Network notes there are two possible approaches to this task:

1. Calculate the end of month DRP estimate from the end of month debt yield and risk-free rate and interpolate the DRP over the averaging period (as per the AER 2018 Rate of Return instrument); or
2. Interpolate the end of month cost of debt over the averaging period and deduct the daily risk-free rate.

The QCA's Decision on the Preliminary Values confirmed that the methodology used in the QCA's 2018 Decision is the latter approach. Aurizon Network notes that where the risk-free rate is volatile over the averaging period, the latter approach is likely to produce a less reliable estimate of the DRP compared to the AER approach. While Aurizon Network has calculated the DRP estimate as per the

²¹ Applying a threshold value for standardised residual of 2 increases the DRP estimate for domestic bonds in the expanded sample to 2.59%.

methodology used in the QCA's 2018 Decision, the DRP has also been estimated using the AER approach for the purpose of applying judgement to obtain a point estimate.

Table 28 DRP Estimates obtained from RBA Non-Financial Corporate Bond Yields and Spreads

	A-Rating (1/3)	B-Rating (2/3)	BBB+ Rating
Yield Interpolation	1.90	2.75	2.47
DRP Interpolation	1.99	2.84	2.56

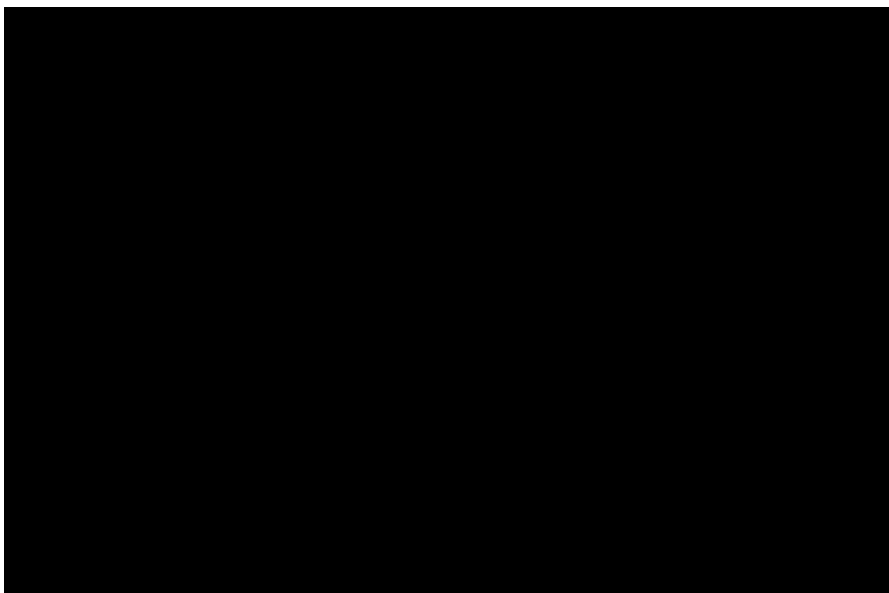
Given the material disparity between the BVAL and RBA estimates and the large proportion of financial bonds present in the BVAL series, Aurizon Network has also compared the composition of the bonds sample used by the RBA to obtain its non-financial corporate bond yields and spreads with the expanded sample.

Of the 94 A-, BBB+ and BBB rated bonds in the RBA's bond sample, 86 of those bonds are present in the expanded bond sample. Bonds that are not included where they due to their inconsistency with the selection criteria, i.e. they either have a term to maturity of slightly less than 1 year or Australia is not the country of risk.

Aurizon Network has also considered the industry composition used in the BVAL and RBA samples as shown in Figure 15. It shows that financial firms make up a significant proportion of the Bloomberg sample. In contrast, the RBA sample, is entirely made up of non-financial firms and financial firms making up the majority of the Bloomberg A ratings group sample.

In addition, almost half of the bonds in the Bloomberg sample used to construct the A+, A, A- yield curve have a current Standard & Poor credit rating of AA-. The rest of the Bloomberg sample is fairly equally divided between A+ and A- bonds. This implies the Bloomberg 10 year DRP estimate is likely to be an underestimate of the true 10 year DRP for the A credit rating group.

Figure 15 Bloomberg BVAL sample vs RBA sample – Industry

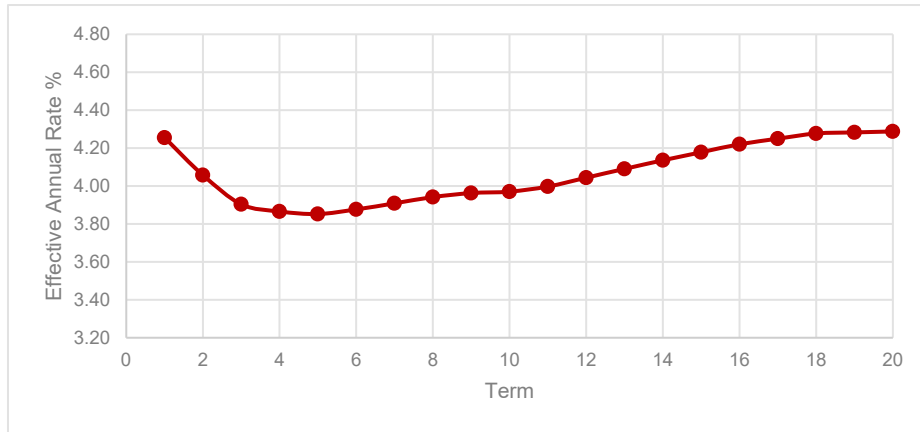


As such, Aurizon Network considers that when applying judgement to determine a point estimate for the debt risk premium, limited weight should be given to the BVAL estimate due to its composition and only the DRP estimate derived from the RBA non-financial corporate yields and spreads should be included in the assessment.

Additional Considerations

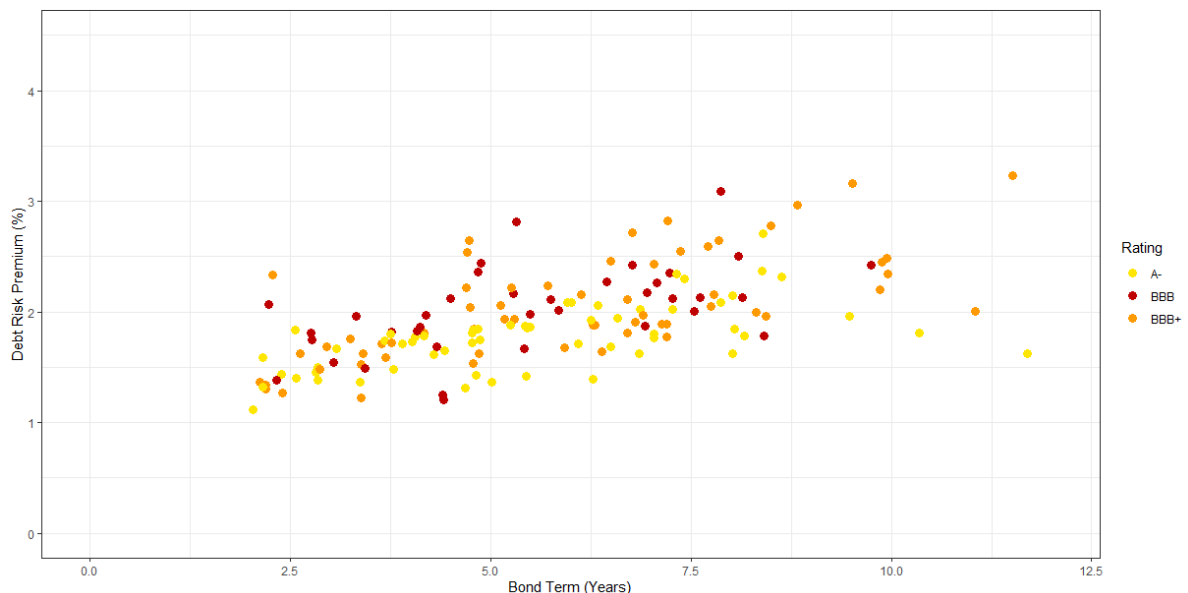
The DRP values for bond observations in the expanded bonds sample at the shorter end of the term also appear depressed. This is likely related to the yield curve of the Australian Government securities where the short-term rates (<2 years) are greater than the term of bonds in the bond sample as shown in Figure 16.

Figure 16 Average Australian Government Yield Curve over the Averaging Period



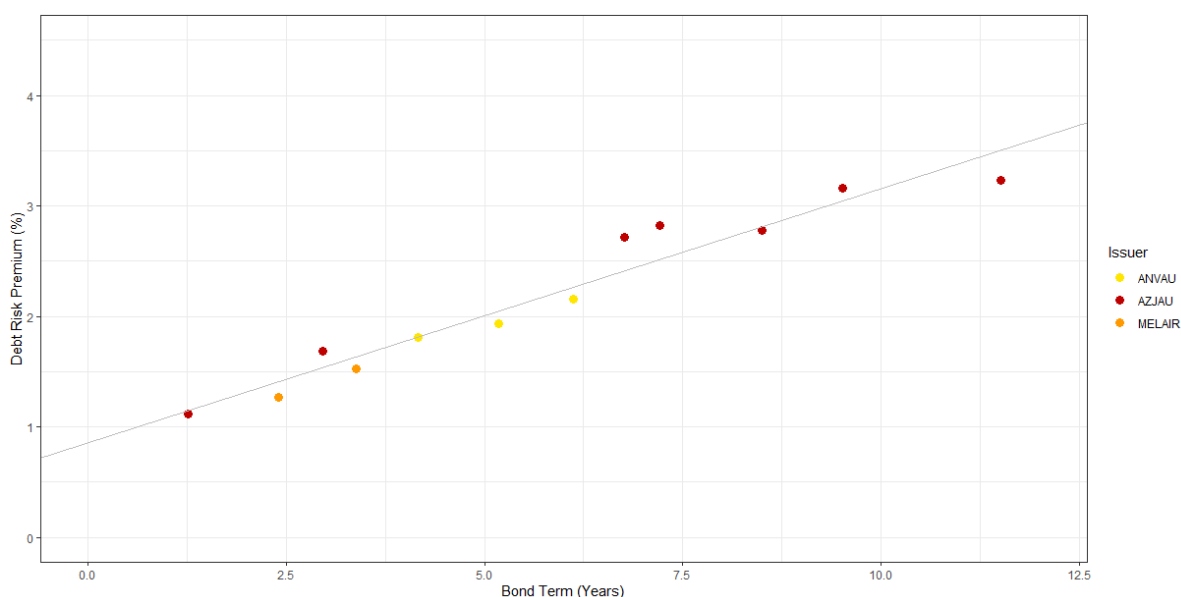
Aurizon Network notes the DRP methodology applied by the Economic Regulatory Authority of Western Australia explicitly excludes bonds with a term of less than two years to avoid the influence of monetary policy on DRP estimates. As an additional sensitivity, Aurizon Network has fitted a dummy intercept regression to the expanded bond sample from Figure 10 and excluded bonds with a term of less than 2 years. The dummy intercepts regression for the term-restricted expanded bond sample in Figure 17 returns a 10-year BBB+ DRP estimate of **2.49%**.

Figure 17 Expanded Bond Sample with Term Restriction (> 2 Years)



Aurizon Network has also evaluated the DRP for Aurizon Network issued bonds trading in public markets. In this regard, there are 7 Aurizon Network bonds within the expanded bond sample. Linear regression on these observations returns a 10-year BBB+ DRP estimate of 3.18%. Aurizon Network notes this estimate is comparable to the 10-year DRP estimate obtained from the BBB+ bonds in the domestic bond sample comprising issuers of similar infrastructure assets. The combination of those bonds (ANVAU, MELAIR) and the Aurizon Network bonds (AZJAU) is plotted in Figure 18.

Figure 18 Aurizon Network Bonds and At-Maturity Domestic Infrastructure Bonds



Finally, Aurizon Network has also considered the impact of issuers with single bonds to the contribution of noise to the expanded sample. A key problem with the pooling of bonds from different issuers into a single regression without dummy variables (missing variable) for each issuer is that it assumes the market believes issuers with the same credit rating are equal in risk. However, that is clearly not the case given the large disparity of DRPs across issuers for the similar term to maturity and same credit rating. The missing variable might be expected to capture differences in risk for issuers with the same credit rating (e.g., this might be a dummy variable for industry or some other factor that investors care about such as ESG).

The methodology of removing high leverage and high standardised residual observations is one way to attempt to remove the impact of this heterogeneity. However, another method is to:

- First estimate a number of regressions where each regression is restricted to issuers with more than a single observation in the sample. This removes heterogeneity of issuers as a concern because in each regression it is the same issuer;
- Second, pool (average) the estimated intercepts and slopes from the single issuer regressions.

Aurizon Network notes that there are 38 issuers out of the 65 issuers in the expanded sample that have multiple bonds with different maturity dates. The average number of bonds issued by the 38 issuers is 4.4. While QIC has issued three bonds, two are effective duplicates with the same maturity. In addition, Origin Energy Finance is removed due to the anomalously low BBB DRP shown in Figure 5.

Table 29 shows the average estimated slope and intercept when the DRP curve is estimated individually for each issuer. It shows bonds of different credit ratings have similar intercept, which is the DRP as term to maturity approaches zero. However, bonds with lower ratings have much steeper slope indicating widening of credit spread as term to maturity increases (i.e. rating slopes are not parallel is implied by dummy intercept regression) as shown in Figure 19. This suggests greater weight should be given to the BBB+ sub-sample DRP estimate from the expanded sample over the parallel slope assumption in the dummy intercepts for the complete expanded sample.

Table 29 Average Slope and Intercept of Pairwise Regression

	Intercept	Slope	Intercept	Slope
Minimum number of bonds by the relevant issuer	2		3	
A-	1.40	0.071	1.31	0.073
BBB+	1.31	0.117	1.35	0.101
BBB	1.33	0.110	1.30	0.112
All	1.36	0.094	1.32	0.092

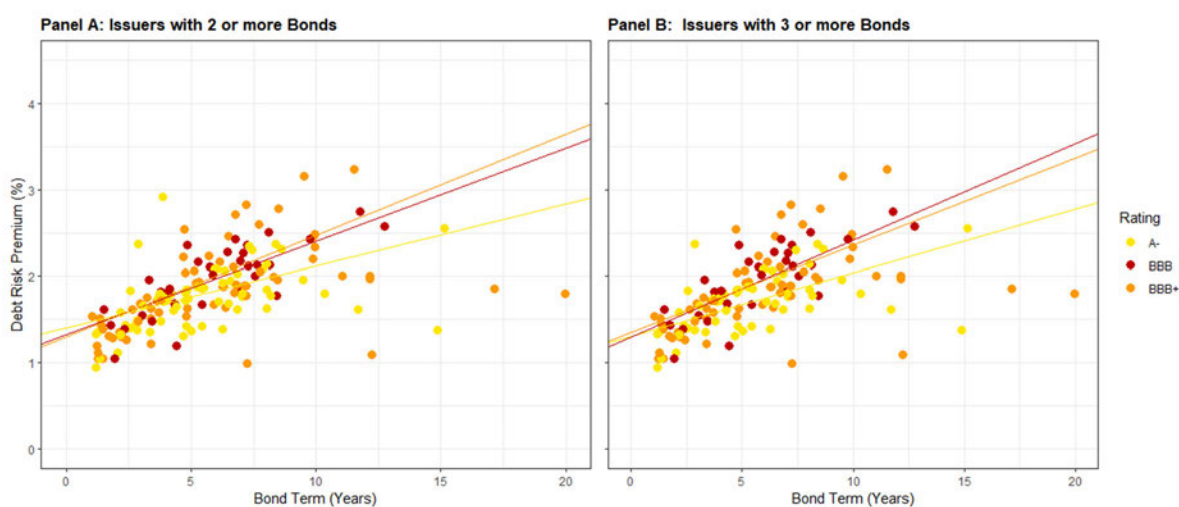
Figure 19 DRP Rating Spreads for Maturity from Pairwise Regression

Table 30 shows the estimated 10-year DRP based on the choice of intercept and slope coefficients. The result varies between 2.25% to 2.53% depending on whether the intercept and slope is based on the average of all 39 issuer or only the BBB+ issuers²².

Table 30 Average Slope and Intercept of Pairwise Regression for BBB+ DRP

Averaging Approach	10 Year DRP	10Year DRP
Minimum number of bonds by the relevant issuer	2	3
Intercept: BBB+; Slope: BBB+	2.48	2.36
Intercept: BBB+; Slope: All	2.25	2.28
Intercept: All; Slope: BBB+	2.53	2.33

Under this method, the estimated 10 year BBB+ DRP is between 2.36% and 2.48% (using only BBB+ issuers with at least 2 bonds on issue) which spans a range inclusive of the DRP estimates obtained from the expanded bonds sample using the leverage/residual parameter of 3.

²² There are 13 BBB+ issuers, with an average of 5 bonds each.

Applying Judgement to Obtain a Reasonable Point Estimate.

The QCA's 2018 Decision methodology requires consideration of:

- a domestic bond sample comprising non-callable bonds;
- an expanded bond sample comprising the domestic bonds sample and callable and foreign currency and issued bonds;
- an interpolated DRP estimate obtained from BVAL indexes for A and BBB benchmarks; and
- an interpolated DRP estimate obtained from the RBA's non-financial corporate yields and spreads for A and BBB benchmarks.

The following regressions are also performed on the domestic and expanded bonds samples:

- a dummy intercept (parallel slope) regression where there is no asymmetric between the ratings;
- a pooled regression where the bond sample is balanced between A- and BBB bonds to avoid bias; and
- a stand-alone BBB+ rating where there are sufficient bonds in the sample.

Of these methods, only three approaches have produced reliable DRP estimates and have been considered in the determination of a reasonable point estimate. These methods are summarised in Table 31.

Table 31 Average DRP Estimates for Threshold for Removal of Influential Bonds and Outliers

Estimate	Threshold <3	Threshold <2
Expanded Bond Sample Dummy Intercept Regression	2.41	2.45
Expanded Bond Sample BBB+ Regression	2.47	2.58
Yield Interpolation of RBA Yields	2.47	2.47
Average DRP Estimate	2.45	2.50

The inclusion of the **2.57%** DRP estimate for the domestic bonds within the expanded sample in the pool of DRP estimates would increase the average DRP estimates in Table 31 to 2.48% and 2.52% respectively. Consequently, the feasible range for a 10-year BBB+ DRP estimate is **2.41%** to **2.58%**.

Aurizon Network considers a DRP estimate of **2.48%** is unbiased²³ and reasonable in that it is:

- is in the lower half of the feasible range of 10-year BBB+ DRP estimates;
- lower than the **3.10%** estimate obtained from BBB+ bonds in the domestic bond sample;
- falls within the range of average DRPs in Table 31 obtained from using both a restrictive parameter of 2 (**2.45%**) for the removal of outliers and influential bonds and a more conservative parameter of 3 (**2.50%**);
- lower than the alternate **2.56%** estimate that would be derived from the interpolated debt risk premium obtained from the RBA non-financial corporate yields and spreads;

²³ The QRC's response to Aurizon Network's proposed Reset Schedule F Preliminary Values raised concerns regarding Aurizon Network exercising judgement to obtain a point estimate which is upwardly biased. The use of the average from estimates obtained from the appropriate UT5 methodologies should address those concerns.

- lower than necessary to reflect the additional cross-currency swap allowances needed to raise foreign debt as assumed by the expanded bonds sample;
- consistent with the **2.49%** DRP estimate obtained from restricting the term to bonds > 2 years (and excluding high leverage bonds > 15 years);
- not inconsistent with the range of **2.36%** to **2.48%** obtained from the average of the BBB+ pairwise regression estimates; and
- lower than the DRP estimate of **3.18%** obtained from observed yields on Aurizon Network issued bonds which is representative of the expected cost of financing the provision of below rail services in the CQCN and consistent with the BBB+ estimate obtained from the domestic bond sample with similar infrastructure issuers.

4.1.4 Summary – Return on Capital

The application of the Reset WACC to the forecast RAB values (see section 4.3 below) will result in the following Return on Capital for the UT5 Reset Period.

Table 32 Return on Capital - Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	198.1	201.8	206.0	208.8
Goonyella	142.9	146.7	150.4	153.3
Moura	30.2	30.8	31.3	31.4
Newlands	22.7	24.4	26.1	27.7
GAPE	61.7	57.4	52.7	47.8
Total	455.7	461.1	466.5	469.0
<i>Preliminary Values</i>	440.3	446.1	451.9	454.8
<i>Variance</i>	15.3	15.0	14.6	14.2

Table 33 Return on Capital - Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	31.6	30.6	29.8	29.7
Goonyella	20.2	20.3	20.9	21.5
Total	51.7	50.9	50.8	51.2
<i>Preliminary Values</i>	50.0	49.3	49.2	49.7
<i>Variance</i>	1.7	1.6	1.6	1.5

4.2 Reset Inflation Rate

Aurizon Network submits a Reset Inflation Rate of 2.90% for the UT5 Reset Period.

Consistent with the definitions provided in UT5, Aurizon Network has calculated the Reset Inflation Rate as the arithmetic average of the midpoint of short-term RBA inflation rate forecasts for the period from 1 July 2024 to the period that the RBA reports short-term inflation forecasts and the midpoint of the RBA target band for inflation for the years to the Terminating Date (if any) that short-term RBA inflation rate.

Consistent with the QCA's 2018 Decision and the QCA's Decision on the Reset Schedule F preliminary values the relevant RBA short term forecasts are those published in the RBA Statement of Monetary Policy (**SoMP**) prior to the commencement of the averaging period. The May 2023 SoMP is the source of the short-term CPI forecasts for the June 2023 averaging period.

In accordance with the short-term inflation forecasts in the RBA's May 2023 SoMP, Aurizon Network has adopted the following values when determining the Reset Inflation Rate. The UT5 definition for the Reset Inflation Rate calculates the annual forecast inflation rate as the arithmetic average of the forecasts over the four-year period.

Table 34 RBA Inflation Forecasts

Date	CPI	Comment
June-24	3.60%	RBA short-term forecast
June-25	3.00%	RBA short-term forecast
June-26	2.50%	Midpoint of RBA target band
June-27	2.50%	Midpoint of RBA target band
Reset Inflation Rate	2.90%	4 Year Average Inflation Forecast

4.3 Forecast Regulatory Asset Base values

Aurizon Network submits the following forecast RAB values for the UT5 Reset Period. These forecast RAB values differ from the approved Preliminary Values due to updated inflation outcomes. Aurizon Network has updated the forecast value of the RAB to reflect:

- actual CPI outcomes for FY2023 of 6.33%²⁴; and
- for FY2024 – FY2027, the Reset Inflation Rate of 2.90%.

Please note that the RAB values for FY2022 and FY2023 presented in the tables below are not within the UT5 Reset Period. The FY2022 and FY2023 values are provided for completeness and to illustrate the transition from the latest QCA-approved RAB roll-forward (FY2022) to the opening RAB values for FY2024.

Table 35 Forecast RAB Values – Blackwater System

Blackwater (\$m)	FY2022 [^]	FY2023 [^]	FY2024	FY2025	FY2026	FY2027
Opening	2,570.3	2,637.5	2,710.8	2,738.4	2,770.9	2,799.8
Capex	109.4	122.0	139.6	147.1	157.4	162.8
Inflation	195.6	174.8	84.0	85.1	86.5	87.6
minus Depreciation	225.0	223.5	196.0	199.7	215.0	231.5
Closing	2,650.2	2,710.8	2,738.4	2,770.9	2,799.8	2,818.8

²⁴ Australian Bureau of Statistics (2023), Consumer Price Index: All Groups – Brisbane, Publication No.6401.0, Tables 1 and 2, Series ID: A2325816R, Published 26 July 2023.

Table 36 Forecast RAB Values – Goonyella System

Goonyella (\$m)	FY2022 [^]	FY2023 [^]	FY2024	FY2025	FY2026	FY2027
Opening	1,713.3	1,794.4	1,887.6	1,917.7	1,955.8	1,998.3
Capex	96.3	118.7	109.2	126.4	141.9	142.2
Inflation	132.1	121.2	57.9	59.3	60.8	62.1
minus Depreciation	147.3	146.7	136.9	147.7	160.3	170.4
Closing	1,794.4	1,887.6	1,917.7	1,955.8	1,998.3	2,032.1

Table 37 Forecast RAB Values – Moura System

Moura (\$m)	FY2022 [^]	FY2023 [^]	FY2024	FY2025	FY2026	FY2027
Opening	318.7	339.0	351.7	356.8	362.5	366.5
Capex	18.3	15.3	18.0	20.3	20.5	17.5
Inflation	24.6	22.4	10.7	10.9	11.1	11.1
minus Depreciation	22.7	25.0	23.7	25.5	27.6	28.5
Closing	339.0	351.7	356.8	362.5	366.5	366.7

Table 38 Forecast RAB Values – Newlands System

Newlands (\$m)	FY2022 [^]	FY2023 [^]	FY2024	FY2025	FY2026	FY2027
Opening	358.8	386.2	411.7	438.3	474.0	508.5
Capex	20.1	19.7	22.2	29.4	28.6	29.6
Inflation	25.9	25.7	21.3	23.1	24.9	26.8
minus Depreciation	18.5	19.9	16.9	16.8	19.0	21.5
Closing	386.2	411.7	438.3	474.0	508.5	543.4

Table 39 Forecast RAB Values – GAPE

GAPE (\$m)	FY2022 [^]	FY2023 [^]	FY2024	FY2025	FY2026	FY2027
Opening	821.9	805.7	776.7	725.9	671.1	612.5
Capex	2.2	2.1	0.6	--	--	--
Inflation	59.9	51.2	23.8	22.4	20.9	19.3
minus Depreciation	78.3	82.3	75.1	77.2	79.5	63.4
Closing	805.7	776.7	725.9	671.1	612.5	568.5

4.3.1 Methodology

The FY2024 opening asset value for the UT5 Reset Period, reflects a roll-forward value of \$6,139m for the CQCN. This value has been determined having regard to the following matters:

- Applying the roll-forward methodology outlined in the 2017 Access Undertaking;

- Applying the approved RAB values for each Coal System as at FY2022 (the latest approved RAB Roll-forward);²⁵
- Aurizon Network has estimated the roll-forward value of the RAB:
 - For FY2023, by having regard to the forecast capital expenditure outlined in the FY2023 MRSB and the actual inflation outcomes of 6.33%; and
 - For the UT5 Reset Period (FY2024 – FY2027), by having regard to the four-year capital expenditure forecasts outlined in the FY2024 MRSB and the Reset Inflation Rate of 2.90%,
- depreciation rates based on previous QCA decisions and endorsed asset lives. For clarity, the rolling 20-year asset life has been reset from FY2024 as required by as required by clause 6A.3 of UT5.

4.4 Depreciation Allowance

Aurizon Network's depreciation allowance for the Reset Period is calculated using a methodology consistent with the QCA's 2018 Decision. As required by clause 6A.3 of UT5, the rolling 20-year asset life has been reset at the commencement of the Reset Period (FY24).

Aurizon Network submits the following depreciation allowance for the UT5 Reset Period. For clarity, the depreciation allowance outlined below represents the "Return of Capital minus Inflation", i.e. the Return of Capital (Depreciation) for the year minus the inflationary gain from indexation of the asset base, which is based on the Reset Inflation Rate.

Table 40 Return of Capital minus Inflation - Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	91.0	92.1	104.1	117.5
Goonyella	64.5	72.3	81.6	88.9
Moura	12.5	14.0	15.8	16.7
Newlands	8.5	7.8	9.4	11.2
GAPE	51.1	54.6	58.3	44.6
Total	227.5	240.8	269.1	278.9
<i>Preliminary Values</i>	221.2	234.8	263.6	273.6
<i>Variance</i>	6.3	6.0	5.6	5.2

Table 41 Return of Capital minus Inflation - Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	17.6	19.1	20.7	22.6
Goonyella	11.4	12.5	13.9	15.1
Total	29.0	31.6	34.6	37.7
<i>Preliminary Values</i>	28.3	31.0	34.0	37.3
<i>Variance</i>	0.7	0.6	0.5	0.5

²⁵ QCA (2023) Decision RAB roll-forward 2021-22, 11 April 2023. Available at: <http://www.qca.org.au/wp-content/uploads/2023/04/qca-aurizon-network-rab-roll-forward-2021-22-acceptance-letter.pdf>

4.5 Indirect Maintenance Cost Allowance

Consistent with the QCA's 2018 Decision, the Indirect Maintenance Cost Allowance for the UT5 Reset Period is comprised of a return on plant and a return on inventory.

The Preliminary Values approved by the QCA were calculated having regard to the preliminary Reset WACC of 8.18%. Aurizon Network has updated the Indirect Maintenance Cost Allowance to reflect Reset WACC of 8.51% outlined in section 4.1 of this submission. Aurizon Network confirms that the underlying plant asset base and forecast inventory holdings remain consistent with the QCA's decision on the Preliminary Values.

Aurizon Network submits the following Indirect Maintenance Cost Allowance for the UT5 Reset Period.

Table 42 Indirect Maintenance Cost Allowance

Indirect Maintenance (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	7.9	7.8	7.5	7.4
Goonyella	8.1	7.9	7.6	7.5
Moura	1.0	1.1	1.0	1.0
Newlands	0.5	0.5	0.5	0.5
GAPE	0.8	0.8	0.8	0.8
Total	18.2	18.0	17.4	17.1
<i>Preliminary Values</i>	<i>17.5</i>	<i>17.3</i>	<i>16.7</i>	<i>16.4</i>
<i>Variance</i>	<i>0.7</i>	<i>0.7</i>	<i>0.7</i>	<i>0.7</i>

4.5.1 Return on Plant

The Return on Plant for the UT5 Reset Period is summarised in Table 43 below.

Table 43 Return on Plant

Return on Plant (\$m)	Value	FY2024	FY2025	FY2026	FY2027
Reset WACC	8.51%				
Opening Asset Value [^]		182.8	178.6	170.6	166.1
Total Return on Plant		15.5	15.2	14.5	14.1
<i>Preliminary Values</i>		<i>14.9</i>	<i>14.6</i>	<i>14.0</i>	<i>13.6</i>
<i>Variance</i>		<i>0.6</i>	<i>0.6</i>	<i>0.6</i>	<i>0.6</i>

[^] Reflects the opening value of the Asset Register in each year.

4.5.2 Return on Inventory

The return on inventory for the UT5 Reset Period is summarised in Table 44 below.

Table 44 Return on Inventory

Return on Inventory (\$m)	Value	FY2024	FY2025	FY2026	FY2027
Reset WACC	8.51%				
Inventory consumption - Maintenance	43.3%				
Forecast Inventory Holdings		74.7	76.1	78.1	79.8

Total Return on Inventory	2.8	2.8	2.9	2.9
<i>Preliminary Values</i>	2.6	2.7	2.7	2.8
<i>Variance</i>	0.1	0.1	0.1	0.1

4.6 Tax Allowance

The tax allowance is a computation of Aurizon Network's post-tax revenue model using a methodology consistent with the QCA's 2018 Decision. Aurizon Network submits the following tax allowance for the UT5 Reset Period.

Table 45 Tax Allowance - Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	18.0	17.4	19.2	21.0
Goonyella	12.6	13.5	14.6	15.3
Moura	3.3	3.5	3.7	3.8
Newlands	1.8	1.6	1.8	2.1
GAPE	11.4	11.8	12.3	9.5
Total	47.1	47.9	51.6	51.7
<i>Preliminary Values</i>	44.4	45.3	49.1	49.3
<i>Variance</i>	2.7	2.6	2.5	2.4

Table 46 Tax Allowance - Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	2.9	3.1	3.5	3.8
Goonyella	2.2	2.4	2.6	2.8
Total	5.1	5.5	6.1	6.6
<i>Preliminary Values</i>	4.8	5.2	5.8	6.4
<i>Variance</i>	0.3	0.3	0.3	0.2

4.7 Working Capital

The working capital allowance is a computation of Aurizon Network's post-tax revenue model and is determined using the same methodology approved in the QCA's 2018 Decision. Aurizon Network submits the following working capital allowance for the UT5 Reset Period.

Table 47 Working capital - Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	1.2	1.3	1.3	1.4
Goonyella	1.0	1.0	1.1	1.1
Moura	0.2	0.2	0.2	0.2
Newlands	0.1	0.1	0.1	0.1
GAPE	0.4	0.4	0.4	0.3

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Total	3.0	3.0	3.1	3.2
<i>Preliminary Values</i>	2.9	3.0	3.1	3.1
<i>Variance</i>	0.1	0.1	0.1	0.1

Table 48 Working Capital - Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	0.3	0.3	0.3	0.3
Goonyella	0.2	0.2	0.2	0.2
Total	0.5	0.5	0.5	0.5
<i>Preliminary Values</i>	0.5	0.5	0.5	0.5
<i>Variance</i>	0.0	0.0	0.0	0.0

4.8 Approved Allowable Revenue Adjustments

The Preliminary Values provided for the recovery of several revenue adjustments that had previously been approved by the QCA. The adjustments are:

- UT4 Capital Carryover;
- Reconciliation of FY2018 and FY2019 Transitional Tariffs;
- Extended recovery of APS Capital Expenditure;
- FY2022 Revenue Adjustment Amounts; and
- FY2022 Capital Expenditure Allowable Revenue Adjustment.

Adjustment amounts associated with the UT4 Capital Carryover, Transitional Tariffs and APS Capital Expenditure will not change, and are re-stated in section 4.14 below.

The adjustments associated with the FY2022 Revenue Adjustment Amounts and FY2022 Capital Expenditure Allowable Revenue are impacted by the Reset WACC, resulting in minor variations when compared to the approved Preliminary Values. Aurizon Network submits the following updates to the allowable revenue adjustments for the UT5 Reset Period.

4.8.1 FY22 Revenue Adjustment Amounts

The updated FY22 Revenue Adjustment Amounts for the UT5 Reset Period are as follows.

Table 49 FY22 Revenue Adjustment Amounts – Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	16.5	--	--	--
Goonyella	(2.1)	--	--	--
Moura	2.8	--	--	--
Newlands	1.1	--	--	--
GAPE	12.0	--	--	--
Total	30.3	--	--	--

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
<i>Preliminary Values</i>	30.2	--	--	--
<i>Variance</i>	0.1	--	--	--

Table 50 FY22 Revenue Adjustment Amounts – Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	(1.4)	--	--	--
Goonyella	12.4	--	--	--
Total	11.0	--	--	--
<i>Preliminary Values</i>	11.0	--	--	--
<i>Variance</i>	0.0	--	--	--

4.8.2 FY22 Capital Expenditure Allowable Revenue Adjustment

The updated FY22 Capital Expenditure Allowable Revenue Adjustments for the UT5 Reset Period are as follows.

Table 51 FY22 Capital Expenditure Allowable Revenue Adjustment – Non-Electric

Non-Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	(3.2)	--	--	--
Goonyella	(6.3)	--	--	--
Moura	1.7	--	--	--
Newlands	(1.2)	--	--	--
GAPE	0.4	--	--	--
Total	(8.7)	--	--	--
<i>Preliminary Values</i>	(8.6)	--	--	--
<i>Variance</i>	(0.0)	--	--	--

Table 52 FY22 Capital Expenditure Allowable Revenue Adjustment – Electric

Electric (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	(0.5)	--	--	--
Goonyella	(0.2)	--	--	--
Total	(0.7)	--	--	--
<i>Preliminary Values</i>	(0.7)	--	--	--
<i>Variance</i>	0.0	--	--	--

4.9 Electric Energy Charge

The EC Tariff for FY2024 has been updated to reflect the charge of \$1.66 per eGTK'000, which was approved by the QCA on 22 June 2023.

For FY2025 – FY2027, the QCA approved a preliminary EC Tariff of \$2.82 per eGTK'000.

Aurizon Network proposes to update the EC Tariff for all years to \$1.66 per eGTK'000, reflecting the latest approved value. Aurizon Network notes that these values are likely to be updated prior to the commencement of each year in accordance with UT5, Schedule F.

Table 53 EC Tariff

EC Tariff	FY2024	FY2025	FY2026	FY2027
Blackwater	1.66	1.66	1.66	1.66
Goonyella	1.66	1.66	1.66	1.66

QCA Approved Inputs

The inputs contained in the following section have already been approved by the QCA as part of their decision on the Preliminary Values. Aurizon Network has restated these values below for completeness.

4.10 Direct Maintenance Costs

The forecast direct maintenance costs for the UT5 Reset Period are as follows:

Table 54 Direct Maintenance Costs - Non-Electric

Non-Electric Maintenance (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	62.9	68.1	68.3	69.6
Goonyella	59.9	63.0	64.0	64.7
Moura	13.2	13.1	13.6	13.6
Newlands	5.1	5.7	5.5	5.9
GAPE	8.7	9.7	9.3	10.1
Total	149.7	159.5	160.7	164.0

Table 55 Direct Maintenance Costs - Electric

Electric Maintenance (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	7.0	7.2	7.4	7.5
Goonyella	7.4	8.1	7.7	7.9
Total	14.4	15.4	15.1	15.5

4.11 Forecast Capital Expenditure

The capital expenditure forecasts for the UT5 Reset Period (expressed as min-year values) are as follows:

Table 56 Forecast Capital Expenditure - Non-Electric (Mid-Year \$)

Non-Electric Capex (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	139.9	145.9	153.6	148.8
Goonyella	102.9	118.1	125.9	125.4
Moura	18.8	21.1	21.3	18.3
Newlands	23.1	30.6	29.8	30.9
GAPE	0.6	0.0	0.0	0.0
Total	285.3	315.7	330.7	323.3

Table 57 Forecast Capital Expenditure - Electric (Mid-Year \$)

Electric Capex (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	5.5	7.3	10.4	20.8
Goonyella	10.8	13.6	21.9	22.7
Total	16.4	20.9	32.3	43.5

4.12 Non-Electric Operating Expenditure Allowance

The non-electric operating expenditure allowances for the UT5 Reset Period are as follows:

Table 58 Non-Electric Operating Expenditure Allowance

Non-Electric OPEX (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	53.9	53.9	53.9	53.9
Goonyella	58.8	58.8	58.8	58.8
Moura	5.8	5.8	5.8	5.8
Newlands	3.6	3.6	3.6	3.6
GAPE	12.9	12.9	12.9	12.9
Total	135.1	135.1	135.1	135.1

4.13 Electric Operating Expenditure Allowance

The electric operating expenditure allowances for the UT5 Reset Period are as follows:

Table 59 Electric Operating Expenditure Allowance

Electric OPEX (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	38.9	38.9	38.9	38.9
Goonyella	33.1	33.1	33.1	33.1
Total	72.0	72.0	72.0	72.0

4.14 Allowable Revenue Adjustments

The QCA has approved the following allowable revenue adjustments for the UT5 Reset Period.

4.14.1 UT4 Capital Carryover

Table 60 UT4 Capital Carryover – Non-Electric

Non-Electric Capital Carryover (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	1.9	2.0	2.0	2.1
Goonyella	2.5	2.5	2.6	2.7
Moura	0.4	0.4	0.4	0.4
Newlands	0.9	0.9	0.9	0.9
GAPE	(0.8)	(0.8)	(0.8)	(0.9)

Non-Electric Capital Carryover (\$m)	FY2024	FY2025	FY2026	FY2027
Total	4.9	5.0	5.1	5.2

Table 61 UT4 Capital Carryover – Electric

Electric Capital Carryover (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	(0.0)	(0.0)	(0.0)	(0.0)
Goonyella	1.8	1.8	1.9	1.9
Total	1.7	1.8	1.8	1.9

4.14.2 Reconciliation of FY2018 and FY2019 Transitional Tariffs

Table 62 Reconciliation of Transitional Tariff Arrangements – Non-Electric

Non-Electric Transitional Tariff (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	4.6	4.7	4.9	5.0
Goonyella	3.2	3.3	3.3	3.4
Moura	(0.1)	(0.1)	(0.1)	(0.1)
Newlands	0.7	0.7	0.7	0.7
GAPE	0.4	0.4	0.4	0.4
Total	8.8	9.0	9.2	9.4

Table 63 Reconciliation of Transitional Tariff Arrangements – Electric

Electric Transitional Tariffs (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	0.1	0.1	0.1	0.1
Goonyella	(0.7)	(0.7)	(0.7)	(0.7)
Total	(0.6)	(0.6)	(0.6)	(0.7)

4.14.3 Extended recovery of APS Capital Expenditure

Table 64 Allowable Revenue adjustment for extended recovery of approved APS capital expenditure

Recovery of APS (\$m)	FY2024	FY2025	FY2026	FY2027
Blackwater	7.1	7.3	7.5	7.6
Goonyella	7.6	7.8	8.0	8.2
Moura	0.8	0.9	0.9	0.9
Newlands	0.5	0.5	0.5	0.5
GAPE	0.0	0.0	0.0	0.0
Total	16.1	16.4	16.8	17.2

4.15 IE Pass Through Cost

The QCA has approved the following IE Pass Through Costs for each year of the UT5 Reset Period:

Table 65 IE Pass Through Cost – FY2024 – FY2027

IE Pass Through Cost	FY2024	FY2025	FY2026	FY2027
All Coal Systems	0.0164	0.0164	0.0164	0.0164

4.16 QCA Levy

The QCA has approved the following QCA Levy for each year of the UT5 Reset Period:

Table 66 QCA Levy

QCA Levy	FY2024	FY2025	FY2026	FY2027
All Coal Systems	0.0063	0.0063	0.0063	0.0063

Aurizon Network received correspondence from the QCA:

- on 30 June 2023, which outlined its estimate of regulatory fees for FY2024; and
- on 12 July 2023, which provided a cost update on the QCA's FY2023 fees.

The QCA's correspondence constitutes a notice under Schedule F, clause 5.1 of UT5 of an Endorsed Variation Event. On 18 July 2023, Aurizon Network made a submission to the QCA seeking approval to vary the FY2024 QCA Levy in accordance with Schedule F, Clause 5.2 (c).

Aurizon Network is awaiting the QCA's decision on the updated FY2024 QCA Levy and will seek to reflect the outcomes of that decision within this Reset Schedule F Values process. Should Aurizon Network's submission be approved, this would see the FY2024 QCA Levy reduce to \$0.0058, with an effective date of 1 September 2023.

5. Allowable Revenues and Reference Tariffs

5.1 Allowable Revenues

Schedule F to UT5, provides the Allowable Revenues for each Coal System. Aurizon Network submits the following AT2-4 and AT5 Allowable Revenues for each Coal System and for each year of the Reset Period to the QCA for approval:

Table 67 Blackwater System - Allowable Revenues (\$m)

Blackwater	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2024	32.7	427.3	96.3	556.3
FY2025	33.6	422.7	99.2	555.6
FY2026	34.6	440.0	100.6	575.2
FY2027	35.6	458.7	102.9	597.2

Table 68 Goonyella System - Allowable Revenues (\$m)

Goonyella	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2024	24.9	327.8	87.8	440.5
FY2025	25.6	351.3	77.8	454.7
FY2026	26.4	365.8	79.6	471.8
FY2027	27.1	376.8	81.9	485.8

Table 69 Moura System - Allowable Revenues (\$m)

Moura	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2024	6.0	65.8	--	71.7
FY2025	6.1	63.5	--	69.6
FY2026	6.3	66.2	--	72.6
FY2027	6.5	67.2	--	73.7

Table 70 Newlands System - Allowable Revenues (\$m)

Newlands	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2024	7.1	37.0	--	44.2
FY2025	7.4	38.4	--	45.8
FY2026	7.6	41.5	--	49.0
FY2027	7.8	45.5	--	53.2

Table 71 GAPE - Allowable Revenues (\$m)

GAPE	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2024	14.5	144.5	--	159.0
FY2025	14.9	132.3	--	147.2

GAPE	AT1 (\$m)	AT2-4 (\$m)	AT5 (\$m)	Total (\$m)
FY2026	15.4	131.0	–	146.4
FY2027	15.8	109.8	–	125.6

5.2 Reference Tariffs

Schedule F to UT5, provides the Allowable Revenues for each Coal System. Aurizon Network submits the following Reference Tariffs to the QCA for approval. Please note that the rate of escalation applied to the AT1 and AT2 Reference Tariffs for each year has been updated to reflect the Reset Inflation Rate.

The combination of the System Forecasts and Allowable Revenues outlined in this submission results in the following Reference Tariffs for each Coal System and for each year of the Reset Period.

It should be noted that the Preliminary Values approved by the QCA in May 2023 will form the basis of the Reference Tariffs that will be applicable in FY2024. In circumstances where the QCA issues a decision on the Reset Schedule F Values during FY2024, this would see:

- the Preliminary Values continue to be billed during FY2024 (subject to any variations that may be approved by the QCA during the year);
- Reset Schedule F Values forming the basis of estimated allowable revenues and tariffs for FY2025 to FY2027; and
- any Allowable Revenue difference between the FY2024 Preliminary Values and Reset Schedule F Values will be reconciled through the Revenue Adjustment Amounts (Revenue Cap) process, which is outlined in UT5.

Table 72 Blackwater System – Reference Tariffs

Blackwater	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.04	2,563.21	10.51	3.40	4.25	1.66~	0.0063	0.0164
FY2025	1.07	2,633.70	10.66	3.45	4.46	1.66	0.0063	0.0164
FY2026	1.10	2,710.08	11.10	3.59	4.52	1.66	0.0063	0.0164
FY2027	1.13	2,788.67	11.59	3.75	4.62	1.66	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

~ Reflects the updated EC Tariff for FY2024 approved by the QCA on 21 June 2023.

Table 73 Goonyella System – Reference Tariffs

Goonyella	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	0.72	1,623.94	6.41	1.33	2.61	1.66~	0.0063	0.0164
FY2025	0.74	1,668.60	7.11	1.47	2.34	1.66	0.0063	0.0164
FY2026	0.76	1,716.99	7.41	1.53	2.40	1.66	0.0063	0.0164
FY2027	0.78	1,766.79	7.62	1.58	2.47	1.66	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

~ Reflects the updated EC Tariff for FY2024 approved by the QCA on 21 June 2023.

Table 74 Moura System – Reference Tariffs

Moura	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.93	759.15	15.96	2.60	--	--	0.0063	0.0164
FY2025	1.98	780.03	15.78	2.58	--	--	0.0063	0.0164
FY2026	2.04	802.65	16.48	2.69	--	--	0.0063	0.0164
FY2027	2.10	825.93	16.71	2.73	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

Table 75 Newlands System – Reference Tariffs

Newlands	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	2.01	343.28	8.87	1.21	--	--	0.0063	0.0164
FY2025	2.06	352.72	9.50	1.29	--	--	0.0063	0.0164
FY2026	2.12	362.95	10.18	1.39	--	--	0.0063	0.0164
FY2027	2.18	373.48	11.06	1.51	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

Table 76 GAPE – Reference Tariffs

GAPE	AT1	AT2	AT3	AT4	AT5	EC	QCA Levy	IE Pass Through Cost
FY2024 [^]	1.62	15,464.32	1.55	3.22	--	--	0.0063	0.0164
FY2025	1.66	15,464.32	1.44	2.73	--	--	0.0063	0.0164
FY2026	1.71	15,464.32	1.39	2.67	--	--	0.0063	0.0164
FY2027	1.76	15,464.32	1.41	1.43	--	--	0.0063	0.0164

[^] FY2024 Reference Tariffs reflect the Reset Schedule F Preliminary Values approved by the QCA in May 2023.

Appendix 1: Allowable Revenue Waterfall Charts

Figure 20 Allowable Revenue Waterfall – Blackwater System (\$m)

Blackwater System – FY24 Preliminary vs Reset Schedule F Values

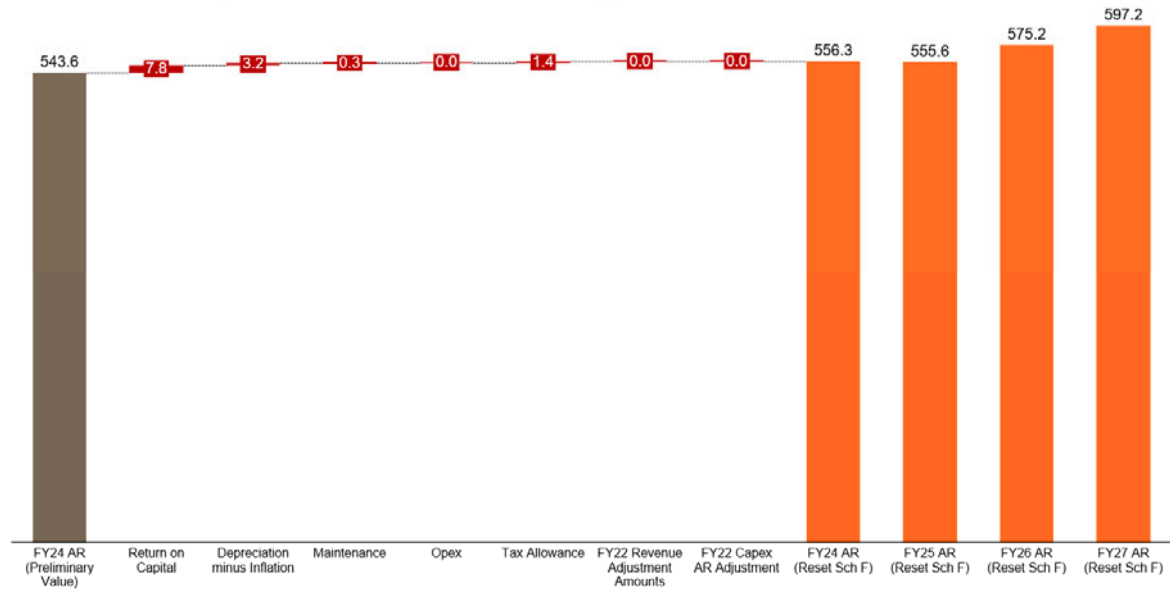


Figure 21 Allowable Revenue Waterfall – Goonyella System (\$m)

Goonyella System - FY24 Preliminary vs Reset Schedule F Values

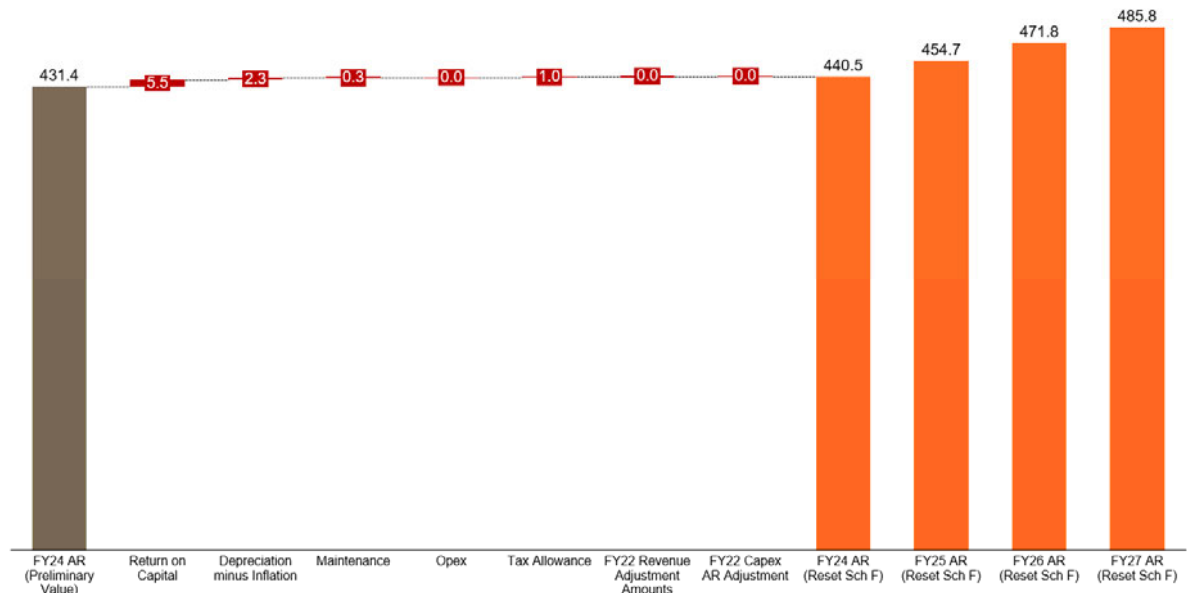


Figure 22 Allowable Revenue Waterfall – Moura System (\$m)

Moura System - FY24 Preliminary vs Reset Schedule F Values

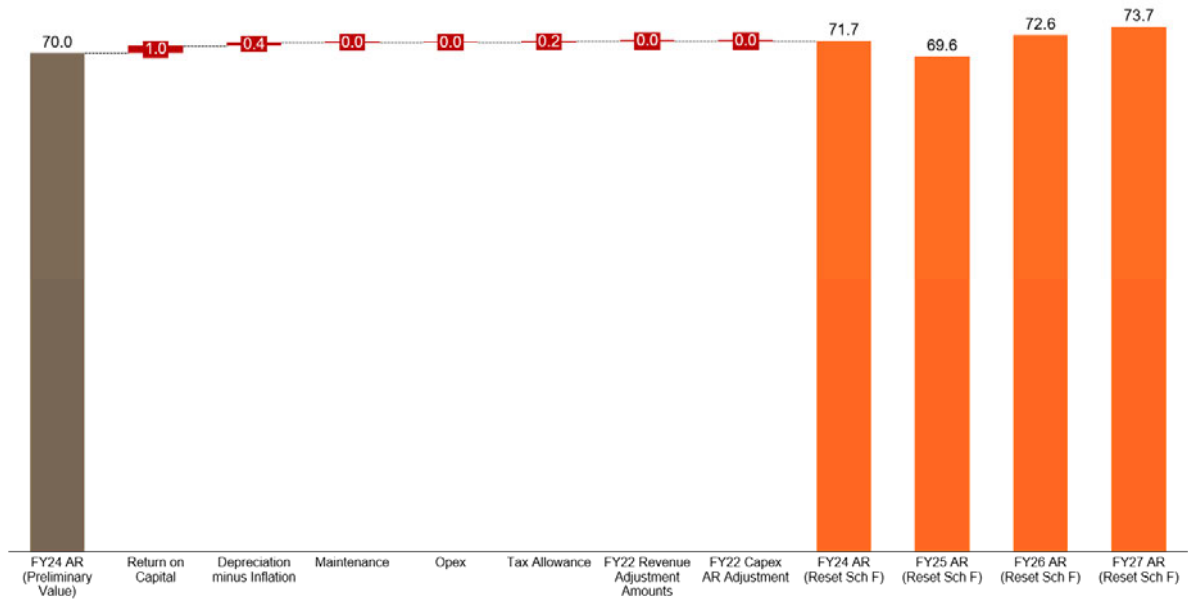


Figure 23 Allowable Revenue Waterfall – Newlands System (\$m)

Newlands System - FY24 Preliminary vs Reset Schedule F Values

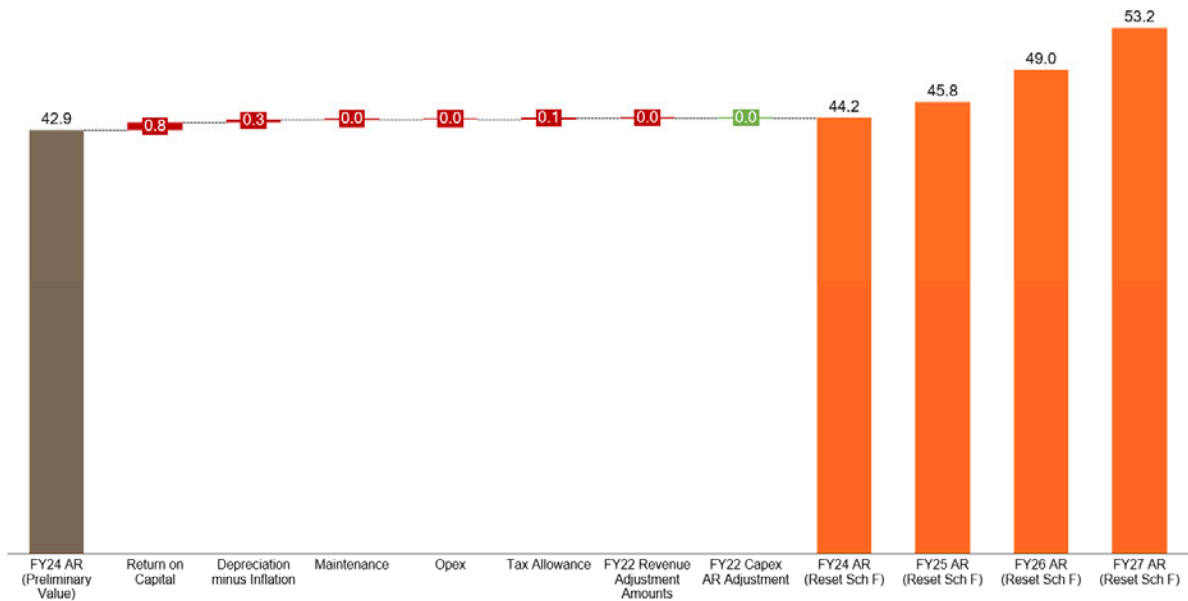
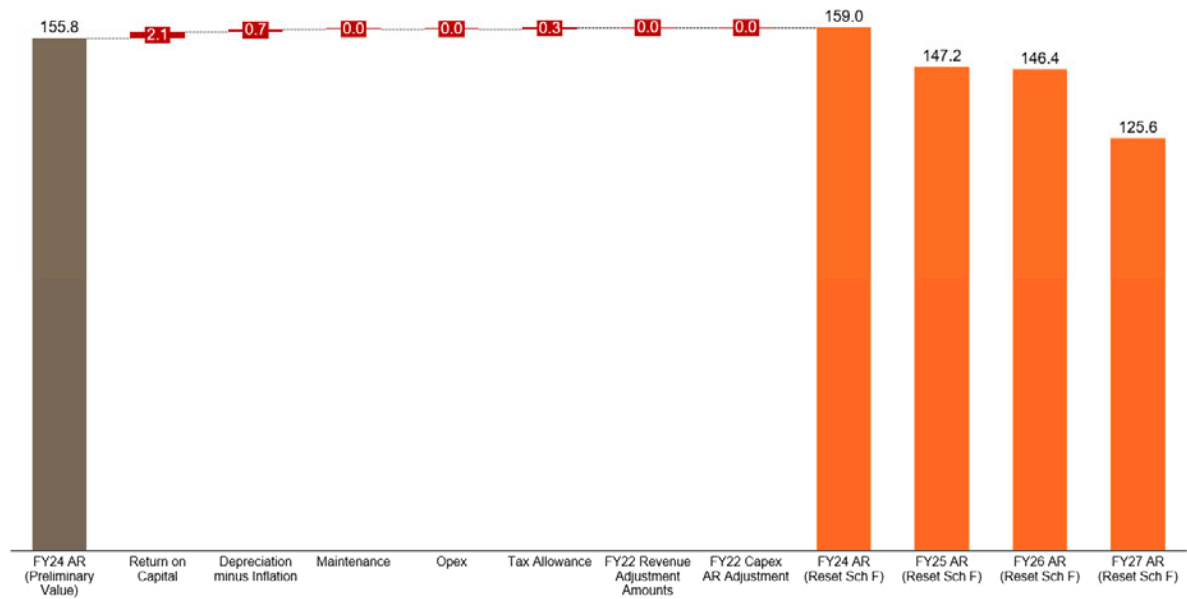


Figure 24 Allowable Revenue Waterfall – GAPE (\$m)

GAPE System - FY24 Preliminary vs Reset Schedule F Values



The reduction in GAPE Allowable Revenues in FY2027 is primarily attributable to the written down value of GAPE signalling and telecommunications assets that were approved for inclusion in the RAB in FY2012. These assets reach the end of their economic life in FY2027.

Appendix 2: Bond Data for the Reset DRP

Table 77 Bloomberg BVAL Data

Date	BVCSAE10 BVLI Index	BVCSAB10 BVLI Index	Interpolated BBB+	FCMY GACGB10	BBB+ Rated DRP
<i>Weightings</i>	<i>0.33</i>	<i>0.66</i>			
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
<i>Average</i>					<i>2.250</i>

Table 78 RBA Corporate Bond Yields and Spreads BBB-Rated

Dates	FNFY BBB10M	FNFS BBB10M	FNFS BBB7M	FNFT BBB10M	FNFT BBB7M	10 Year YTM	FCMY GBAG10	DRP
31 May 23	6.30	228.51	214.45	9.14	6.71	6.53	3.64	2.89
30 Jun 23	6.65	221.18	195.59	9.10	6.71	6.86	4.07	2.80

Table 79 RBA Corporate Bond Yields and Spreads A-Rated

Dates	FNFY A10M	FNFS A10M	FNFS A7M	FNFT A10M	FNFT A7M	10 Year YTM	FCMY GBAG10	DRP
31 May 23	5.59	149.40	142.23	9.34	6.27	5.68	3.64	2.04
30 Jun 23	5.90	146.54	131.47	9.31	6.26	6.02	4.07	1.96

Table 80 RBA Interpolation

Obs	Date	A-Rated DRP	BBB Rated DRP	Weighted BBB+ Rated
Weightings		0.33	0.66	
1	2-Jun-23	2.023%	2.871%	2.589%
2	5-Jun-23	1.919%	2.766%	2.484%
3	6-Jun-23	1.910%	2.757%	2.475%
4	7-Jun-23	1.896%	2.742%	2.460%
5	8-Jun-23	1.724%	2.570%	2.288%
6	9-Jun-23	1.791%	2.636%	2.355%
7	13-Jun-23	1.851%	2.695%	2.414%
8	14-Jun-23	1.822%	2.665%	2.384%
9	15-Jun-23	1.808%	2.651%	2.370%
10	16-Jun-23	1.793%	2.636%	2.355%
11	19-Jun-23	1.883%	2.725%	2.444%
12	20-Jun-23	1.839%	2.680%	2.399%
13	21-Jun-23	1.896%	2.737%	2.456%
14	22-Jun-23	1.912%	2.753%	2.473%
15	23-Jun-23	1.908%	2.748%	2.468%
16	26-Jun-23	1.983%	2.822%	2.542%
17	27-Jun-23	2.014%	2.853%	2.574%
18	28-Jun-23	2.087%	2.926%	2.646%
19	29-Jun-23	2.068%	2.906%	2.627%
20	30-Jun-23	1.957%	2.795%	2.515%

Table 81 Expanded Corporate Bond Sample (196 Bonds)

Issuer Name	ISIN
Qantas Airways Ltd	AU3CB0240109
AusNet Services Holdings Pty Ltd	AU3CB0242527
AusNet Services Holdings Pty Ltd	AU3CB0250751
Woolworths Group Ltd	AU3CB0272227
Optus Finance Pty Ltd	AU3CB0272888
Optus Finance Pty Ltd	AU3CB0272896
AusNet Services Holdings Pty Ltd	AU0000053241

Issuer Name	ISIN
Woolworths Group Ltd	AU3CB0272219
Brisbane Airport Corp Pty Ltd	AU3CB0252617
ICPF Finance Pty Ltd	AU3CB0243889
SGSP Australia Assets Pty Ltd	AU3CB0247393
Australia Pacific Airports Melbourne Pty Ltd	AU3CB0233856
Australia Pacific Airports Melbourne Pty Ltd	AU3CB0240364
SGSP Australia Assets Pty Ltd	AU3FN0074209
Victoria Power Networks Finance Pty Ltd	AU3FN0061172
SGSP Australia Assets Pty Ltd	AU3CB0284651
New Terminal Financing Co Pty Ltd	AU3FN0036984
CNH Industrial Capital Australia Pty Ltd	AU3CB0281418
AusNet Services Holdings Pty Ltd	AU3CB0299816
Sydney Airport Finance Co Pty Ltd	XS2613209670
Origin Energy Finance Ltd	XS2051788219
Australia Pacific Airports Melbourne Pty Ltd	XS2624503509
NSW Electricity Networks Finance Pty Ltd	AU3CB0299618
Qantas Airways Ltd	AU3CB0274280
Network Finance Co Pty Ltd	AU3CB0280006
Goodman Australia Finance Pty Ltd	XS1577951129
APA Infrastructure Ltd	XS2315784715
Transurban Finance Co Pty Ltd	XS2614623978
AusNet Services Holdings Pty Ltd	AU3CB0288066
Woolworths Group Ltd	XS2384274440
Australia Pacific Airports Melbourne Pty Ltd	AU3CB0284735
Qantas Airways Ltd	AU3CB0283182
Qantas Airways Ltd	AU3CB0268357
Brisbane Airport Corp Pty Ltd	AU3CB0272854
Aurizon Finance Pty Ltd	AU3CB0278380
Worley Financial Services Pty Ltd	AU3CB0298487
Downer Group Finance Pty Ltd	AU3CB0262673
Incitec Pivot Ltd	AU3CB0261576
Aurizon Network Pty Ltd	AU3CB0274173
Ausgrid Finance Pty Ltd	AU3CB0273563
APA Infrastructure Ltd	XS2315784806
Australian Gas Networks Ltd	AU3CB0279891
Sydney Airport Finance Co Pty Ltd	XS1811198701
Australian Gas Networks Ltd	AU3CB0279883

Issuer Name	ISIN
Stockland Trust	AU3CB0298867
Transurban Queensland Finance Pty Ltd	AU3CB0279958
Ausgrid Finance Pty Ltd	XS2391430837
WestConnex Finance Co Pty Ltd	AU3CB0279057
Transurban Finance Co Pty Ltd	XS1681520786
Network Finance Co Pty Ltd	AU3CB0249167
AusNet Services Holdings Pty Ltd	XS2118213888
NSW Electricity Networks Finance Pty Ltd	AU3CB0274645
AGI Finance Pty Ltd	AU3CB0281145
Transurban Finance Co Pty Ltd	XS1997077364
QIC Finance Town Centre Fund Pty Ltd	AU3CB0299717
Brisbane Airport Corp Pty Ltd	AU3CB0272847
CPIF Finance Pty Ltd	AU3CB0275501
Wesfarmers Ltd	AU3CB0281053
Network Finance Co Pty Ltd	AU3CB0268035
GPT Wholesale Office Fund No1	AU3CB0284289
Optus Finance Pty Ltd	XS2013539635
APA Infrastructure Ltd	XS2164646304
Ausgrid Finance Pty Ltd	XS1812905526
Transurban Finance Co Pty Ltd	XS2152883406
Lonsdale Finance Pty Ltd	AU3CB0275253
Wesfarmers Ltd	XS2399154181
ElectraNet Pty Ltd	AU3CB0283034
Optus Finance Pty Ltd	AU3CB0284875
Charter Hall LWR Pty Ltd	AU3CB0280956
APA Infrastructure Ltd	XS1205617829
Ausgrid Finance Pty Ltd	AU3CB0248318
AusNet Services Holdings Pty Ltd	XS1191877452
DEXUS Finance Pty Ltd	AU3CB0270197
AGI Finance Pty Ltd	AU3CB0281152
Woolworths Group Ltd	AU3CB0283414
SGSP Australia Assets Pty Ltd	AU3CB0274462
Woolworths Group Ltd	AU3CB0283406
Ampol Ltd	AU3CB0252369
Llitst Finance Pty Ltd	AU3CB0281251
ConnectEast Finance Pty Ltd	AU3CB0261808
Coles Group Treasury Pty Ltd	AU3CB0268134

Issuer Name	ISIN
Transurban Finance Co Pty Ltd	XS1109744778
APA Infrastructure Ltd	XS2315784988
Aurizon Network Pty Ltd	XS1418788599
AGI Finance Pty Ltd	AU3CB0276269
Stockland Trust	AU3CB0278893
NSW Electricity Networks Finance Pty Ltd	AU3CB0279578
Charter Hall LWR Pty Ltd	AU3CB0278133
ETSA Utilities Finance Pty Ltd	AU3CB0246544
CHC Finance Pty Ltd	AU3CB0279560
APA Infrastructure Ltd	XS0858000606
QPH Finance Co Pty Ltd	AU3CB0273373
Charter Hall LWR Pty Ltd	AU3CB0278117
GPT Wholesale Office Fund No1	AU3CB0264828
Ausgrid Finance Pty Ltd	AU3FN0038881
Victoria Power Networks Finance Pty Ltd	XS1808720194
Stockland Trust	XS1812887443
Network Finance Co Pty Ltd	AU3CB0268837
AGI Finance Pty Ltd	AU3FN0057428
CIP Funding Pty Ltd	AU3CB0285310
Coles Group Treasury Pty Ltd	AU3CB0274017
Wesfarmers Ltd	AU3CB0281046
AusNet Services Holdings Pty Ltd	XS1082471423
GAIF Bond Issuer Pty Ltd	AU3CB0284727
APA Infrastructure Ltd	XS1963555534
AusNet Services Holdings Pty Ltd	XS2212025543
ETSA Utilities Finance Pty Ltd	AU3CB0298685
Shopping Centres Australasia Property Retail Trust	AU3CB0283224
Mirvac Group Finance Ltd	AU3CB0278653
Victoria Power Networks Finance Pty Ltd	AU3CB0279644
Victoria Power Networks Finance Pty Ltd	AU3CB0279651
DEXUS Finance Pty Ltd	AU3CB0233732
Lonsdale Finance Pty Ltd	AU3CB0268548
QPH Finance Co Pty Ltd	AU3CB0273365
APA Infrastructure Ltd	XS1205616698
Transurban Finance Co Pty Ltd	XS1239502328
Optus Finance Pty Ltd	AU3CB0298529
SGSP Australia Assets Pty Ltd	AU3CB0294809

Issuer Name	ISIN
GPT Wholesale Office Fund No1	AU3CB0242774
Australia Pacific Airports Melbourne Pty Ltd	XS1121229402
Coles Group Treasury Pty Ltd	AU3CB0268126
United Energy Distribution Pty Ltd	AU3CB0247971
BWP Trust	AU3CB0262350
GTA Finance Co Pty Ltd	AU3CB0273977
Lonsdale Finance Pty Ltd	AU3CB0257533
Victoria Power Networks Finance Pty Ltd	AU3CB0246387
AusNet Services Holdings Pty Ltd	XS2212009000
Transurban Finance Co Pty Ltd	XS2021470898
WSO Finance Pty Ltd	AU3CB0272920
Coles Group Treasury Pty Ltd	AU3FN0055695
ICPF Finance Pty Ltd	AU3CB0283646
United Energy Distribution Pty Ltd	AU3CB0267920
SGSP Australia Assets Pty Ltd	AU3CB0285294
DEXUS Finance Pty Ltd	AU3CB0267524
Aurizon Network Pty Ltd	AU3CB0295129
GPT Wholesale Shopping Centre Fund No 1	AU3CB0251064
Aurizon Network Pty Ltd	XS1111428402
Charter Hall Exchange Finance Pty Ltd	AU3CB0274710
Victoria Power Networks Finance Pty Ltd	AU3CB0252005
QIC Finance Town Centre Fund Pty Ltd	AU3CB0265700
DBNGP Finance Co Pty Ltd	AU3CB0253417
AusNet Services Holdings Pty Ltd	XS1823480311
QIC Finance Town Centre Fund Pty Ltd	AU3FN0049490
Energy Partnership Gas Pty Ltd	AU3CB0249209
GPT Wholesale Shopping Centre Fund No 1	AU3CB0246890
Network Finance Co Pty Ltd	AU3FN0040101
Victoria Power Networks Finance Pty Ltd	XS2258961866
ETSA Utilities Finance Pty Ltd	AU3CB0270676
AusNet Services Holdings Pty Ltd	XS1782802794
WSO Finance Pty Ltd	AU3CB0243590
DEXUS Finance Pty Ltd	AU3CB0244168
AusNet Services Holdings Pty Ltd	XS2212024652
Victoria Power Networks Finance Pty Ltd	AU3FN0062642
Aurizon Network Pty Ltd	AU3CB0295137
Victoria Power Networks Finance Pty Ltd	AU3FN0059994

Issuer Name	ISIN
United Energy Distribution Pty Ltd	AU3CB0266922
SGSP Australia Assets Pty Ltd	XS2030514090
Shopping Centres Australasia Property Retail Trust	AU3CB0274348
AusNet Services Holdings Pty Ltd	XS1782798406
Shopping Centres Australasia Property Retail Trust	AU3CB0274330
BWP Trust	AU3CB0278703
Aurizon Network Pty Ltd	AU3CB0266633
Victoria Power Networks Finance Pty Ltd	AU3CB0282333
SGSP Australia Assets Pty Ltd	XS2124042339
Aurizon Network Pty Ltd	AU3CB0280915
DEXUS Finance Pty Ltd	AU3CB0255354
AusNet Services Holdings Pty Ltd	XS2212025386
Origin Energy Finance Ltd	AU3CB0267847
Newcastle Coal Infrastructure Group Pty Ltd	US65106WAB19
Newcrest Finance Pty Ltd	US65120FAD69
Santos Finance Ltd	US803014AA74
SGSP Australia Assets Pty Ltd	XS1642641812
Woodside Finance Ltd	US980236AP83
Ausgrid Finance Pty Ltd	US052113AB36
South32 Treasury Ltd	US84055BAA17
Transurban Finance Co Pty Ltd	US89400PAK93
Transurban Queensland Finance Pty Ltd	XS1808838434
Sydney Airport Finance Co Pty Ltd	US87124VAF67
APA Infrastructure Ltd	US00205GAD97
Woodside Finance Ltd	US980236AQ66
APA Infrastructure Ltd	US00205GAB32
Mirvac Group Finance Ltd	XS1688567251
Woodside Finance Ltd	US980236AN36
Transurban Queensland Finance Pty Ltd	AU3FN0025987
Woodside Finance Ltd	US980236AM52
APPF Commercial Finance Pty Ltd	AU3CB0284347
APA Infrastructure Ltd	US00205GAC15
Transurban Finance Co Pty Ltd	US89400PAE34
AGL Energy Ltd	
VER Finco Pty Ltd	AU3CB0283059
WSO Finance Pty Ltd	AU3CB0243566
GAIF Bond Issuer Pty Ltd	AU3CB0276707

Issuer Name	ISIN
WSO Finance Pty Ltd	AU3FN0031563
Sydney Airport Finance Co Pty Ltd	US87124VAE92
Transurban Finance Co Pty Ltd	US89400PAG81
Boral Finance Pty Ltd	US09952AAC09

Appendix 3: Amended 2017 Access Undertaking (clean)

Appendix 4: Amended 2017 Access Undertaking (mark-up)
