

Assessing the value of Victorian water entitlements

A Marsden Jacob Report

19 July 2022

Prepared for the Federation of Victorian Traditional Owner Corporations

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Introduction

Marsden Jacob Associates (Marsden Jacob) has been engaged by the Federation of Victorian Traditional Owner Corporations (the Federation) to assess the economic value of water in Victoria’s declared areas.

In agreement with the Federation, the focus of our valuation assessment is water entitlements in the regulated water systems in Northern and Southern Victoria (Figure 1). Our focus on the impacts of water recovery is in the regulated water systems in Northern Victoria.

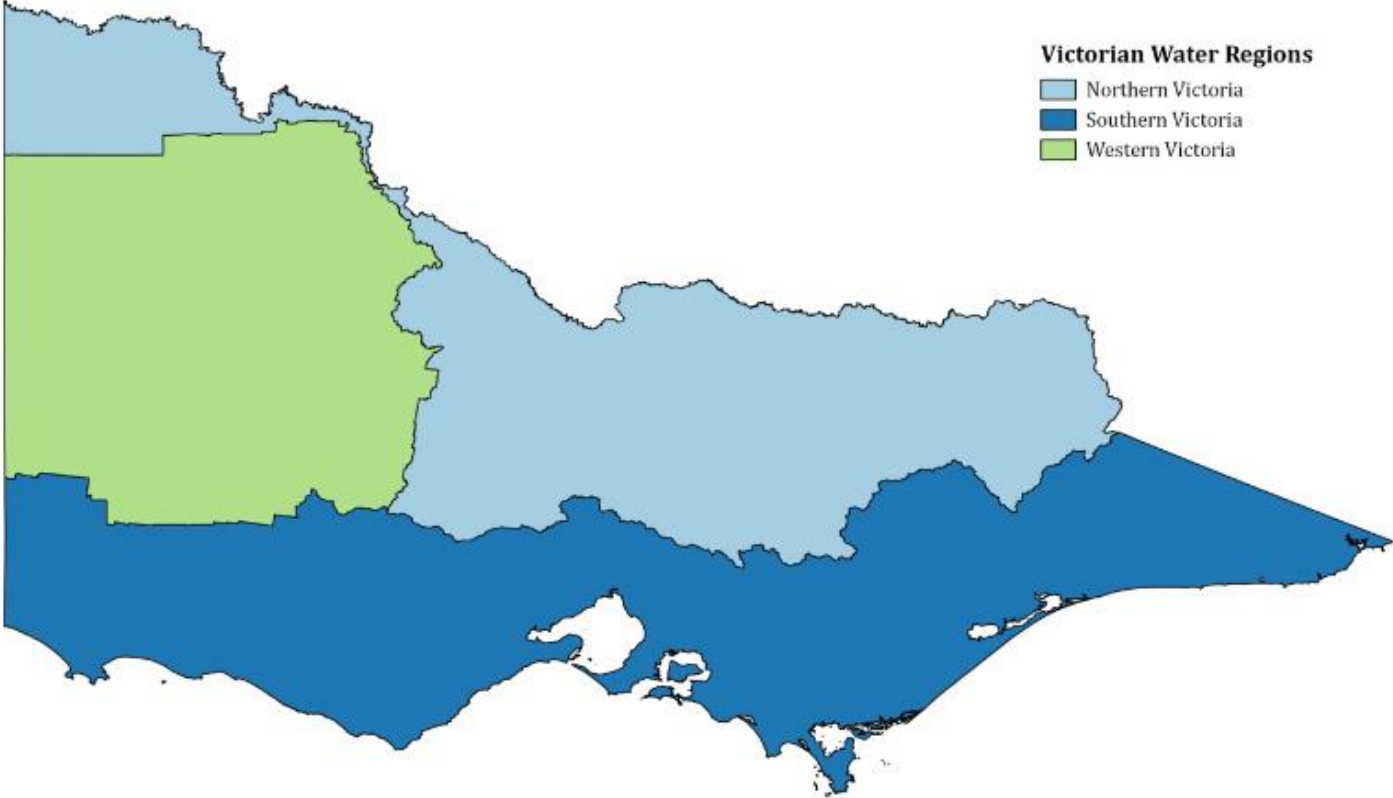
Table 1 shows the trading zones included in our evaluation¹. The entitlement types included in our assessment are High Reliability water shares; Low Reliability water shares; and Spill reliability water shares (only exist in zones 9A and 9B).

Table 1: Trading zones included in the Northern and Southern regulated water systems

Northern Victoria		Southern Victoria
1A Goulburn	5B Bullarook	31AD Bacchus Marsh
1B Boort	6 Murray Above Choke	31AR Upper Werribee
2 Broken	6B Lower Broken Creek	31BD Werribee
3 Lower Goulburn	7 Murray Below Choke	31BR Lower Werribee
4A Campaspe	9A Ovens	31C Lake Merrimu
4C Lower Campaspe	9B King	41 Macalister
5A Loddon		42B Mid-Thomson

¹ Water trading zone map for Victorian declared water systems can be accessed at: https://www.waterregister.vic.gov.au/images/documents/map_water_trading_09July2014.pdf

Figure 1: Victorian trade regions



Source: Victorian Water Trading: 2019-20 Annual Report, available [here](#).

What is the value of Victorian water entitlements?

Victorian water shares are tradable commodities that are witnessing value growth. This section discusses the current market value of the water entitlements on issue in Victoria.

1.1 Valuation methodology and sources

We have estimated the value of Victorian water entitlements following established assumptions and procedures for valuing water entitlements. Our approach is consistent with Australian Accounting Standards Board (AASB) 13² and other guidance, including Australian Property Institute (API) guidance.

As per AASB 13, our valuation approach uses prices and other relevant information generated by water market transactions involving identical or comparable assets to value the assets on a fair value measurement basis. This is Marsden Jacob's preferred valuation technique for water entitlements whenever sufficient data is available.

This market transaction value approach establishes the value of water entitlements as the estimated amount for which an asset should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion.³

We have prepared and analysed the valuation data by completing the following steps:

- **Entitlements on issue data were assembled from the Victorian Water Register (VWR)** to develop a definitive list of held volumes in the desired water areas.
- **Water entitlements held by the environmental water holders (Commonwealth and Victoria)** were excluded from the analysis.

² https://www.aasb.gov.au/admin/file/content105/c9/AASB13_08-15_COMPfeb16_01-19.pdf

³ <https://www.api.org.au/definitions>

- **Trade data was compiled from the following sources:** Marsden Jacob [Waterflow™](#); the [Victorian Water Register](#) (VWR) and [Bureau of Meteorology Water Information Dashboard](#).
- **Trade data was thoroughly cleaned to remove outliers** by reviewing each trade individually per water source.
Based on the above data, current market value of each entitlement type was determined. In trading zones with liquid markets, market prices are assumed to reflect the value of water (most zones fell under this category). In these zones we have used observed market prices as the basis for valuing water shares. Where possible, the current market value is based on the 'dry' entitlement value (excluding allocation water value from the pure entitlement value).
 In zones with low market liquidity, market trades were supplemented with data from neighbouring markets.
- **The total market value of the water assets was calculated as the sum of entitlements (water shares) on issue (EOI) multiplied by the current value**, per zone and water share type.

The data collection and cleaning work was underpinned by our deep understanding of entitlement values across the state, as we have undertaken prior work in nearly all Victorian surface and groundwater catchments.

We note that aggregate level water value estimates in this report are provided for information purposes and are not to be used or considered as a commercial valuation of any particular Victorian entitlement type.

1.2 Entitlement values by zone, region and whole of Victoria

Based on the approach set out above, we estimate the current total market value of Victorian water entitlements is close to \$11 billion (Table 4 to Table 3). Around \$10.3 billion of Victoria's water entitlements are in Northern Victoria (Table 4), including around \$3 billion of entitlement in the Goulburn and \$6.2 billion in the upper and lower Murray trading zones (Table 4). Water assets in the Southern region represent only about 7% of the state's total water value (Table 2). High reliability entitlements comprise more than 90% of Victorian water entitlement value (Table 3).

Water entitlement held for the environment represents a quarter of all entitlements on issue in the Northern region, and less than 1% of entitlements in southern Victoria (Table 2).

Table 2: Entitlements on issue and total market value by entitlement type (as of 30 May 2022)

Entitlement type	Entitlements on issue (EOI) (ML)	Currently held by the environment (ML)	Environment % of EOI	Consumptive pool (ML)	Total market value (\$)
High Reliability	2,671,400	733,635	27.5%	1,937,764	\$10,259,872,720
Low Reliability	932,050	103,462	11.1%	828,589	\$728,776,633
Spill Reliability	12,501	-	0.0%	12,501	\$2,500,120
Total	3,615,951	837,097	23.2%	2,778,854	\$10,991,149,473

Source: Victorian Water Register (VWR)

Table 3: Entitlements on issue and total market value by region (as of 30 May 2022)

Region	Entitlements on issue (EOI) (ML)	Currently held by the environment (ML)	Environment % of EOI	Consumptive pool (ML)	Total market value (\$)
Northern	3,362,754	836,002	24.9%	2,526,752	\$10,516,216,525
Southern	253,197	1,095	0.4%	252,102	\$474,932,948
Total	3,615,951	837,097	23.2%	2,778,854	\$10,991,149,473

Source: Victorian Water Register (VWR)

Table 4: Entitlements on issue, current market price and total market value by zone, region and entitlement type (as of 30 May 2022)

Type	Region	Zone	Entitlements on issue (EOI) (ML)	Currently held by the environment (ML)	Environment % of EOI	Consumptive pool (ML)	Market price (\$/ML)	Total market value (\$)
High Reliability	Northern	1A Greater Goulburn	1,009,961	292,071	28.9%	717,890	\$4,150	\$2,979,242,255
		1B Boort	83,016	33,550	40.4%	49,466	\$4,150	\$205,282,655
		2 Broken	17,623	624	3.5%	16,999	\$2,750	\$46,747,250
		3 Lower Goulburn	20,915	6,816	32.6%	14,099	\$3,950	\$55,692,630
		4A Campaspe	21,832	6,594	30.2%	15,238	\$4,000	\$60,951,200
		4C Lower Campaspe	1,634	0	0.0%	1,634	\$4,000	\$6,534,000
		5A Loddon	21,389	3,826	17.9%	17,563	\$4,000	\$70,253,600
		5B Bullarook	758	0	0.0%	758	\$4,000	\$3,030,800
		6 Murray Above	326,771	115,363	35.3%	211,408	\$5,050	\$1,067,610,400
		6B Lower Broken Creek	24,389	4,102	16.8%	20,287	\$7,000	\$142,008,300
		7 Murray Below	945,683	269,832	28.5%	675,850	\$7,600	\$5,136,460,760
	9A Ovens	15,125	123	0.8%	15,002	\$1,250	\$18,751,875	
	9B King	10,999	0	0.0%	10,999	\$1,150	\$12,648,505	
	Southern	31AD Bacchus Marsh	4,273	0	0.0%	4,273	\$2,700	\$11,537,910
		31AR Upper Werribee	34	0	0.0%	34	\$2,700	\$91,800
		31BD Werribee	9,424	0	0.0%	9,424	\$2,700	\$25,443,720
		31BR Lower Werribee	1,626	734	45.1%	892	\$2,700	\$2,408,130
		31C Lake Merrimu	109	0	0.0%	109	\$2,000	\$217,600
		41 Macalister	144,228	0	0.0%	144,228	\$2,700	\$389,414,250
42B Mid-Thomson		11,611	0	0.0%	11,611	\$2,200	\$25,545,080	

Type	Region	Zone	Entitlements on issue (EOI) (ML)	Currently held by the environment (ML)	Environment % of EOI	Consumptive pool (ML)	Market price (\$/ML)	Total market value (\$)
Low Reliability	Northern	1A Greater Goulburn	443,268	49,473	11.2%	393,795	\$750	\$295,346,325
		1B Boort	38,540	9,611	24.9%	28,930	\$750	\$21,697,125
		2 Broken	3,303	23	0.7%	3,280	\$250	\$820,050
		3 Lower Goulburn	5,172	1,235	23.9%	3,937	\$600	\$2,362,440
		4A Campaspe	19,175	395	2.1%	18,780	\$700	\$13,145,860
		5A Loddon	8,072	527	6.5%	7,545	\$450	\$3,395,205
		5B Bullarook	381	0	0.0%	381	\$450	\$171,360
		6 Murray Above	135,514	18,175	13.4%	117,339	\$700	\$82,137,090
		6B Lower Broken Creek	11,986	0	0.0%	11,986	\$1,300	\$15,581,540
		7 Murray Below	184,747	23,662	12.8%	161,085	\$1,700	\$273,845,180
	Southern	31AD Bacchus Marsh	2,012	0	0.0%	2,012	\$275	\$553,355
		31AR Upper Werribee	15	0	0.0%	15	\$275	\$4,235
		31BD Werribee	4,484	0	0.0%	4,484	\$275	\$1,233,045
		31BR Lower Werribee	743	361	48.6%	382	\$275	\$105,133
41 Macalister		69,022	0	0.0%	69,022	\$250	\$17,255,450	
42B Mid-Thomson		5,616	0	0.0%	5,616	\$200	\$1,123,240	
Spill reliability	Northern	9A Ovens	7,035	0	0.0%	7,035	\$200	\$1,406,960
		9B King	5,466	0	0.0%	5,466	\$200	\$1,093,160

Source: Victorian Water Register (VWR)

1.3 Recent market values

To provide additional context, Marsden Jacob has also put together summary statistics regarding the recent entitlement and allocation market transaction values (based on commercial trades, excluding outliers).

1.3.1 Entitlement market transactions

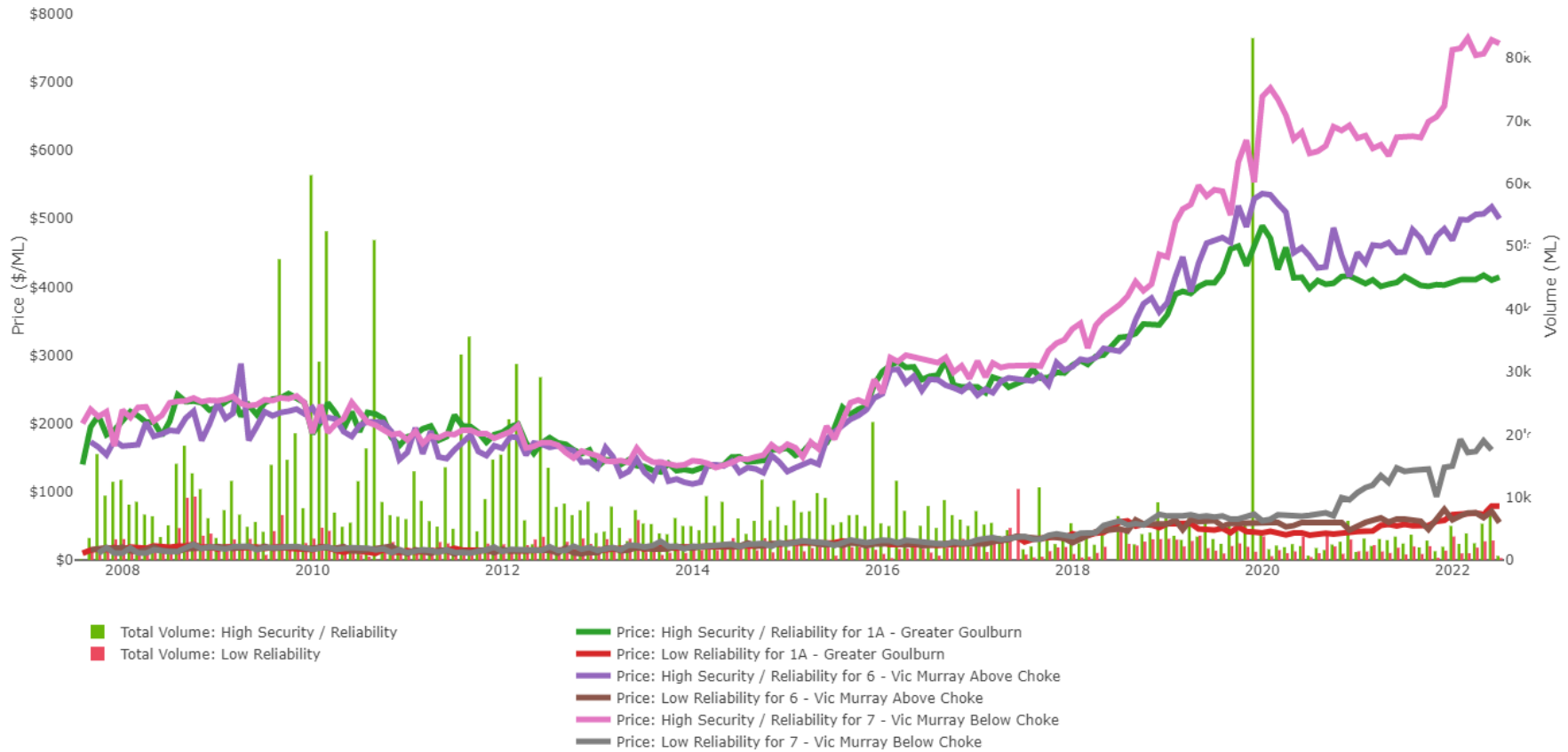
Trade in entitlement market water increased from \$170 to \$202 million from previous financial year to 2021/22, respectively, in Northern Victoria (Table 5). The increase in water market values is occurring due to both increasing trade of entitlements and prices in the Goulburn and Murray zones (Figure 2). Entitlement prices have seen sustained growth since around 2014, driven by water availability, increasing demand for water from horticulture and other factors discussed in section 3.

Table 5: Northern Victoria entitlement market value 2020-2022 (as of 30 May 2022)

Zone	2021/22 trade value (\$)	2020/21 trade value (\$)
1A/1B Goulburn	\$60,613,823	\$62,218,831
2 Broken	\$2,167,350	\$750,750
3 Lower Goulburn	\$1,466,986	\$250,000
4A Campaspe	\$606,825	\$2,061,600
5A Loddon	\$1,617,015	\$1,882,900
6 Murray Above	\$36,274,139	\$22,729,919
6B Lower Broken Creek	\$4,329,460	\$2,019,500
7 Murray Below	\$94,898,981	\$77,604,497
9A Ovens	\$151,850	\$509,925
9B King	\$141,300	\$491,750
Total	\$202,267,729	\$170,519,672

Source: Marsden Jacob, Waterflow™ and Victorian Water Register (VWR)

Figure 2: Victorian Goulburn (zone 1A/1B) and Victorian Murray (zone 6 and 7) entitlement prices (\$/ML) and volumes 2007-22



Source: Marsden Jacob, Waterflow™

Entitlement markets in the South are less liquid, and entitlement values are generally lower (Table 6). In our experience, the decrease in the total trade value is likely to stem from the fact that Southern Rural Water (the local water authority) has not held its annual water auction this season.

Table 6: Southern Victoria entitlement market value 2020-2022 (as of 30 May 2022)

Zone	2021/22 trade value (\$)	2020/21 trade value (\$)
31AD Bacchus Marsh	\$55,930	\$0
31AR Upper Werribee	\$0	\$0
31BD Werribee	\$0	\$400,000
31BR Lower Werribee	\$16,000	\$0
31C Lake Merrimu	\$0	\$0
41 Macalister	\$5,331,110	\$16,408,704
42B Mid-Thomson	\$343,620	\$189,000
Total	\$5,746,660	\$16,997,704

Source: Marsden Jacob Waterflow™ and Victorian Water Register (VWR)

1.3.2 Allocation market transactions

In the Northern and Southern allocation markets, total trade value has decreased this season (Table 7 and Table 8). Wet conditions across Victoria have resulted in both trade volumes and prices being subsequently lower compared to the previous year (Figure 3).

Table 7: Northern Victoria allocation market value 2020-2022 (as of 30 May 2022)

Zone	2021/22 trade value (\$)	2020/21 trade value (\$)
1A/1B Goulburn	\$16,644,169	\$33,800,180
2 Broken	\$13,000	\$50,597
3 Lower Goulburn	\$645,141	\$933,297
4A Campaspe	\$193,055	\$695,601

Zone	2021/22 trade value (\$)	2020/21 trade value (\$)
4C Lower Campaspe	\$11,460	\$51,427
5A Loddon	\$198,859	\$761,982
5B Bullarook	\$11,210	\$11,760
6 Murray Above	\$5,047,028	\$15,756,364
6B Lower Broken Creek	\$470,616	\$792,201
7 Murray Below	\$27,013,259	\$49,375,002
9A Ovens	\$39,110	\$21,040
9B King	\$0	\$0
Total	\$50,286,907	\$102,249,451

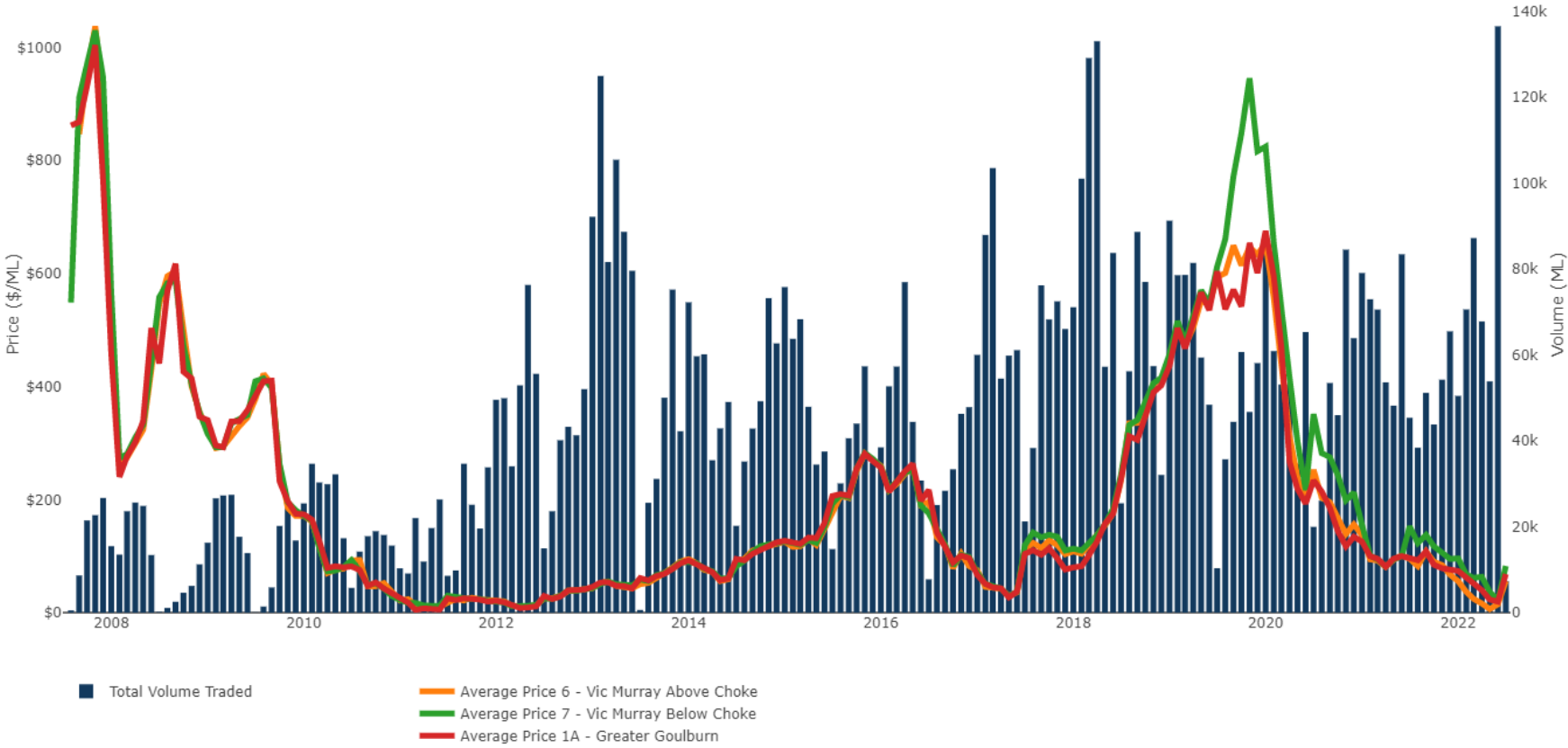
Source: Marsden Jacob Waterflow™ and Victorian Water Register (VWR)

Table 8: Southern Victoria allocation market value 2020-2022 (as of 30 May 2022)

Zone	2021/22 trade value (\$)	2020/21 trade value (\$)
31AD Bacchus Marsh	\$0	\$15,238
31AR Upper Werribee	\$0	\$0
31BD Werribee	\$37,900	\$33,610
31BR Lower Werribee	\$0	\$0
31C Lake Merrimu	\$0	\$0
41 Macalister	\$11,720	\$97,250
42B Mid-Thomson	\$3,002	\$18,502
Total	\$52,622	\$164,599

Source: Marsden Jacob Waterflow™ and Victorian Water Register (VWR)


Figure 3: Victoria Goulburn (zone 1A/1B) and Victorian Murray (zone 6 and 7) allocation prices (\$/ML) and trade volumes 2007-22





Source: Marsden Jacob Waterflow™


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