

Water entitlement market prices

Murray–Darling Basin

(January 2017)

Prepared for Australian Government Department of Agriculture and Water Resources

MARSDEN JACOB ASSOCIATES

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Introduction

This January 2017 monthly water entitlement market prices report has been prepared by Marsden Jacob Associates (Marsden Jacob) for the Australian Government Department of Agriculture and Water Resources.

A water access entitlement is a perpetual or ongoing entitlement to exclusive access to a share of water from a specified consumptive pool, as defined in the relevant water plan.

The report includes:

- southern Murray–Darling Basin (MDB) market activity and price information, by region and entitlement type
- northern MDB market activity and price information, by region and entitlement type
- a list of catchments and water sources
- a list of data outliers removed from the trade data

Regions, entitlements and key statistics

The entitlement price report is broadly split into the southern and the northern MDB, as detailed in Table 1 and Table 2. Interactive maps showing the location of these trading regions are available on the Murray–Darling Basin Authority's website.

The water sources included in each of the regions are listed in Appendix A.

Table 1: Regions and entitlement types, southern MDB

Region	Entitlement type
SA Murray	Class 3a
Vic. Murray above Barmah Choke	High reliability
Vic. Murray above Barmah Choke	Low reliability
Vic. Murray below Barmah Choke	High reliability
Vic. Murray below Barmah Choke	Low reliability
Goulburn	High reliability
Goulburn	Low reliability
Campaspe	High reliability
Loddon	High reliability
NSW Murray	General security
NSW Murray	High security
NSW Murray Irrigation Limited	General security
Murrumbidgee	General security
Murrumbidgee	High security
Lower Darling	General security
Lower Darling	High security

Table 2: Regions and entitlement types, northern MDB

Region	Entitlement type
Macquarie	General security
Namoi	General security
Gwydir	General security
NSW Border Rivers	General security
Barwon–Darling	Unregulated
Lachlan	General security
Condamine–Balonne (St George)	Supplemented
Condamine–Balonne (Upper Condamine and Lower Balonne)	Unsupplemented
Central Condamine Alluvium Groundwater (1, 2, 3 and 4)	Groundwater (sub areas 1, 2, 3 and 4)
Upper Condamine Alluvium Groundwater (Dalrymple Creek)	Groundwater
Upper Condamine Alluvium Groundwater (Oakey Creek)	Groundwater
Qld Border Rivers	Supplemented
Qld Border Rivers	Unsupplemented
Lower Balonne	Overland flow

As requested by the department, for each of the regions and water entitlement categories Marsden Jacob reports a range of measures, subject to data availability and the number of trades:

- volume weighted average price (VWAP)
- median price
- mean price
- mode price
- 25th and 75th percentile prices
- price quintiles
- trade volume
- number of trades
- water trading exchange prices.

Data sources

The data sources for this report are:

- National Water Market Register data, up to 31 December 2013
- state government water registers and websites
- water exchange and broker noticeboard prices.

Notes

Entitlement prices in the state government water registers can lag the exchange date of contracts or water sale agreements by periods of days to several months. This means the entitlement prices shown in the monthly and quarterly VWAPs may not reflect all exchanges during the month.

Entitlement prices that do not appear to reflect arm's-length transactions have been excluded in the data cleaning process (see Appendix B).

Removing these values reduces price distortions in the reporting. This means prices in this report may differ from prices shown in registers where these transactions have not been removed.

Marsden Jacob uses a two-stage process to clean the data:

1. Removing prices that may not be genuine; for example, removing transactions where the price was reported to be null (\$0 per ML)
2. Reviewing and potentially removing transactions outside two standard deviations from the average price of water entitlements by region (or trading zone) and by water product.

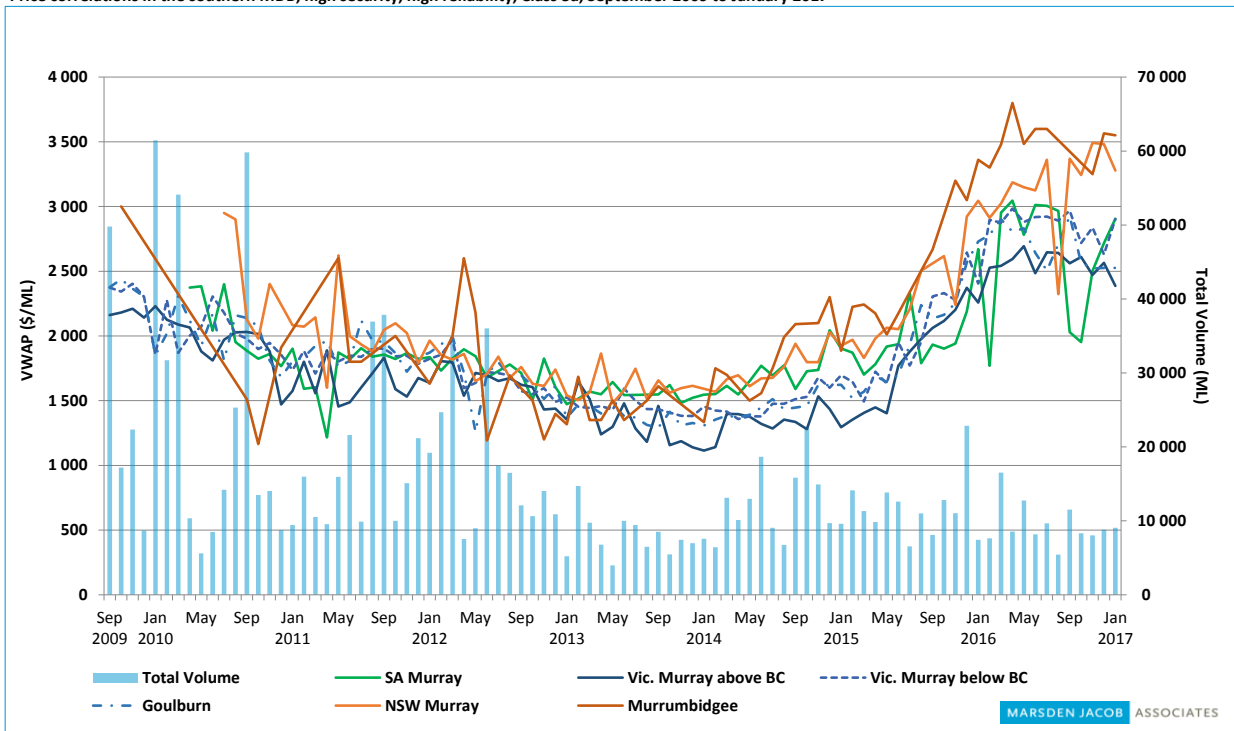
Marsden Jacob does not necessarily remove all trades that fall outside two standard deviations, as some of them reflect arm's-length trades. If trades that fall outside two standard deviations are retained in the regional dataset, this is noted in the region and entitlement-specific reports. Also, trades that fall within two standard deviations but are removed because they are not considered representative on the basis of recent data trends are also noted in the region and entitlement-specific reports as well as Appendix B.

Water entitlement market prices Murray–Darling Basin (January 2017)

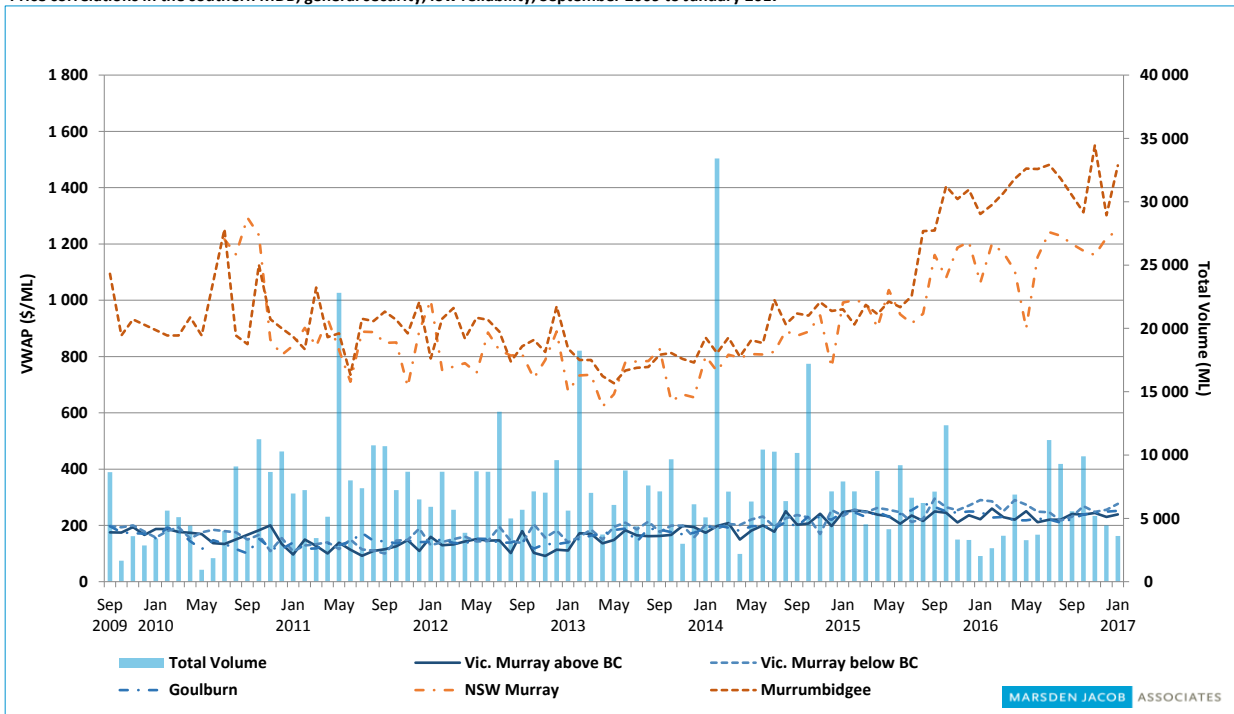
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Southern Murray–Darling Basin

Price correlations in the southern MDB, high security, high reliability, Class 3a, September 2009 to January 2017



Price correlations in the southern MDB, general security, low reliability, September 2009 to January 2017



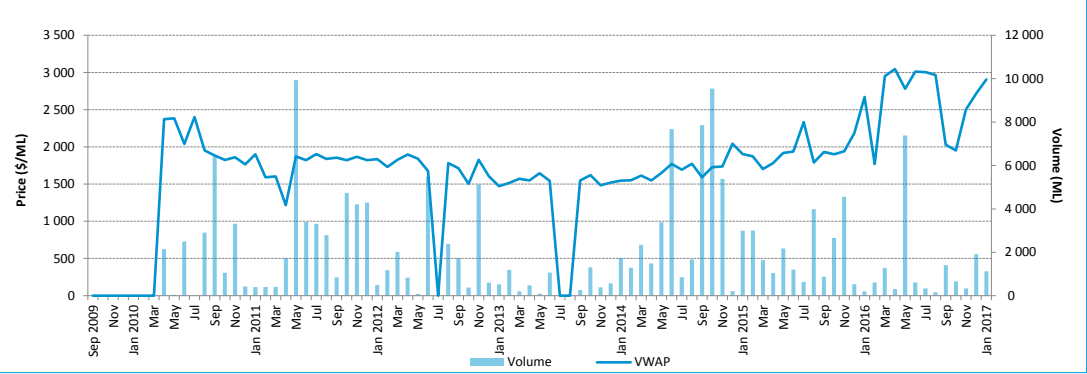
Source: Marsden Jacob analysis, 2017.

Water entitlement market prices Murray–Darling Basin (January 2017)

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Southern Australian Murray: Class 3a

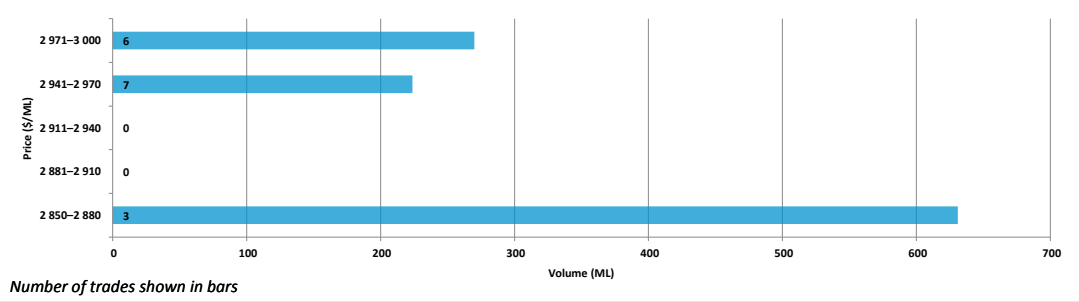
Entitlement market prices and volumes, SA Murray, Class 3a, September 2009 to January 2017



Entitlement market prices and volumes, SA Murray, Class 3a

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
2 905	2 758	2 673	2 950	3 000	2 950	2 949	2 950	1 125	16	2 600 - 3 000

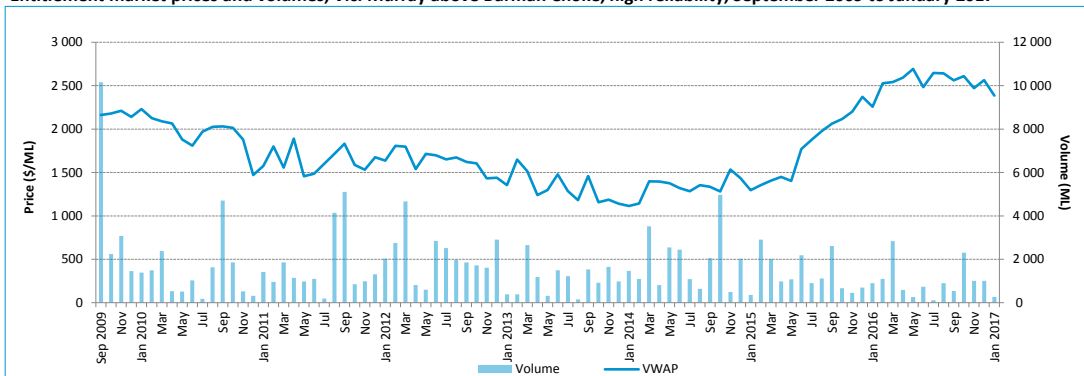
Entitlement market price range, SA Murray, Class 3a, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Victorian Murray above Barmah Choke: high reliability

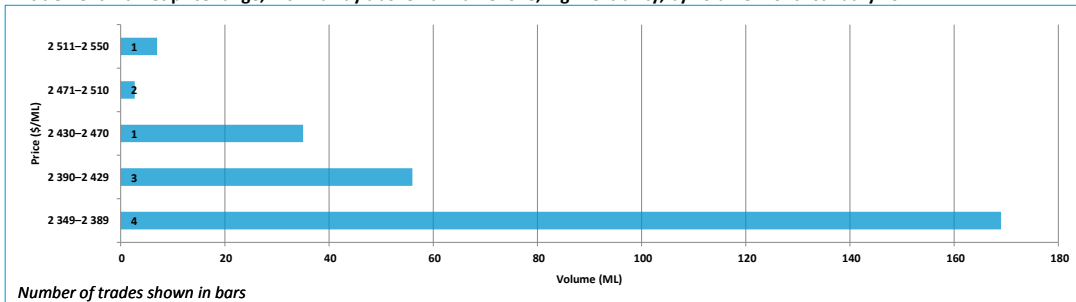
Entitlement market prices and volumes, Vic. Murray above Barmah Choke, high reliability, September 2009 to January 2017



Entitlement market prices and volumes, Vic. Murray above Barmah Choke, high reliability

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
2 386	2 502	2 558	2 365	2 475	2 400	2 421	2 400	270	11	2 450 - 2 700

Entitlement market price range, Vic. Murray above Barmah Choke, high reliability, by volume month January 2017

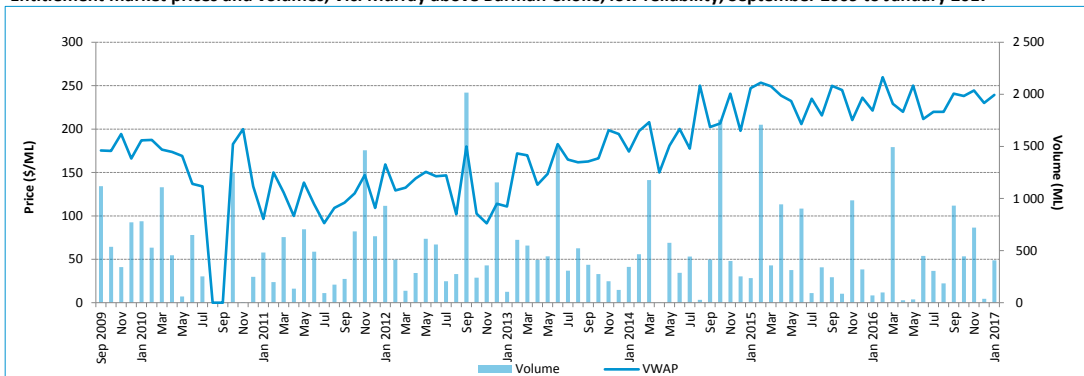


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Victorian Murray above Barmah Choke: low reliability

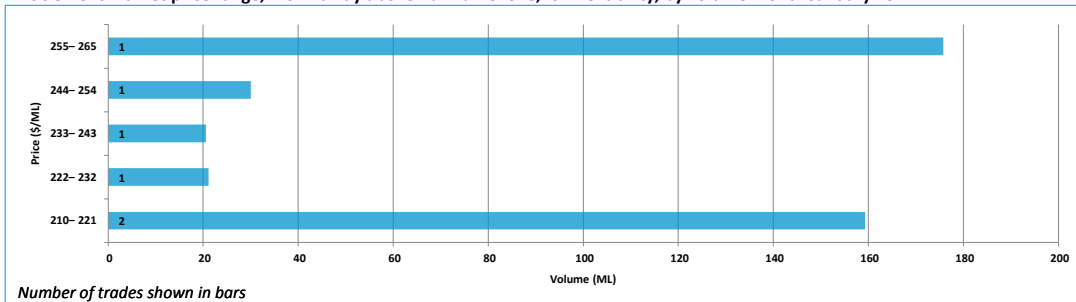
Entitlement market prices and volumes, Vic. Murray above Barmah Choke, low reliability, September 2009 to January 2017



Entitlement market prices and volumes, Vic. Murray above Barmah Choke, low reliability

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
239	242	233	215	248	235	234	210	407	6	260 - 300

Entitlement market price range, Vic. Murray above Barmah Choke, low reliability, by volume month January 2017

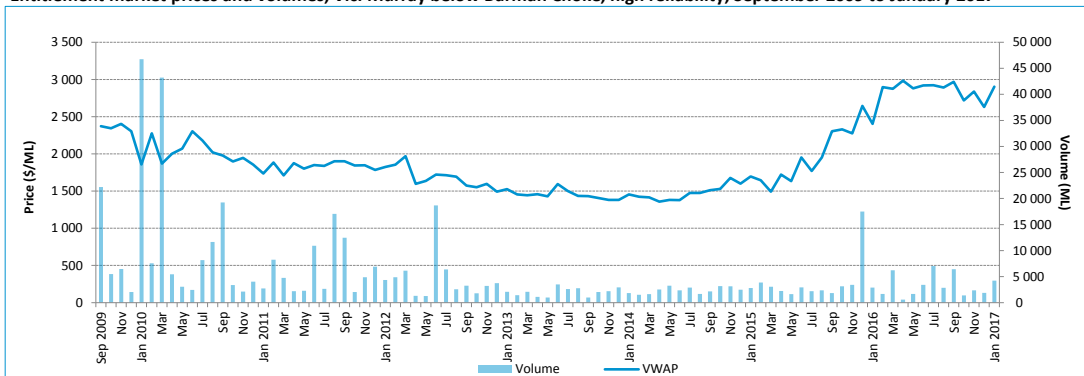


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Victorian Murray below Barmah Choke: high reliability

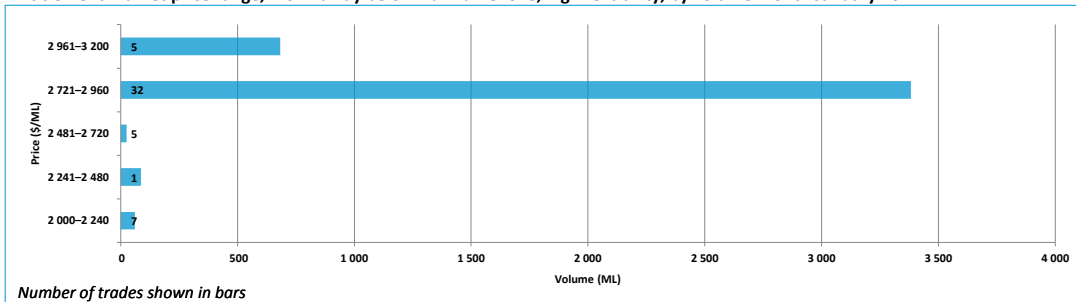
Entitlement market prices and volumes, Vic. Murray below Barmah Choke, high reliability, September 2009 to January 2017



Entitlement market prices and volumes, Vic. Murray below Barmah Choke, high reliability

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
2 902	2 824	2 889	2 713	2 850	2 800	2 711	2 800	4 236	50	2 700 - 2 900

Entitlement market price range, Vic. Murray below Barmah Choke, high reliability, by volume month January 2017

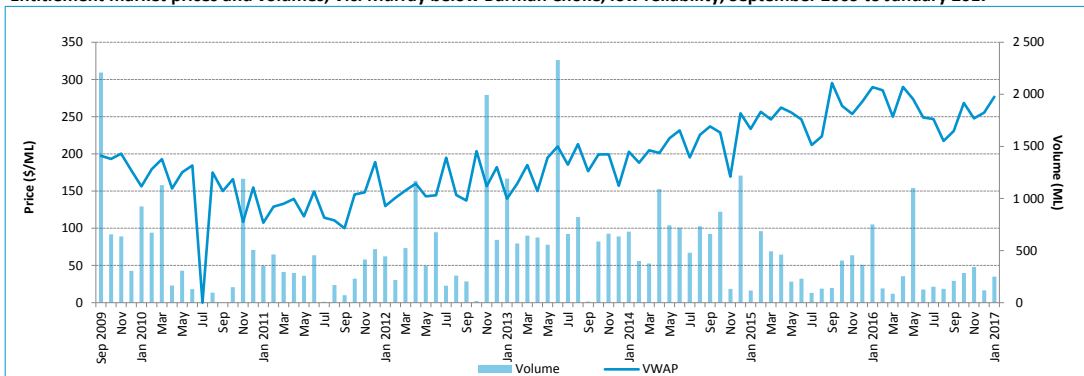


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Victorian Murray below Barmah Choke: low reliability

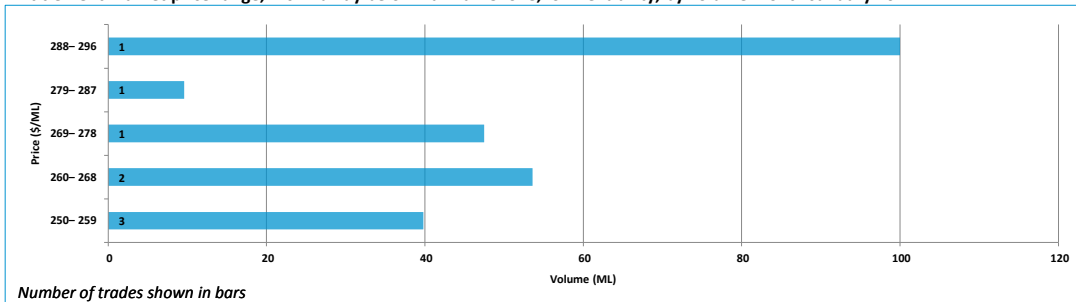
Entitlement market prices and volumes, Vic. Murray below Barmah Choke, low reliability, September 2009 to January 2017



Entitlement market prices and volumes, Vic. Murray below Barmah Choke, low reliability

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)						January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
277	259	264	250	276	263	266	250	251	8	275 - 310

Entitlement market price range, Vic. Murray below Barmah Choke, low reliability, by volume month January 2017

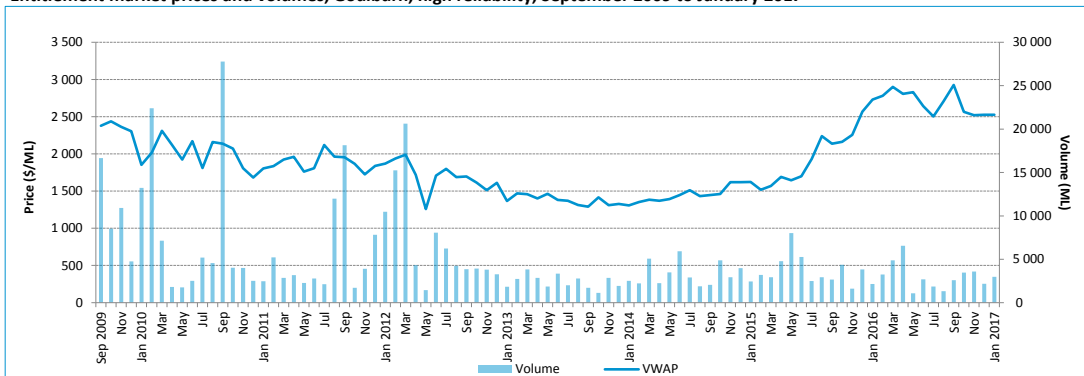


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Goulburn: high reliability

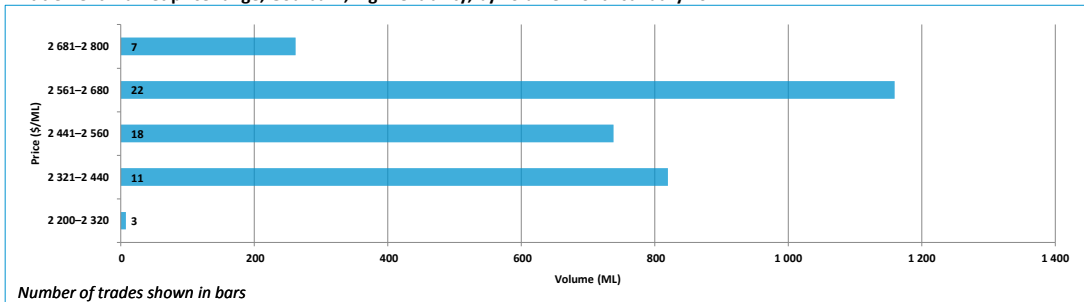
Entitlement market prices and volumes, Goulburn, high reliability, September 2009 to January 2017



Entitlement market prices and volumes, Goulburn, high reliability

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
2 525	2 523	2 704	2 480	2 625	2 550	2 530	2 500	2 988	61	2 500 - 2 700

Entitlement market price range, Goulburn, high reliability, by volume month January 2017

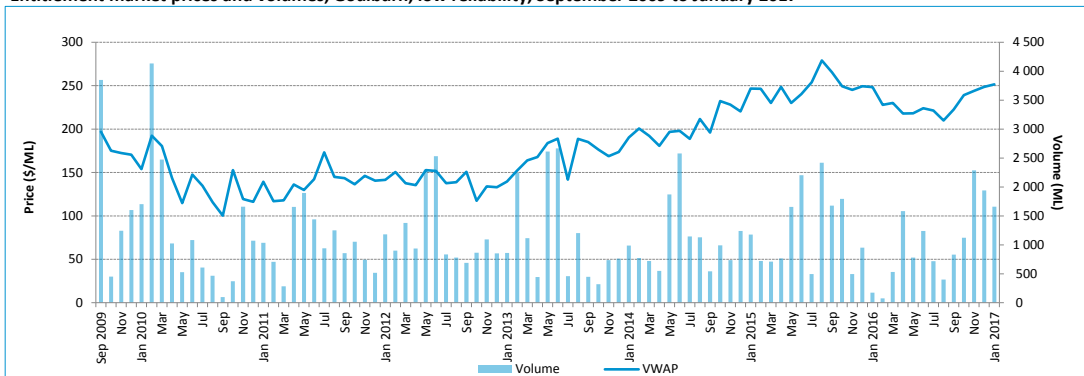


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Goulburn: low reliability

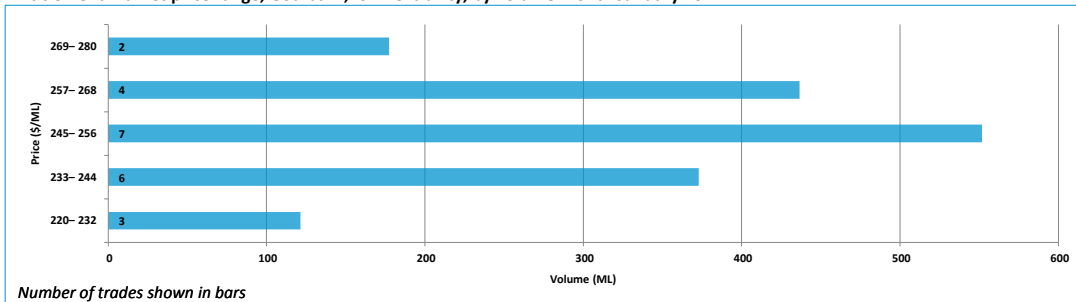
Entitlement market prices and volumes, Goulburn, low reliability, September 2009 to January 2017



Entitlement market prices and volumes, Goulburn, low reliability

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
252	248	234	240	259	250	248	240	1 660	22	260 - 300

Entitlement market price range, Goulburn, low reliability, by volume month January 2017

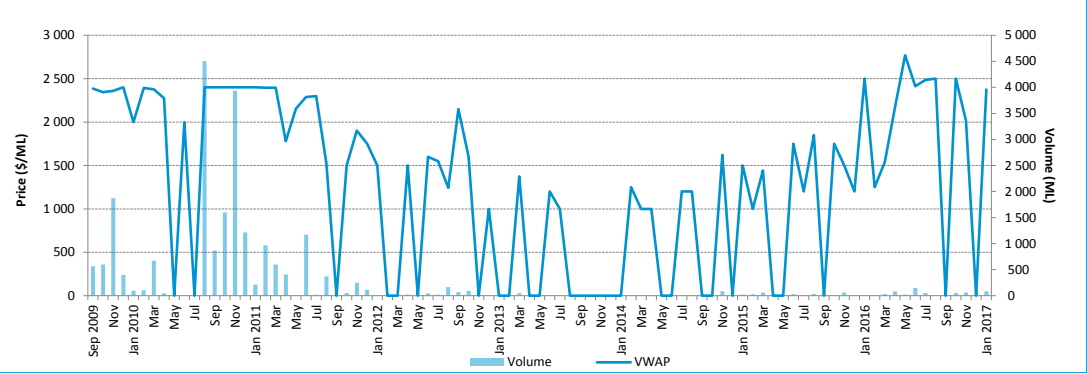


Water entitlement market prices Murray–Darling Basin (January 2017)

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Campaspe: high reliability

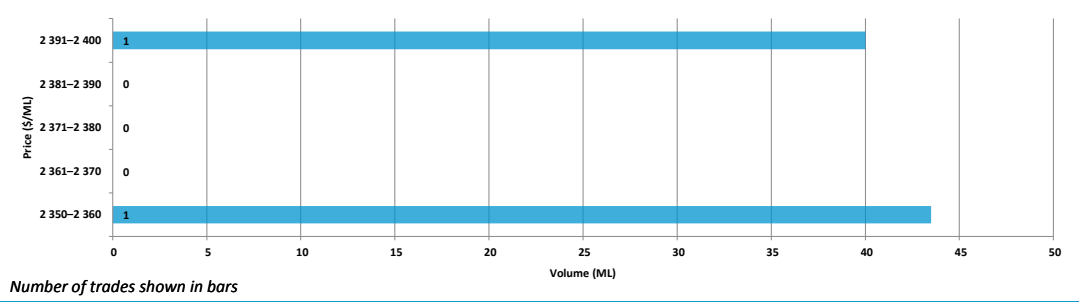
Entitlement market prices and volumes, Campaspe, high reliability, September 2009 to January 2017



Entitlement market prices and volumes, Campaspe, high reliability

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
2 374	2 221	2 303	2 363	2 388	2 375	2 375	-	84	2	2 500 - 2 700

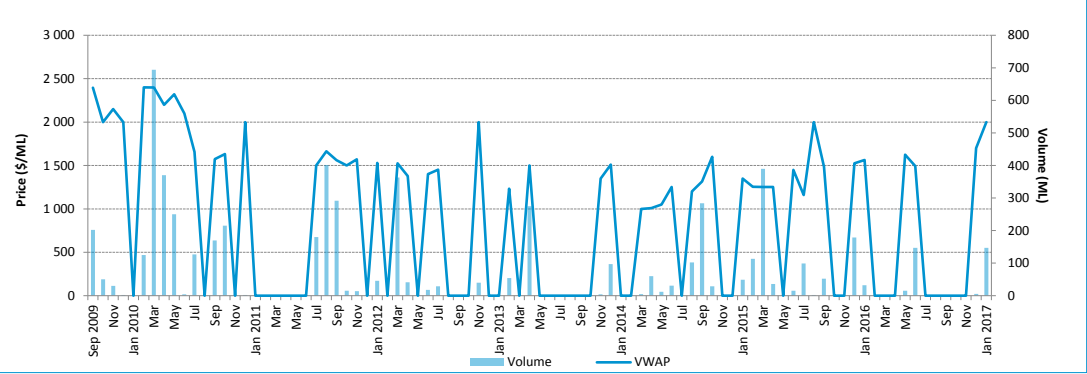
Entitlement market price range, Campaspe, high reliability, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Loddon: high reliability

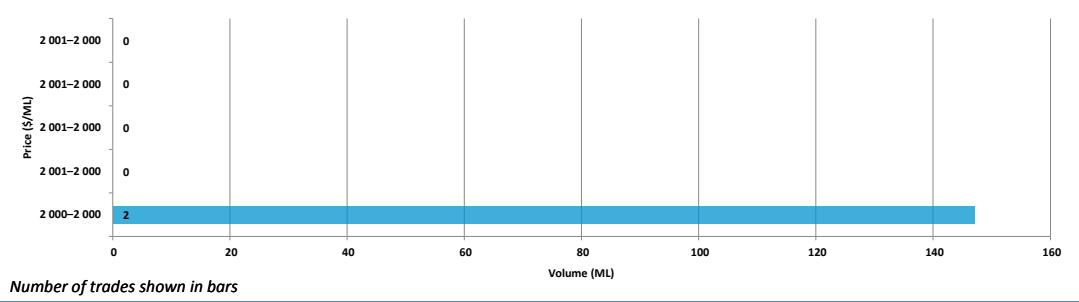
Entitlement market prices and volumes, Loddon, high reliability, September 2009 to January 2017



Entitlement market prices and volumes, Loddon, high reliability

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)							January 2017		Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	January 2017 #	of trades	range (\$/ML)
January 2017	Quarter										
2 000	1 989	1 740	2 000	2 000	2 000	2 000	2 000	147	2		No listings

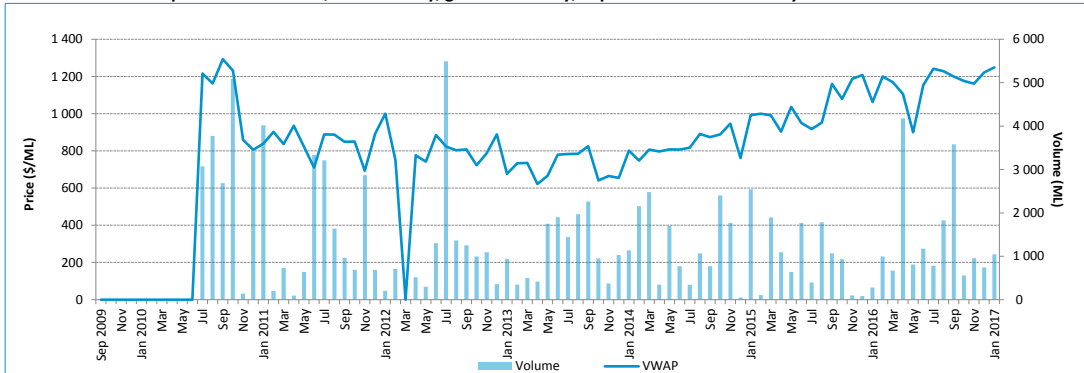
Entitlement market price range, Loddon, high reliability, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

New South Wales Murray: general security

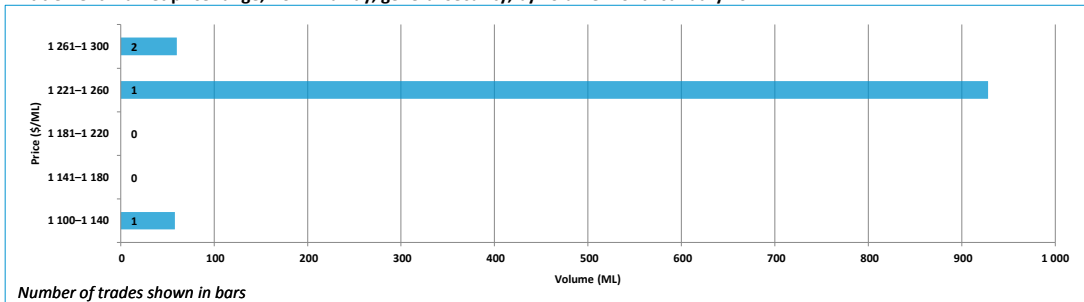
Entitlement market prices and volumes, NSW Murray, general security, September 2009 to January 2017



Entitlement market prices and volumes, NSW Murray, general security

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
1 249	1 211	1 165	1 216	1 285	1 268	1 234	-	1 046	4	1 200 - 1 350

Entitlement market price range, NSW Murray, general security, by volume month January 2017

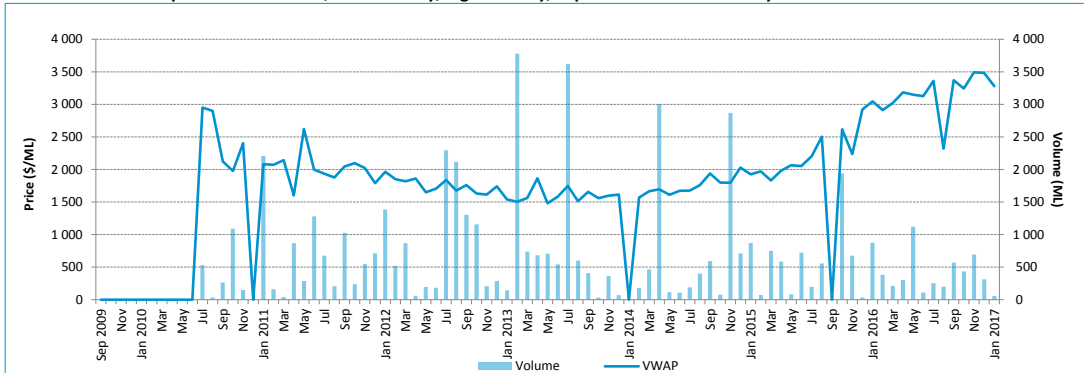


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

New South Wales Murray: high security

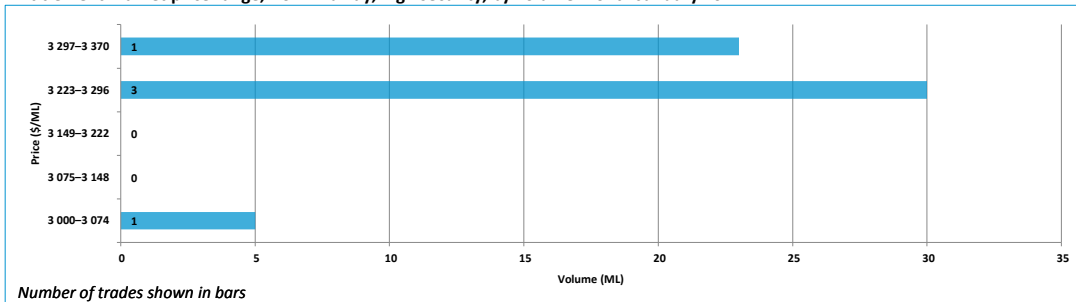
Entitlement market prices and volumes, NSW Murray, high security, September 2009 to January 2017



Entitlement market prices and volumes, NSW Murray, high security

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
3 278	3 477	3 213	3 250	3 260	3 250	3 226	3 250	58	5	3 000 - 3 500

Entitlement market price range, NSW Murray, high security, by volume month January 2017

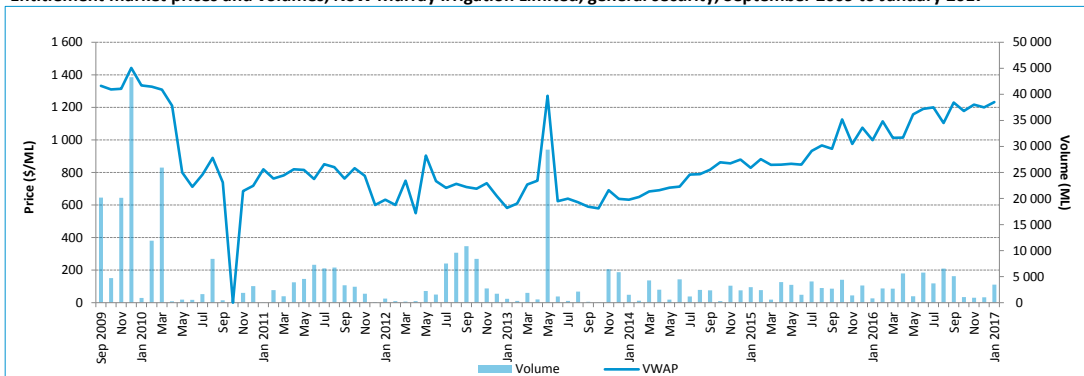


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

New South Wales Murray Irrigation Limited

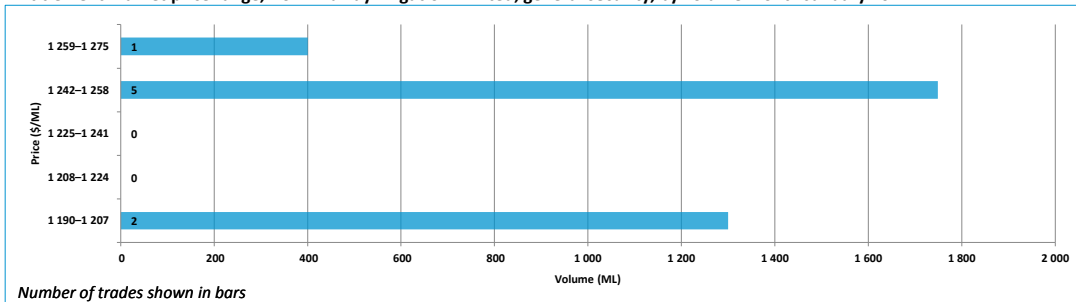
Entitlement market prices and volumes, NSW Murray Irrigation Limited, general security, September 2009 to January 2017



Entitlement market prices and volumes, NSW Murray Irrigation Limited, general security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)						January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
1 232	1 223	1 143	1 239	1 250	1 250	1 240	1 250	3 449	8	1 200 - 1 300

Entitlement market price range, NSW Murray Irrigation Limited, general security, by volume month January 2017

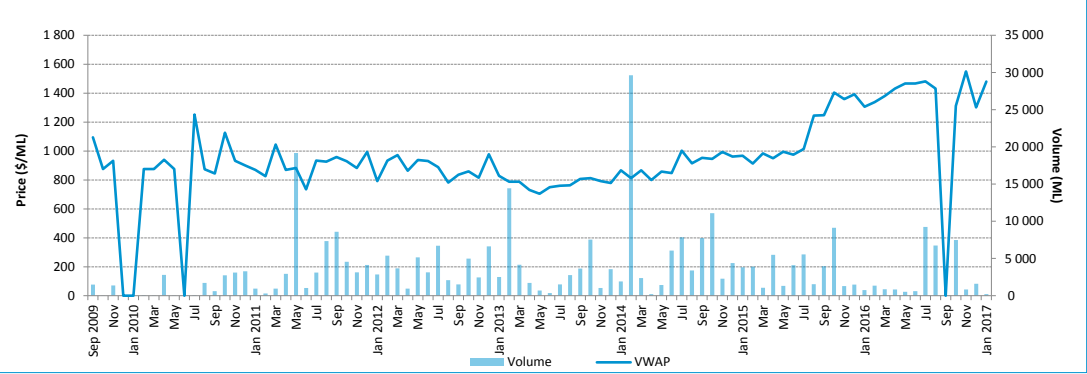


Number of trades shown in bars

Water entitlement market prices Murray–Darling Basin (January 2017)

Murrumbidgee: general security

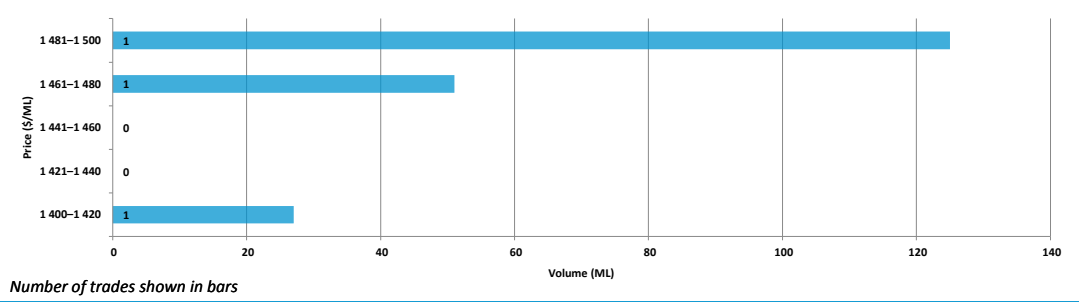
Entitlement market prices and volumes, Murrumbidgee, general security, September 2009 to January 2017



Entitlement market prices and volumes, Murrumbidgee, general security

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
1 479	1 394	1 410	1 435	1 485	1 471	1 457	0	203	3	1 350 - 1 550

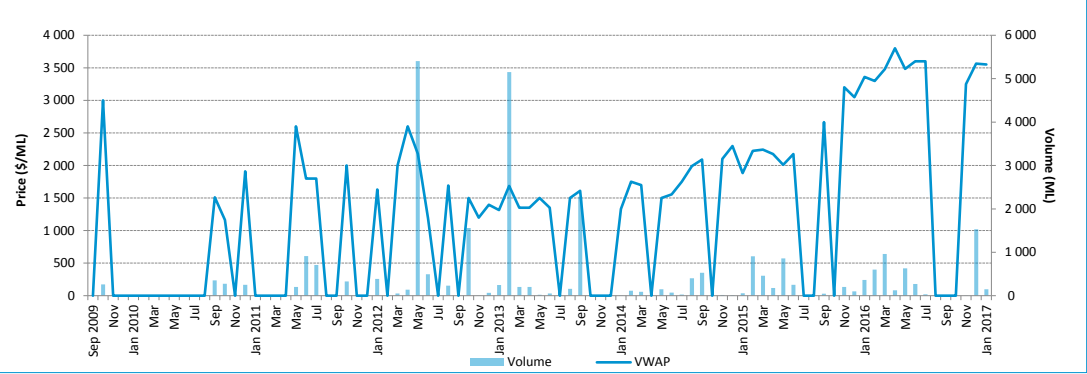
Entitlement market price range, Murrumbidgee, general security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Murrumbidgee: high security

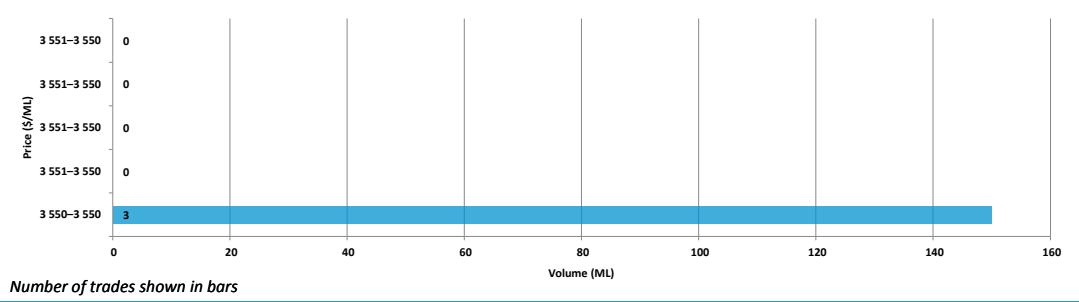
Entitlement market prices and volumes, Murrumbidgee, high security, September 2009 to January 2017



Entitlement market prices and volumes, Murrumbidgee, high security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)							January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades		range (\$/ML)
3 550	3 563	3 506	3 550	3 550	3 550	3 550	3 550	150	3		3 400 - 3 600

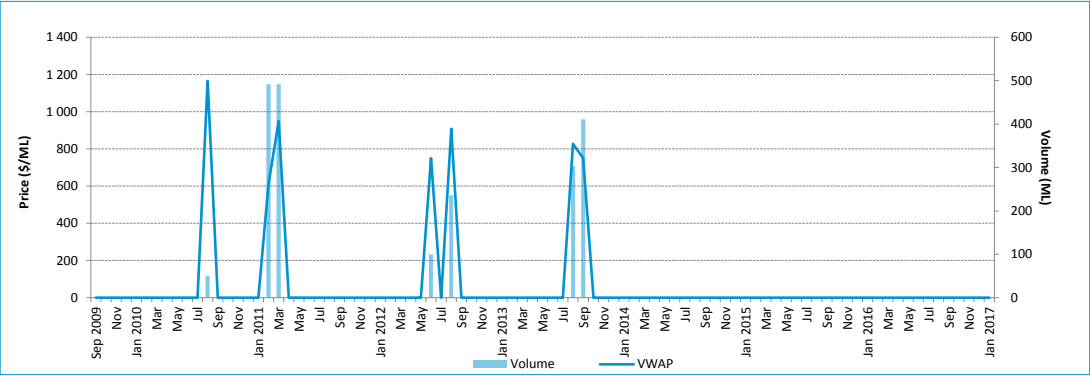
Entitlement market price range, Murrumbidgee, high security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Lower Darling: general security

Entitlement market prices and volumes, Lower Darling, general security, September 2009 to January 2017



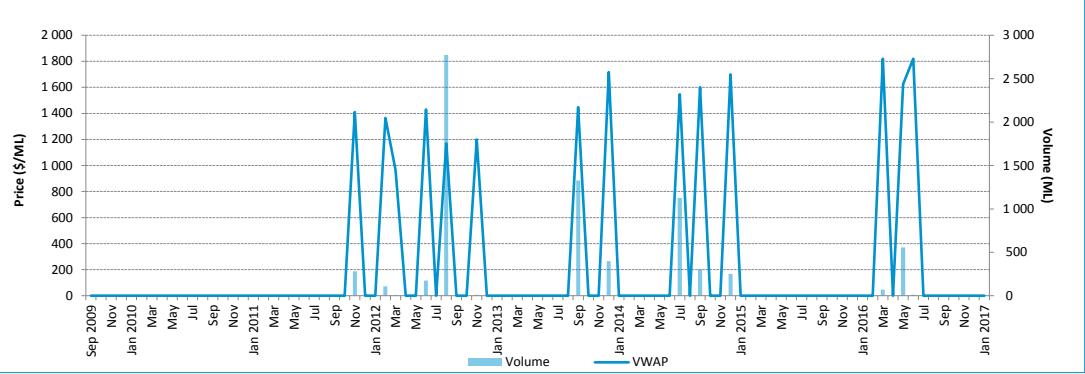
Entitlement market prices and volumes, Lower Darling, general security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)							January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode		Volume	of trades	range (\$/ML)
January 2017	Quarter										
-	-	-	-	-	-	-	-	-	-	-	No listings

Water entitlement market prices Murray–Darling Basin (January 2017)

Lower Darling: high security

Entitlement market prices and volumes, Lower Darling, high security, September 2009 to January 2017



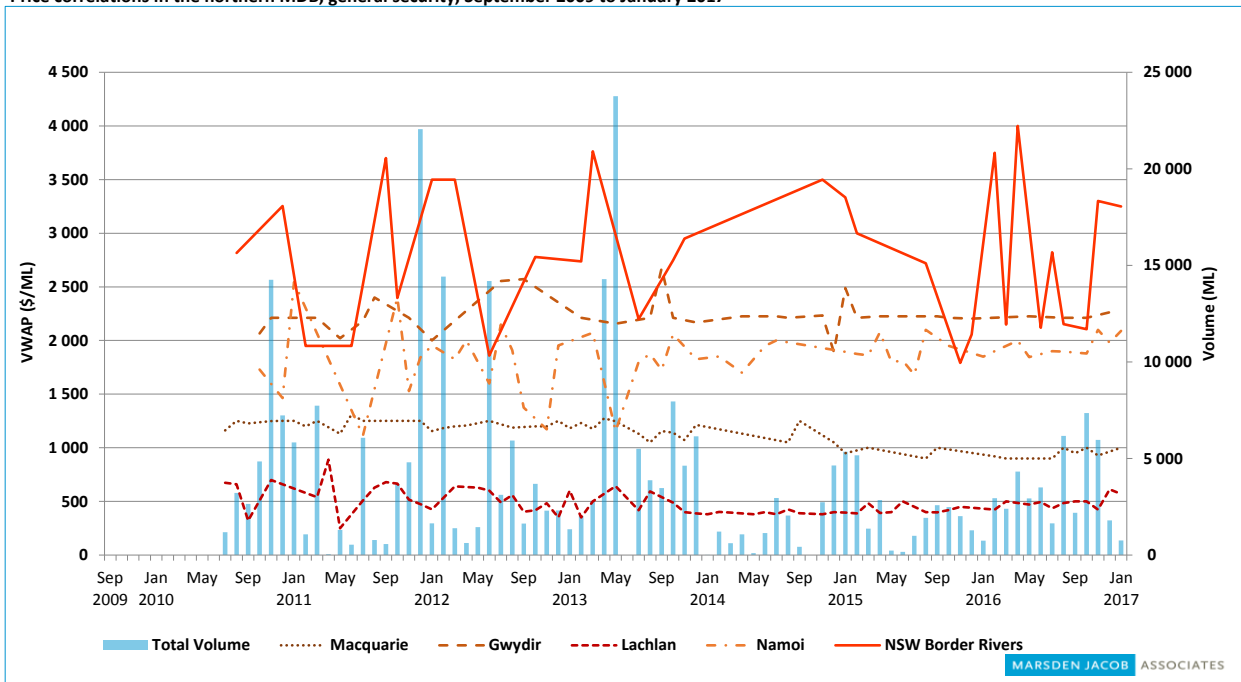
Entitlement market prices and volumes, Lower Darling, high security

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
-	-	1 650	-	-	-	-	-	-	-	No listings

Water entitlement market prices Murray–Darling Basin (January 2017)

Northern Murray–Darling Basin

Price correlations in the northern MDB, general security, September 2009 to January 2017



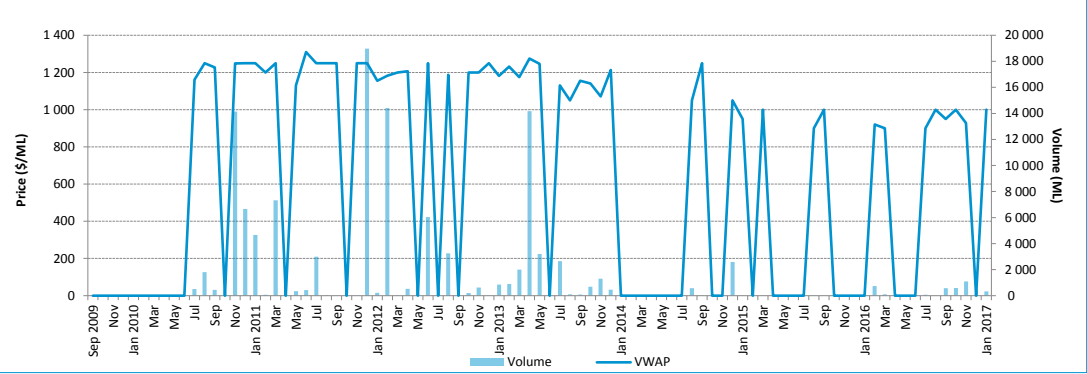
Source: Marsden Jacob analysis, 2017.

Water entitlement market prices Murray–Darling Basin (January 2017)

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Macquarie: general security

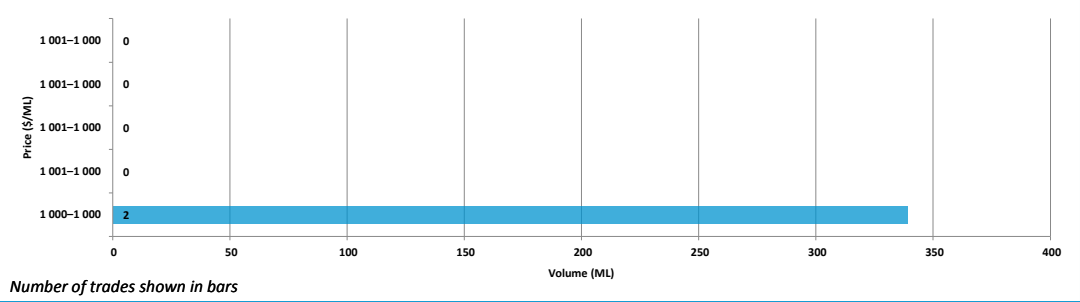
Entitlement market prices and volumes, Macquarie, general security, September 2009 to January 2017



Entitlement market prices and volumes, Macquarie, general security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)						January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
1 000	945	948	1 000	1 000	1 000	1 000	1 000	339	2	1 100 - 1 300

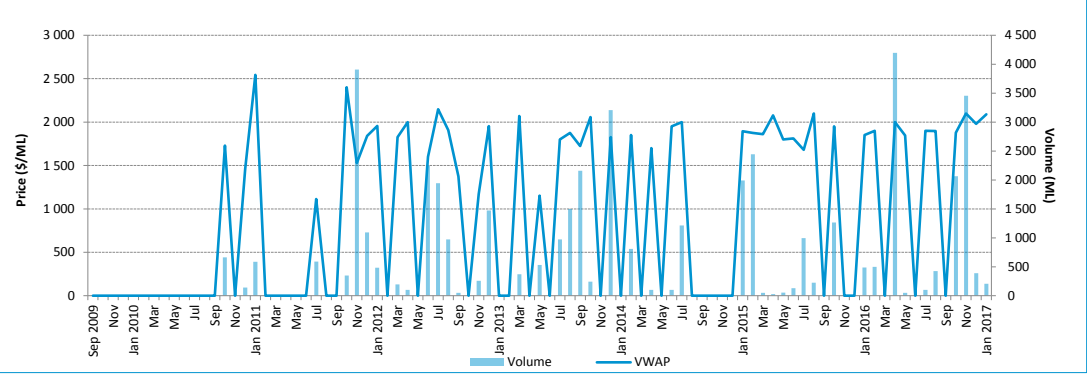
Entitlement market price range, Macquarie, general security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Namoi: general security

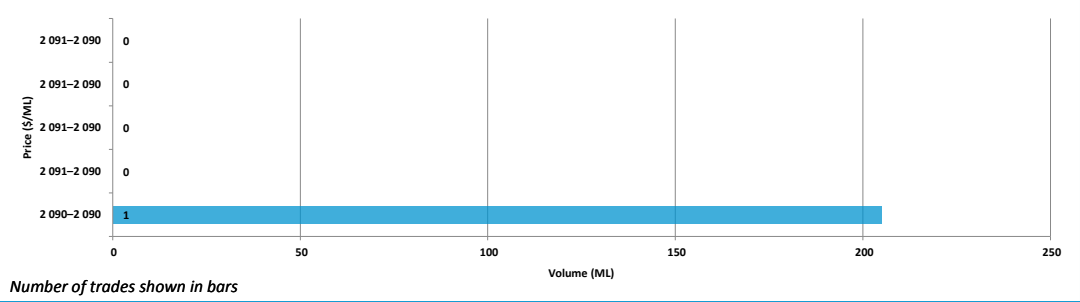
Entitlement market prices and volumes,Namoi, general security, September 2009 to January 2017



Entitlement market prices and volumes, Namoi, general security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)						January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter									
2 090	2 088	1 999	2 090	2 090	2 090	2 090	-	205	1	1 850 - 2 100

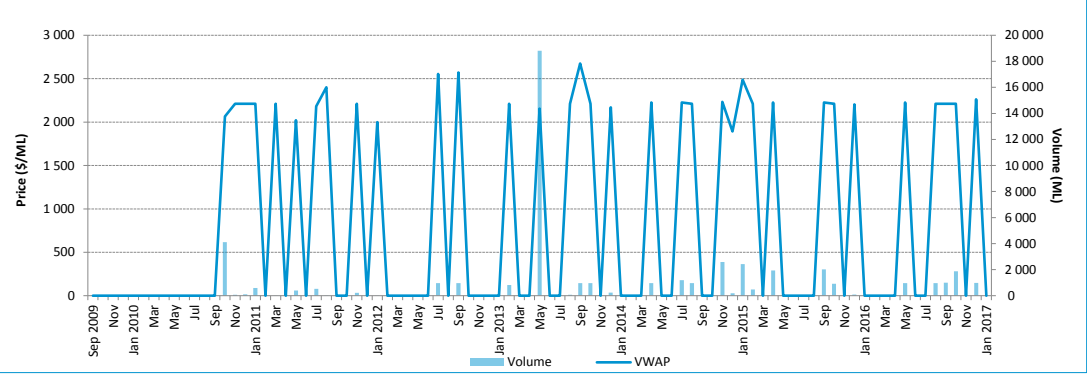
Entitlement market price range, Namoi, general security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Gwydir: general security

Entitlement market prices and volumes, Gwydir, general security, September 2009 to January 2017



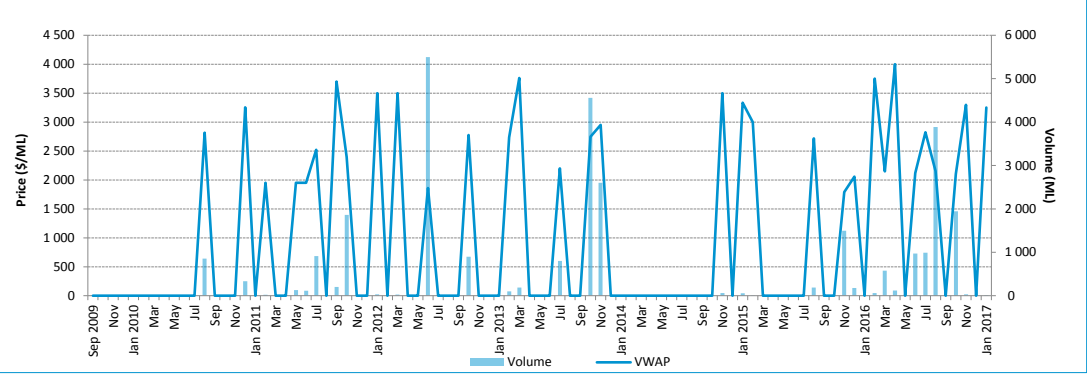
Entitlement market prices and volumes, Gwydir, general security

Volume weighted average price (\$/ML)		January 2017 (in \$/ML)							January 2017	January 2017 #	Broker buy/sell
Month of	January 2017	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	Volume	of trades	range (\$/ML)
January 2017	Quarter										
-	2 262	2 223	-	-	-	-	-	-	-	-	2 100 - 2 300

Water entitlement market prices Murray–Darling Basin (January 2017)

New South Wales Border Rivers: general security

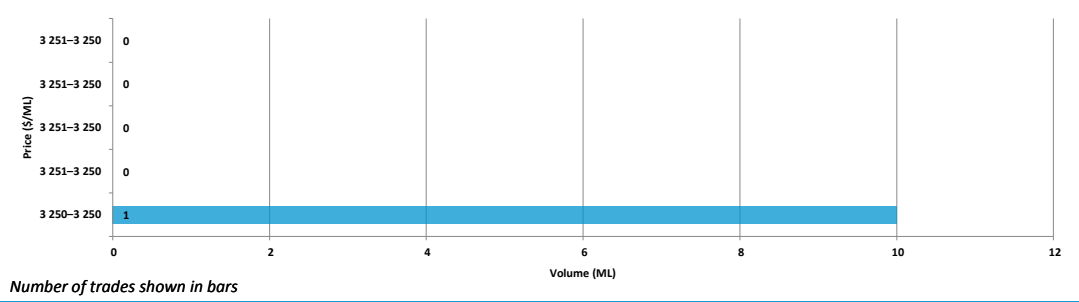
Entitlement market prices and volumes, NSW Border Rivers, general security, September 2009 to January 2017



Entitlement market prices and volumes, NSW Border Rivers, general security

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
3 250	3 288	2 258	3 250	3 250	3 250	3 250	-	10	1	2 000 - 3 500

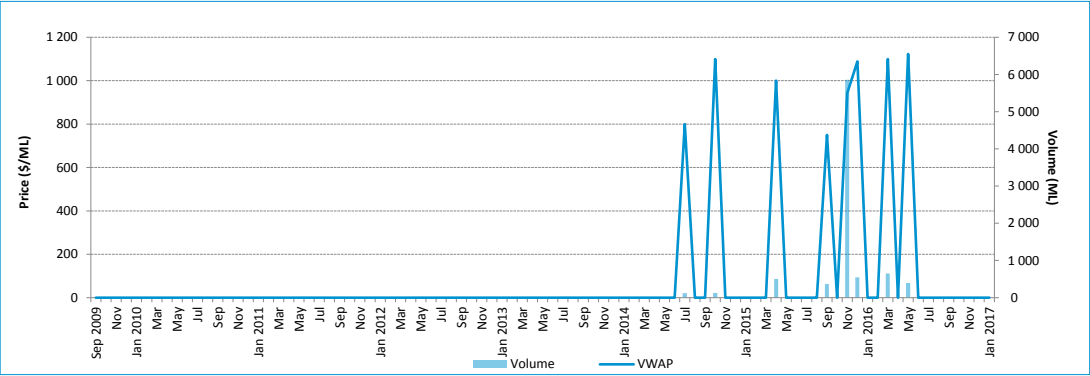
Entitlement market price range, NSW Border Rivers, general security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

Barwon–Darling: unregulated

Entitlement market prices and volumes, Barwon–Darling, unregulated, September 2009 to January 2017



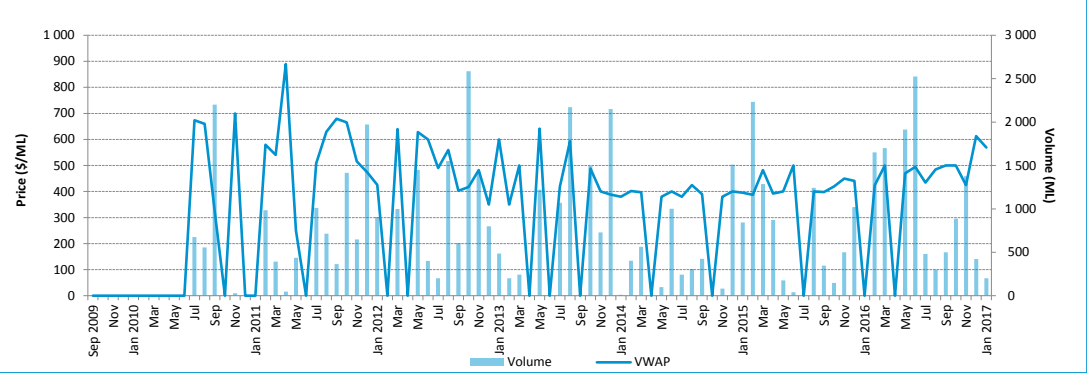
Entitlement market prices and volumes, Barwon–Darling, unregulated

Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017	January 2017 #	Broker buy/sell	
Month of	January 2017		YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
January 2017	Quarter										
-	-		1 109	-	-	-	-	-	-	-	1 100 - 1 400

Water entitlement market prices Murray–Darling Basin (January 2017)

Lachlan: General security

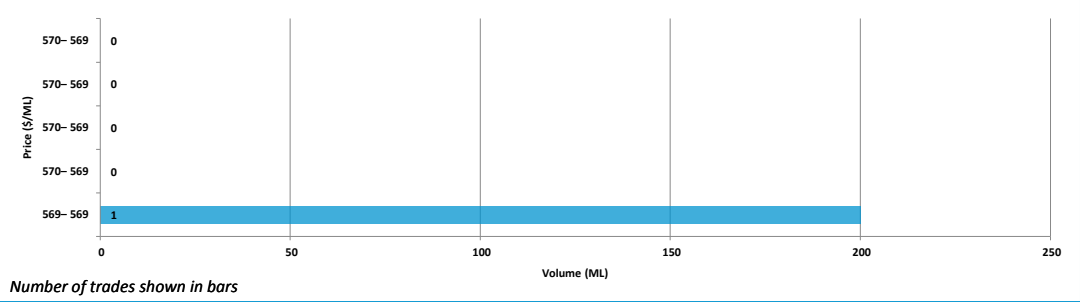
Entitlement market prices and volumes, Lachlan, general security, September 2009 to January 2017



Entitlement market prices and volumes, Lachlan, general security

Volume weighted average price (\$/ML)				January 2017 (in \$/ML)				January 2017	January 2017 #	Broker buy/sell
Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode	Volume	of trades	range (\$/ML)
569	479	477	569	569	569	569	-	200	1	450 - 650

Entitlement market price range, Lachlan, general security, by volume month January 2017



Water entitlement market prices Murray–Darling Basin (January 2017)

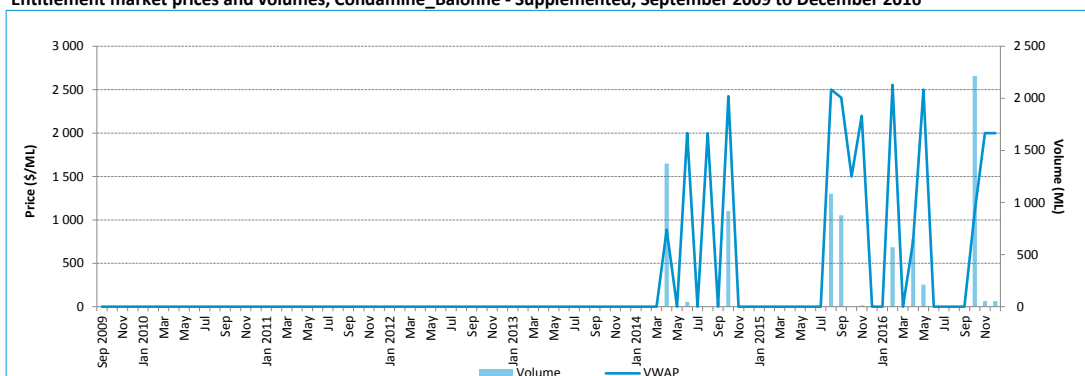
Queensland: Trade Summary

Entitlement market prices and volumes, Lachlan, general security													
Resource Operation Plan	Water Supply Scheme / Water Management Area	Type of Entitlement	Volume weighted average price (\$/ML)			January 2017 (in \$/ML)					January 2017 Volume	January 2017 # of trades	Broker buy/sell range (\$/ML)
			Month of January 2017	January 2017 Quarter	YTD	25th percentile	75th percentile	Median	Mean	Mode			
QLD Border Rivers	Border Rivers/ Macintyre Brook	Supplemented	-	-	1 600	-	-	-	-	-	-	-	No listings
QLD Border Rivers	Border Rivers	Unsupplemented	-	-	1 734	-	-	-	-	-	-	-	No listings
Condamine-Balonne	St. George / Upper Condamine	Supplemented	-	2 000	1 365	-	-	-	-	-	-	-	No listings
Condamine-Balonne	Condamine Balonne / Lower Balonne / Upper Condamine	Unsupplemented	-	1 825	1 467	-	-	-	-	-	-	-	No listings
Condamine-Balonne	Upper Condamine	Alluvium Ground-water	-	-	-	-	-	-	-	-	-	-	No listings
Condamine-Balonne	Lower Balonne	Overland Flow	-	-	-	-	-	-	-	-	-	-	No listings

Water entitlement market prices Murray–Darling Basin (January 2017)

Condamine Balonne: Supplemented

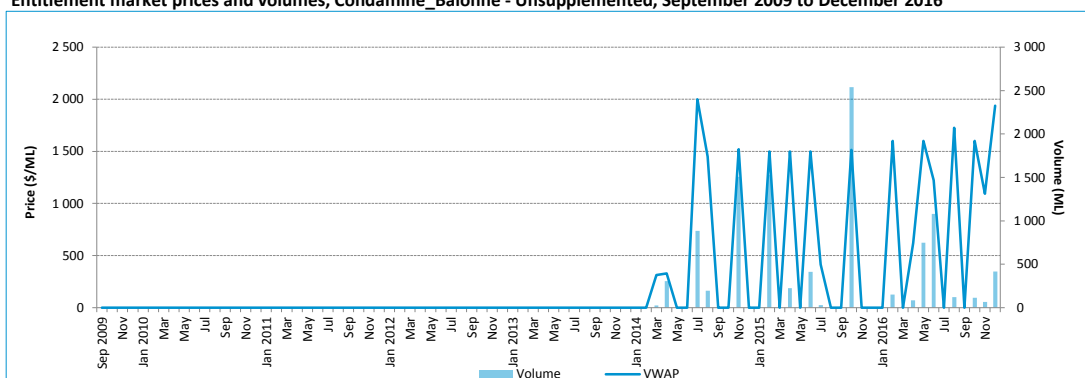
Entitlement market prices and volumes, Condamine_Balonne - Supplemented, September 2009 to December 2016



Note: No trades have been reported for Queensland in January 2017. Charts show the monthly trade volume and value until the end of December.

Condamine Balonne: Unsupplemented

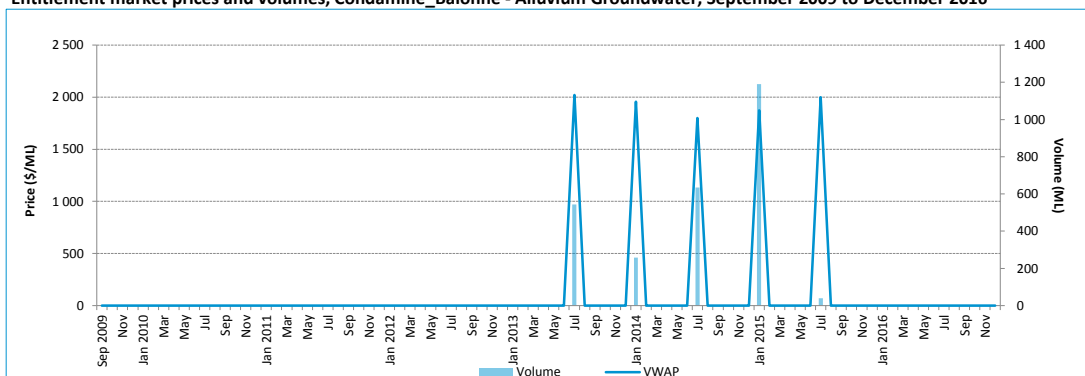
Entitlement market prices and volumes, Condamine_Balonne - Unsupplemented, September 2009 to December 2016



Note: No trades have been reported for Queensland in January 2017. Charts show the monthly trade volume and value until the end of December.

Condamine Balonne: Alluvium Groundwater

Entitlement market prices and volumes, Condamine_Balonne - Alluvium Groundwater, September 2009 to December 2016

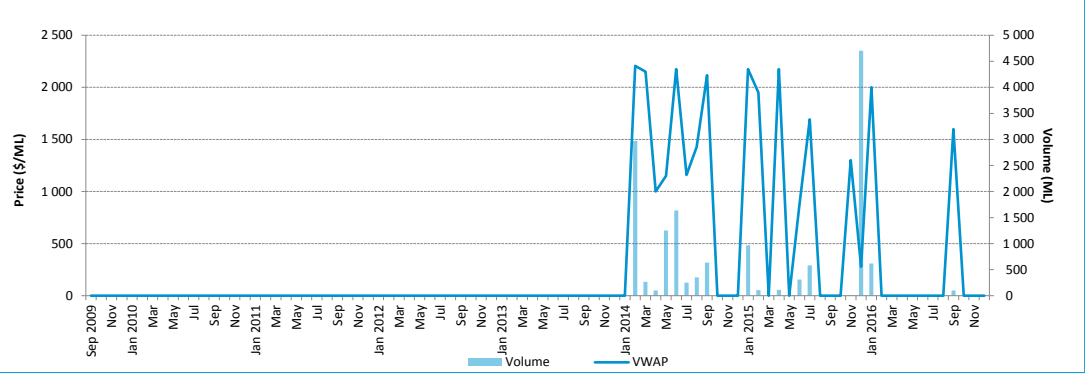


Note: No trades have been reported for Queensland in January 2017. Charts show the monthly trade volume and value until the end of December.

Water entitlement market prices Murray–Darling Basin (January 2017)

QLD Border Rivers: Supplemented

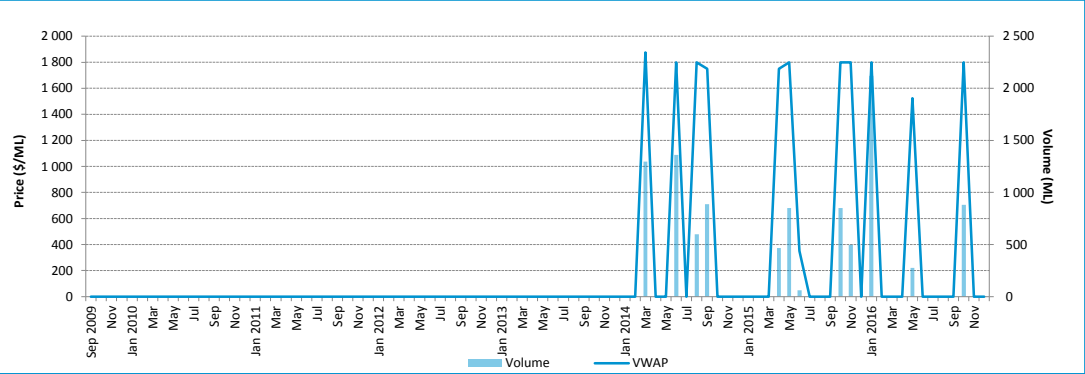
Entitlement market prices and volumes, QLD_Border_Rivers - Supplemented, September 2009 to December 2016



Note: No trades have been reported for Queensland in January 2017. Charts show the monthly trade volume and value until the end of December.

QLD Border Rivers: Unsupplemented

Entitlement market prices and volumes, QLD_Border_Rivers - Unsupplemented, September 2009 to December 2016



Note: No trades have been reported for Queensland in January 2017. Charts show the monthly trade volume and value until the end of December.

Water entitlement market prices Murray–Darling Basin (January 2017)

Appendix A: Regions and water sources

Table A1 Water sources (southern MDB)

Region	Water source
SA Murray	River Murray Prescribed Water Course (Class 3a)
Vic. Murray above Barmah Choke	6 Vic. Murray Dart to Barmah
Vic. Murray below Barmah Choke	7 Vic. Murray Barmah to SA
Goulburn	6B Lower Broken Creek
	1A Greater Goulburn
	1B Boort
Campaspe	3 Lower Goulburn
	4A Campaspe Eppalock to WWC
Loddon	4C Lower Campaspe
	5A Loddon—Coliban Channel to Lower Weir Pool (now 5A Loddon – CC/Tull to LWP)
NSW Murray	5B Bullarook
	New South Wales Murray Regulated River Water Source
Murrumbidgee	Murrumbidgee Regulated River Water Source
Lower Darling	Lower Darling Regulated River Water Source

Table A2 Water sources (northern MDB)

Region	Water source
Macquarie	Macquarie and Cudgegong Regulated Rivers Water Source
Namoi	Lower Namoi Regulated River Water Source
	Upper Namoi Regulated River Water Source
Gwydir	Gwydir Regulated River Water Source
NSW Border Rivers	Border Rivers Regulated River Water Source
Barwon—Darling	Barwon—Darling Unregulated River Water Source
Lachlan	Lachlan Regulated River Water Source

Appendix B: Trades Excluded

Table B1 shows trades that have been excluded from the January 2017 analysis.

Table B1 Outliers removed from trade data

Date	Catchment	Product name	Volume (ML)	Price (\$)	Price per ML (\$/ML)
23/01/2017	Campaspe	High Reliability	1	\$2 800	\$2 800
4/01/2017	Goulburn	High Reliability	7	\$19 500	\$3 000
10/01/2017	Goulburn	High Reliability	6	\$1 320	\$ 240
16/01/2017	Goulburn	High Reliability	1	\$1 500	\$1 500
16/01/2017	Goulburn	High Reliability	3	\$4 350	\$1 500
23/01/2017	Goulburn	High Reliability	12	\$25 200	\$2 100
25/01/2017	Goulburn	High Reliability	2	\$3 000	\$1 500
25/01/2017	Goulburn	High Reliability	2	\$3 000	\$1 500
12/01/2017	Goulburn	Low Reliability	1	\$ 55	\$ 110
23/01/2017	Goulburn	Low Reliability	5	\$ 882	\$ 180
30/01/2017	Goulburn	Low Reliability	4	\$ 524	\$ 138
17/01/2017	NSW_Murray	General Security	21	\$6 500	\$ 310
6/01/2017	NSW_Murray	NOT_ALLOC	3	\$15 000	\$5 000
7/01/2017	NSW_Murray	NOT_ALLOC	8	\$ 1	\$ 0
12/01/2017	NSW_Murray	NOT_ALLOC	4 000	\$9360 000	\$2 340
17/01/2017	NSW_Murray	NOT_ALLOC	8	\$ 1	\$ 0
17/01/2017	NSW_Murray	NOT_ALLOC	1	\$ 1	\$ 1
17/01/2017	NSW_Murray	NOT_ALLOC	8	\$ 1	\$ 0
23/01/2017	NSW_Murray	NOT_ALLOC	60	\$19 200	\$ 320
23/01/2017	NSW_Murray_Irrigation	General Security	10	\$7 500	\$ 750
6/01/2017	Vic_Murray_AboveBC	High Reliability	25	\$37 500	\$1 500
4/01/2017	Vic_Murray_AboveBC	Low Reliability	19	\$3 366	\$ 180
13/01/2017	Vic_Murray_AboveBC	Low Reliability	63	\$10 693	\$ 170
5/01/2017	Vic_Murray_BelowBC	High Reliability	10	\$58 000	\$5 800
12/01/2017	Vic_Murray_BelowBC	High Reliability	2	\$2 500	\$1 250
13/01/2017	Vic_Murray_BelowBC	High Reliability	5	\$1 000	\$ 204
17/01/2017	Vic_Murray_BelowBC	High Reliability	5	\$6 750	\$1 350
17/01/2017	Vic_Murray_BelowBC	High Reliability	2	\$1 350	\$ 675
17/01/2017	Vic_Murray_BelowBC	High Reliability	85	\$151 500	\$1 782
23/01/2017	Vic_Murray_BelowBC	High Reliability	10	\$275 000	\$27 500
4/01/2017	Vic_Murray_BelowBC	Low Reliability	21	\$7 729	\$ 366
4/01/2017	Vic_Murray_BelowBC	Low Reliability	49	\$18 096	\$ 366

* - Trades are within the bounds of two standard deviations for the catchment, but have been excluded