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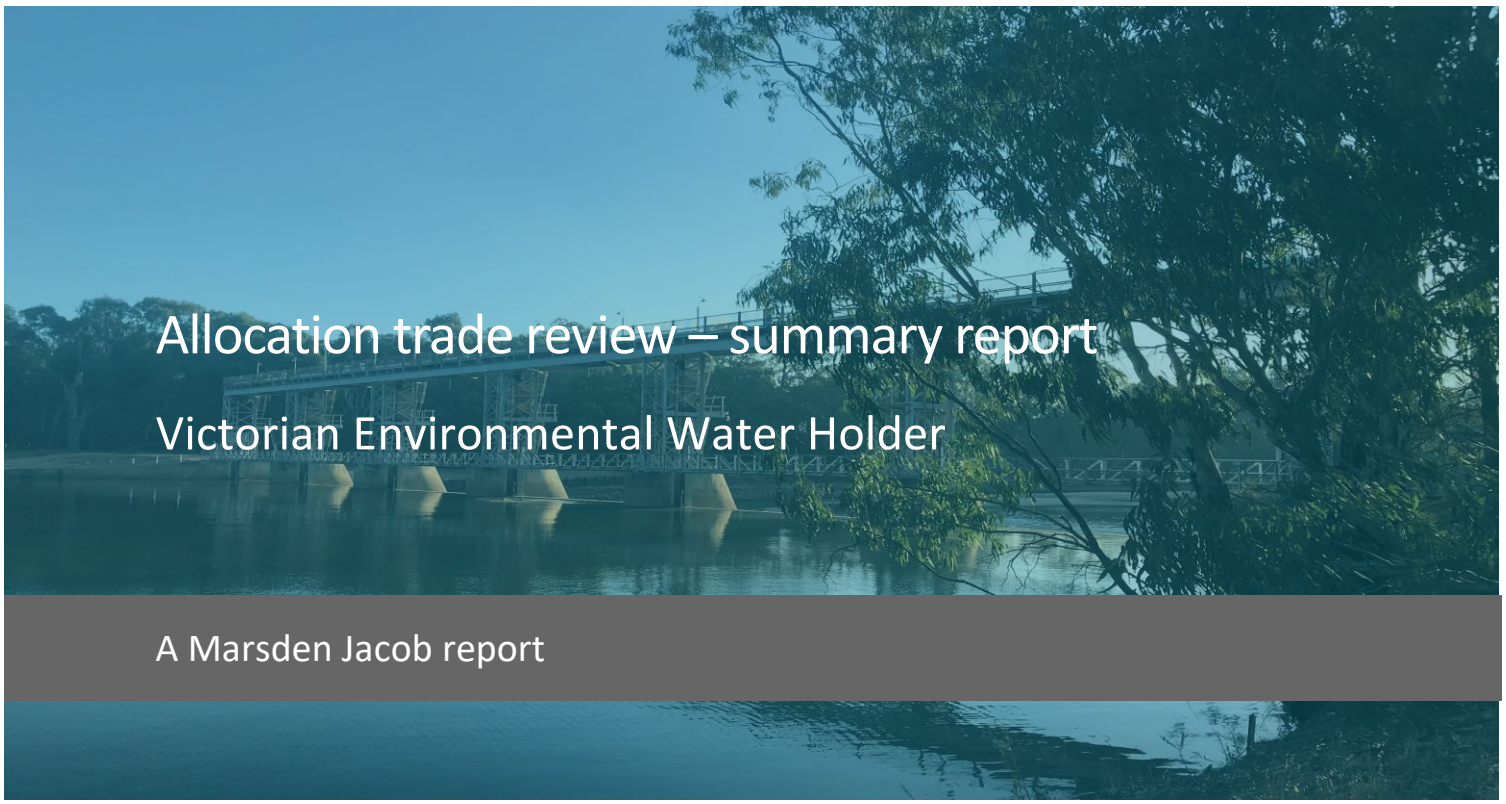

Allocation trade review – summary report

Victorian Environmental Water Holder

A Marsden Jacob report

Prepared for the Victorian Environmental Water Holder

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About us

Established in 1996, Marsden Jacob Associates has grown to be Australia's leading dedicated natural resource economics, policy and strategy advisory. We employ talented economists and policy advisers who specialise in solving practical, real-world problems relating to water, energy, environment, natural resources, agriculture, earth resources, public policy and transport. We work with a wide range of cross-disciplinary partner firms to deliver the best project outcomes for our clients.

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Executive summary

The Victorian Environmental Water Holder (VEWH) is the independent statutory body responsible for holding and managing Victoria's environmental water entitlements. The use of these entitlements for environmental watering is critical in ensuring Victoria's rivers, wetlands and floodplains continue to maintain and improve the environmental benefits that communities value most.

Project scope

The VEWH can engage with the allocation water market (i.e. buy or sell allocation) if it benefits the environment. The VEWH engaged Marsden Jacob Associates (Marsden Jacob) to conduct an external review of the implementation of its commercial trading activity in northern Victoria in 2014/15, 2016/17, and 2017/18.

The broad objective of this review was to inform further development of the VEWH's trade performance and processes. More specifically, Marsden Jacob has reviewed:

- the VEWH's market performance, including reviewing the water market intermediaries (brokers and exchanges) the VEWH has used
- whether the VEWH's trading activity has had an adverse impact on the market
- if the VEWH's trading processes (including planning and implementing strategies, and communicating intents, activities and outcomes to the public) are appropriate and effective, both in general and from the market impact point of view.

This document is a public summary report of the review. Some sections of the original analysis have been omitted or modified due to their commercial in confidence nature.

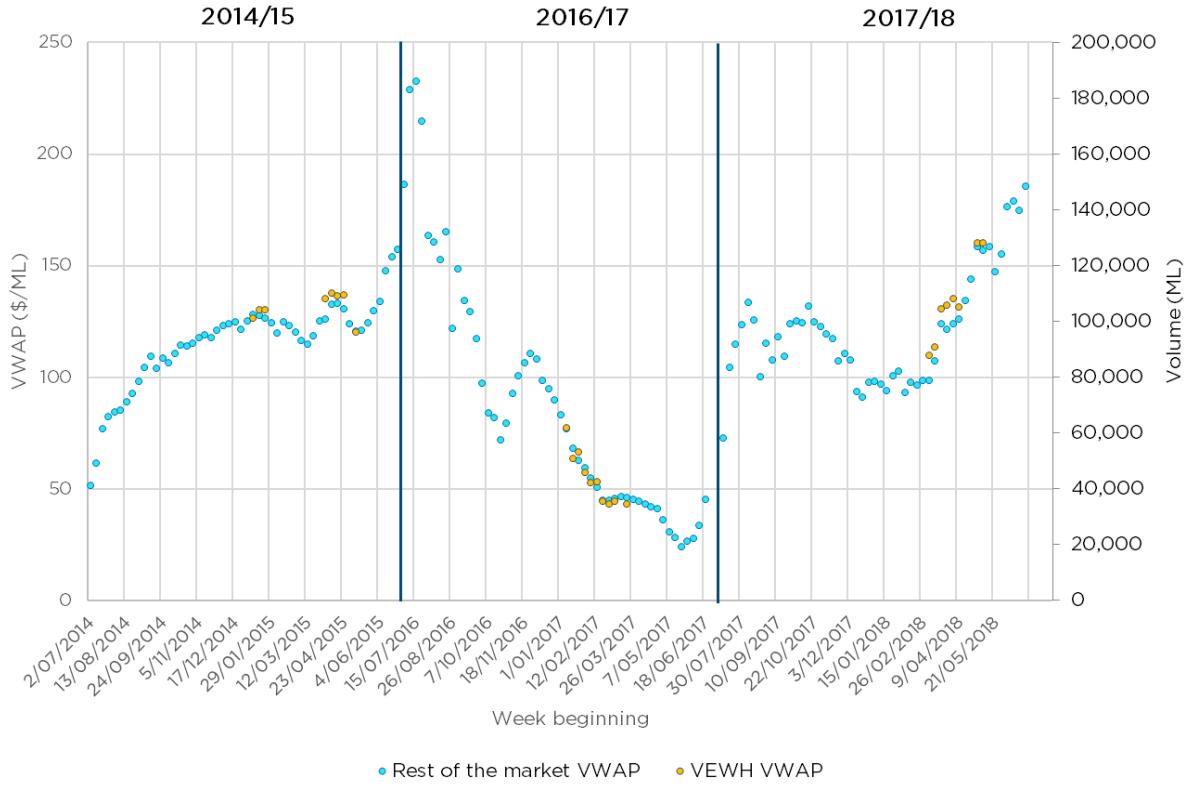
Key findings

The key findings from Marsden Jacob's analysis are set out below.

Key finding #1: The VEWH's market performance in terms of achieved prices and timing of trade has been good.

Over the three water years when the VEWH has periodically sold allocation, it has been able to achieve prices that are generally close to the prevailing market price. Apart from 2016/17, the timing of trade activities has generally been favourable to the VEWH, as far as average market prices throughout the seasons are concerned (see Figure 1).

Figure 1: Weekly volume weighted average price (VWAP) of VEWH trades compared to the rest of the market 2014-2018



Source: Marsden Jacob analysis

Key finding #2: Water market intermediaries engaged by the VEWH have broadly performed well.

Marsden Jacob's review of water market intermediary performance shows the brokers and exchanges VEWH engaged have comparative advantages in different areas. But there aren't major differences in overall service quality apart from one intermediary. Our evaluation suggests this intermediary has provided the best overall service by a clear margin.

Notably, our review has not identified a clear correlation between the cost of brokerage services and the corresponding quality. The results of the intermediary performance review have been omitted from this summary report due to their commercial in confidence nature.

Key finding #3: VEWH trading actions have not materially impacted the market.

Simple descriptive statistics reveal that the volumes of allocation traded by the VEWH only represent a small fraction of the total volume traded annually in the southern connected Murray-Darling Basin (between 1.7% and 3.2% across the three water years) – hence the market impact was expected to be minimal based on these simple metrics.

To further assess the market impact of the VEWH's trading we undertook regression modelling and comparative statistical analyses. The results of our analyses show that changes to the volume of VEWH water traded in the market have had a minimal (if any) impact on allocation market prices.

This result indicates that the volumes traded by the VEWH did not result in material price changes in allocation markets.

As a result, we conclude that the VEWH's participation in the market has not had a significant influence on market price, and that allocation prices are largely being determined by other market forces.

Key finding #4: The VEWH's trading processes are effective and appropriate to mitigate the potential adverse third-party impacts.

Marsden Jacob's view is that the way the VEWH has interacted with the water market to date mitigates potential adverse market impacts as:

- The VEWH only announces specific trade intents and activities when they absolutely are going to happen
- The VEWH uses existing, well-functioning market mechanisms and acts as a silent market participant.

Our evaluation shows that VEWH market announcements do not impact allocation trade activity or prices. The VEWH's market activity is not perceived to distort the water market.

Our review notes that the assessment of third-party impacts needs to consider supply and demand sides of the market. This is because third parties include other buyers and sellers of allocation. Additional supply of allocation onto the market may benefit buyers, because it is easier to source water, whereas sellers may be concerned about any reduction in demand side pressure.

The current minimum and maximum assessment process for trade volume and price supports the consideration of both types of third parties.

Key finding #5: There are minor aspects in the VEWH's market engagement process where it has potentially been overly cautious with third party impacts.

In our view, relying on the backward looking and lagged information from the Victorian Water Register (VWR) as a basis for setting the weekly limits for prices and trade volumes has unnecessarily restricted the VEWH's flexibility in its market engagement.

Taking market connectivity of the southern connected MDB and current supply and demand conditions better into account in the trade planning and implementation process would result in beneficial outcomes to the VEWH, without adversely affecting markets or third parties.

Key finding #6: The current way of signalling the VEWH's trade intents and activities represents good and transparent practice, and provides sufficient detail to market participants.

To improve transparency in line with the intent of the *Basin Plan Water Trading Rules*, the VEWH should include specific trading zone details within its future trading activity announcements.

Moreover, to promote market transparency, it would be prudent for the VEWH to inform the water market about the cessation of its trade activities after all sales are completed for the year, and to report trade results in more detail.

1. Introduction

The VEWH can engage with the allocation water market if it benefits the environment. The VEWH engaged Marsden Jacob Associates (Marsden Jacob) to conduct an external review of the implementation of its commercial trading activity in northern Victoria in 2014/15, 2016/17, and 2017/18.

1.1 Background

The VEWH was established on 1 July 2011 through an amendment to the Victorian Water Act 1989 (the Water Act), passed by the Victorian Parliament in August 2010.

The VEWH is the independent statutory body responsible for holding and managing Victoria's environmental water entitlements (the Water Holdings). The use of the Water Holdings for environmental watering is critical in ensuring Victoria's rivers, wetlands and floodplains continue to maintain and improve the environmental benefits that communities value most.

The VEWH trades water to improve the health of Victoria's rivers and wetlands. Trading helps ensure water is available when and where it is most needed. Environmental water supply and demand across systems varies due to climatic and ecological conditions. Trading, like carryover (saving unused allocated water to use the following season), helps the VEWH to smooth out some of that variability.

Proceeds from selling allocation can help the VEWH to buy water in areas where it is needed. For example, in a year when there is enough water to meet all needs in a system, the VEWH might be able to sell allocation to buy and deliver water in a system where there is a deficit. Proceeds can also fund monitoring and river improvements.

The most common trades undertaken by the VEWH are administrative water transfers, which involve transfers of water with no financial exchange (aside from application fees). These are usually transfers between the entitlements, or with other environmental water holders. However, these trades fall outside the scope of this project, instead this project focuses on financial exchanges that have been supported by intermediaries or brokers.

1.2 Project objective

The key objectives of the project are as follows:

- To review and report on VEWH's market performance (price, timing)
- To test whether the VEWH's trading activity has had an adverse impact on the market
- To review whether the VEWH's trading processes (including planning and implementing strategies, and reporting intents, activities and outcomes to the public) are appropriate and effective, both in general and from the market impact point of view.

The outcomes of the project will help the VEWH to understand whether its current approaches to commercial trading are appropriate, or whether a more aggressive or conservative approach might be needed. The results will feed into improvements in VEWH's trade processes and procedures.

1.3 Project scope

The VEWH has engaged Marsden Jacob Associates (Marsden Jacob) to conduct an external review of the implementation of its commercial trading activity in northern Victoria in 2014/15, 2016/17, and 2017/18. The VEWH did not sell water in 2015-16.

The broad objective of this review was to inform further development of the VEWH's trade performance and processes. More specifically, Marsden Jacob has reviewed:

- the VEWH's market performance
- whether the VEWH's trading activity has had an adverse impact on the market
- whether the VEWH's trading processes (including planning and implementing strategies, and communicating intents, activities and outcomes to the public) are appropriate and effective, both in general and from the market impact point of view.

1.3.1 VEWH's market performance in 2014-15, 2016-17, 2017-18

The assessment of market performance included an assessment of:

- General market activity in the Murray and Goulburn systems in 2014-15, 2016-17, 2017-18 – trends, variables, drivers, indicators
- How did VEWH perform overall compared to the market price?
- How well did each market intermediary perform relative to the market?
- How well did each market intermediary perform relative to: (1) fees and charges and (2) general service provision (qualitative and quantitative assessment)

The results of the intermediary performance review have been omitted from this summary report as they are commercial in confidence.

1.3.2 Market impact, trading processes and reporting

The VEWH asked Marsden Jacob to test:

a) whether its strategies and mechanisms (including planning and implementing strategies, and communicating intents, activities and outcomes to the public) are appropriate and effective, both in general and to minimise adverse market impacts

b) whether its trade activity in 2014-15, 2016-17 2017-18 could feasibly be shown to have adversely impacted the market.

As a government organisation, the VEWH takes its trade responsibilities very seriously. Hence, the VEWH has developed several business processes to guide its trade activity and to minimise any adverse impacts on water markets and other entitlement holders. Specific elements of the current approach include limiting volumes made available, parcel size, and using multiple brokers to extend market reach.

In this project Marsden Jacob has reviewed and considered the appropriateness of the strategies and mechanisms used to minimise VEWH's market impact in 2014-15, 2016-17 and 2017-18, and whether these strategies and processes:

1. Meet the objective of not adversely impacting the market
2. Are too conservative or not conservative enough?
3. Represent the best practice in terms of communicating and reporting trade intents, activities and outcomes to the public
4. Could be further refined.

We have used statistical analyses to identify whether VEWH's trading activity could be shown to have, or could feasibly have had a significant impact on the market.

2. VEWH's market performance

Our evaluation shows that the VEWH has performed well relative to the market during the three seasons the VEWH has been trading its environmental allocation water.

2.1 Findings

Key finding #1: The VEWH's market performance in terms of both achieved prices and timing of trade has been good.

Over the three water years when the VEWH has periodically sold allocation, it has been able to achieve prices that are generally close to the prevailing market price. Except for 2016/17, the timing of trade activities has generally been favourable to the VEWH as far as average market prices throughout the seasons are concerned.

Key finding #2: Water market intermediaries engaged by the VEWH have broadly performed well.

Based on Marsden Jacob's review of the water market intermediary performance, the brokers and exchanges have their strengths and weaknesses in different areas. Our evaluation shows that there aren't major differences in overall service quality apart from one intermediary. In our assessment the intermediary has provided the best overall service by a clear margin. Notably, our review has not identified a clear correlation between the cost of brokerage services and the corresponding quality.

The detailed results of the intermediary performance review have been omitted from this summary report as they are commercial in confidence.

2.2 Overview of general market activity

We outline general allocation market activity for the southern connected Murray-Darling Basin (MDB) for the years VEWH traded. The intention of this section is to provide readers with an introduction to the market conditions when the VEWH entered the market.

2.2.1 2014/15 water year

In 2014/15, temporary water markets in the southern connected recorded the highest weighted average prices since the end of the Millennium drought. The high prices were a consequence of high demand for temporary water and lower allocation levels compared to previous irrigation seasons.

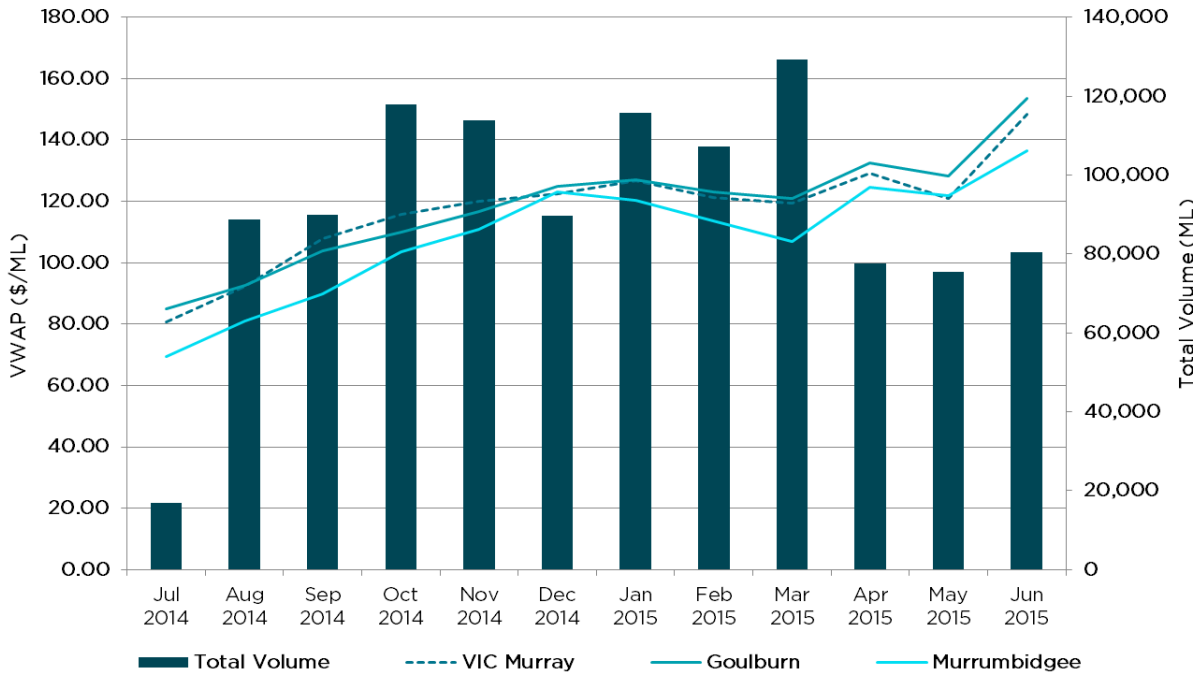
Dry conditions and lower water availability kept the demand and prices for temporary water high during the entire 2014/2015, although rainfall in April reduced the demand temporarily. In addition to water availability, trading restrictions in the southern connected MDB were a major contributor to water prices:

- Barmah Choke: In October 2014 – for the first time since the 2006/07 irrigation season – temporary trade from above the Barmah Choke to below the Choke was restricted by the MDBA

to protect delivery of water downstream. However, the impact was brief because trading was only impacted for the first few weeks after the announcement in October 2014, from November 2014 the impact of the Barmah Choke constraint on temporary trade was minimal.

- Murrumbidgee IVT: As can be seen from Figure 2, in 2014/15 Murrumbidgee prices were the lowest in the connected system throughout the season. This was due to the inter-valley trade (IVT) for out-trade being closed until January 2015 and low demand compared to other trading zones.

Figure 2: 2014/15 southern connected MDB allocation market summary



Source: Marsden Jacob analysis

At the end of the season prices reached the season high as the rainfall and water availability outlooks for the 2015/16 were forecasting prolonged dry conditions and even worse water availability.

2.2.2 2016/17 water year

Having witnessed the highest post-drought prices during 2015/16, temporary water markets in the southern connected MDB softened significantly in the 2016/17 water year.

High rainfall across the MDB resulted in considerably higher storage levels, soil moisture levels and water availability through announced allocations. The combined storage level of Dartmouth, Hume and Lake Victoria in December 2016 (80%) was more than 30% higher than December 2015, and total water availability was around 67% higher in the southern connected system in 2016/17 compared to 2015/16[1].

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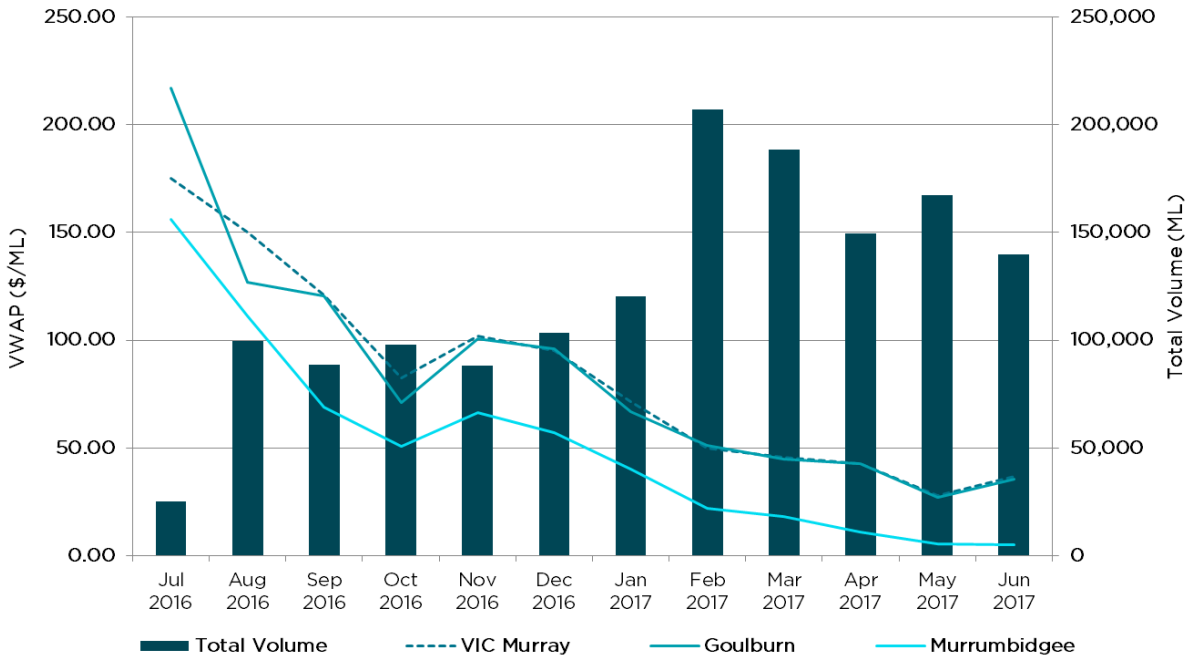
[1] Measured by announced allocations for all entitlement classes across the southern connected system (i.e. excluding carryover and water spilled)

Higher availability naturally led to significant price softening in temporary water prices, see Figure 3.

Figure 3: 2016/17 southern connected MDB allocation market summary



Source: Marsden Jacob analysis

As Figure 3 shows, in 2016/17 Murrumbidgee prices were the lowest in the connected system throughout the season. This was due to low intra-catchment demand and the IVT out-trade being effectively closed for the entire season.

The Goulburn to Murray IVT trade limit was in place from early October 2016 till mid-January. Over this period, Goulburn prices were slightly below the Murray prices. Other than that, the connected system (excluding Murrumbidgee) traded broadly at parity prices throughout the season. The Barmah Choke limit segregated trading zones above and below the Choke from late July 2016 to early March 2017 with the typical $10 per ML price difference applying.

2.2.3 2017/18 water year

After a wet 2016/17, temporary water markets in the southern connected MDB had ample supply in the form of carryover and announced allocations at the opening of the 2017/18 water year.

However, dry conditions, below average inflows to storages and high water demand matched and even exceeded this supply in some zones, resulting in high allocation trade volumes with firm prices across the connected system.

High demand early in the season led to strong prices in the first quarter, setting the tone for the rest of the year. Demand from annual crop preparation and planting (especially cotton) in the Murrumbidgee was the key market driver early in the season. For the first time since 2013, high Murrumbidgee demand resulted in the inter-valley trade closing for in-trade. Restricted supply from

other catchments and high intra-valley demand led to Murrumbidgee prices being the highest in the southern MDB throughout the year[2].

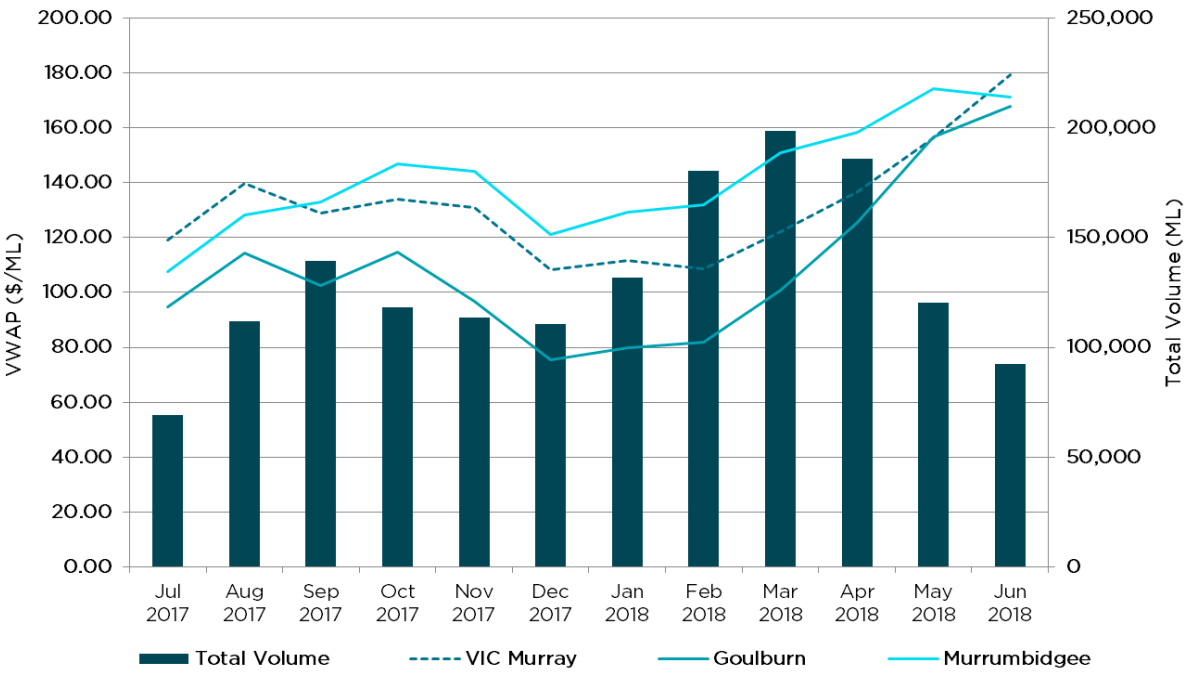
After a strong start with firm prices the market softened slightly during summer, underpinned by some significant rain events. Prices started firming up again towards the end of the season as the allocation outlooks for 2018/19 implied lower water availability and market participants were purchasing allocation for carryover.

The Goulburn system was isolated from the rest of the market for most of the season due to the Goulburn to Murray IVT trade limit being in place. As the internal demand was generally low, prices were lower in the Goulburn compared to other sub-markets while the IVT restriction was in place.

The rest of the connected system traded broadly at parity prices throughout the season, albeit the Barmah Choke limit segregated trading zones above and below the Choke in the first half of the year with a $10 per ML price difference observed.

Figure 4 summarises the allocation market prices and trading activity in the southern connected MDB.

Figure 4: 2017/18 southern connected MDB allocation market summary



Source: Marsden Jacob analysis

2.3 VEWH performance

To measure the VEWH's trade performance in each of the water years when it was selling allocation, Marsden Jacob compared the sale prices achieved by the VEWH to the rest of the market.

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[2] With the exception of June when Murrumbidgee trading had already ceased for most licence holders.

Even though the VEWH trade data is well documented, including the date of offer acceptance and water transaction, state water registers only record the transaction date. This means we do not have offer acceptance dates for the non-VEWH trades. To facilitate comparison, we have assumed that the time lag from offer acceptance to water transaction (i.e. the date when the trade is registered) is the same for both VEWH and the rest of the market trades.

To formulate a representative and realistic comparison dataset for the VEWH trades, we emulated the prevailing market conditions and trade limits at the time when the VEWH was selling allocation. Specifically, we researched the status of the following trade limits in the southern connected MDB for each day during water years 2014/15, 2016/17 and 2017/18:

- Goulburn to Murray IVT limit
- Barmah Choke downstream trade limit
- Murrumbidgee IVT limit
- NSW to Victoria trade limit
- Goulburn back-trade limit
- Lower Darling in/out trade limit

Reflecting the status of these limits, at the time of the VEWH trades, we determined which individual trades should be included in the comparison dataset so that it fully represents the prevailing market connectivity. In other words, in addition to including all the trades that directly concerned the VEWH's trading zones, we also included all the 'connected' trades completed at that time that did not directly concern the VEWH's trading zones, but which, as per the trading limits at that time, could have been

- bought to the VEWH's zone from its origin zone; or
- sold from the VEWH's zone to its destination zone.

In our opinion, this is the only realistic way to compare the VEWH's overall market performance. Alternative methods, such as investigating Murray and Goulburn trades in isolation without taking the market connectivity into consideration, are likely to misstate impacts and outcomes.

Subsequently, we calculated the weekly volume weighted average prices (VWAP) and total trade volume for VEWH trades and for the comparison data.

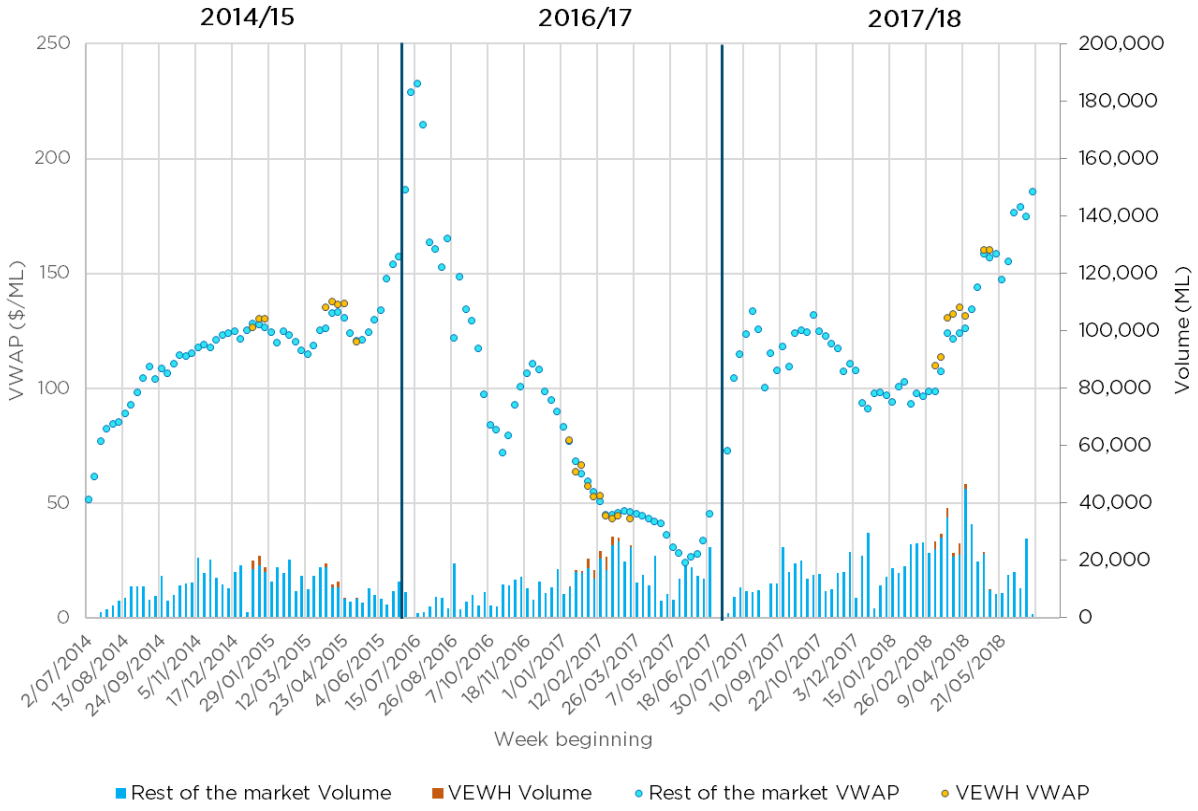
Figure 5 and Table 1 summarise the results of the statistical comparison. Results indicate that the VEWH's market performance in terms of achieved prices and timing of trade has been good:

- Over the three water years when the VEWH has been selling allocation, it has been able to achieve prices that are generally close to the prevailing market price. With the exception of 2016/17, the timing of trade activities has generally been favourable to the VEWH as far as average market prices throughout the seasons are concerned.
- Outside of VEWH's time in the market higher average prices were achieved during the final weeks of 2014/15, early in the season during 2016/17 and again during the very end of 2017/18. For both 2014/15 and 2017/18 the driver for late season price peaks was the forecasted poor water availability for the next season. In hindsight the VEWH could have waited a bit longer to achieve even higher prices, but Marsden Jacob notes that during both years the strong finish for

the season was unanticipated[3]. Hence, from a risk management point of view, the VEWH trade strategy was prudent.

- In 2016/17 if the VEWH had been in the market earlier, higher prices would have been achieved. However, Marsden Jacob notes that the sustained strong inflows and increased water availability could not have been predicted in advance, and forced market participants to adjust their trading plans for the year. This applied to the VEWH as well as the rest of the market, in addition to having to presumably re-adjust the environmental watering programs 'on the go' as well. Hence, Marsden Jacob acknowledges the challenges related to the VEWH reacting to changed conditions in 2016/17.

Figure 5: Price (scatter plot) and Volume (bar chart) of VEWH trades compared to the rest of the market



Source: Marsden Jacob analysis

The VEWH's trading actions comprise a very small proportion of the market, even when the volumes and values are compared across the same period as when the trades occurred (not the full water year). Thus, as a proportion of annual trade activity the VEWH's actions would comprise even smaller proportion of overall market activity (see Table 1).

[3] Confirmed by reviewing our broker interview notes from these years.

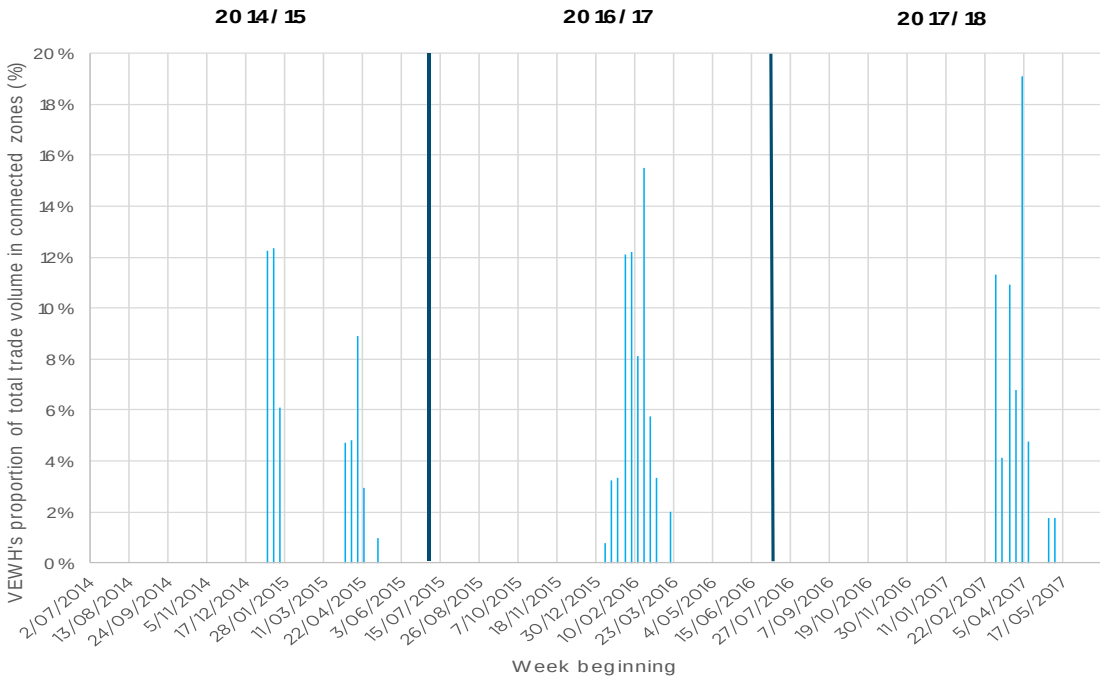
From Figure 6 it can be identified that on two occasions the VEWH trade volume comprised more than 13 percent of the weekly traded volume across the connected trading zones (at the time of the trading action). VEWH markets impact assessment is at Section 3.

Table 1: VEWH trade statistics compared with the rest of the market 2014-18[4]

	Relevant periods of 2014–15		Relevant periods of 2016–17		Relevant periods of 2017–18	
	Market	VEWH	Market	VEWH	Market	VEWH
Number of trades	1,379	38	1,576	86	2,276	44
Volume traded (ML)	103,662	12,475	186,520	20,000	206,811	15,000
Total value traded ($m)	13,263,019	1,635,300	9,896,268	1,000,318	25,666,033	1,924,535
VWAP ($/ML)	129.9	131.1	53.1	50.0	124.1	128.3
Weekly VWAP range ($/ML)	120.5-132.9	120-137.5	44.8-76.8	43.1-77	98.5-158.3	109.7-160
Highest individual trade price ($/ML)	150.0	140.0	110.0	77.0	200.0	160.0
Lowest individual trade price ($/ML)	91.7	120.0	30.0	41.0	75.0	108.0

Source: Marsden Jacob analysis

Figure 6: Volume of VEWH trades compared to the market



[4] The figures for the rest of the market are for the corresponding time periods when the VEWH was selling allocation, and not for the whole water year.

3. Market impact and business process assessment

Our evaluation shows that the VEWH's environmental allocation water trading has not materially impacted the market, and that the VEWH's trading processes mitigate adverse third party impacts.

3.1 Findings

Key finding #3: VEWH trading actions have not impacted the market.

The volumes of allocation traded by the VEWH only represent a small fraction of the total volume traded annually in the southern connected Murray-Darling Basin (between 1.7% and 3.2% across the three water years).

To assess the market impact of the VEWH's trading we undertook regression modelling and comparative statistical analyses. The results of our analyses confirm that changes to the volume of allocation water traded in the market have had a minimal (if any) effect on the market prices. This means additional volumes traded by the VEWH or any other seller did not result in significant price increases or decreases.

As a result, we conclude that the VEWH's participation in the market has not had a significant influence on market price. Allocation prices are largely being determined by other market forces.

Key finding #4: The VEWH's trading processes are effective and appropriate to mitigate the adverse third party impacts.

In our view, the way the VEWH has interacted with the water market thus far mitigates adverse market impacts. Specific trade intents and activities are only announced when they absolutely are going to happen. The VEWH uses existing, well-functioning market mechanisms for allocation trades, and acts as a silent market participant.

The review also notes that the assessment of third party impacts needs to consider both supply and demand sides of the market, because third parties include other buyers and sellers of allocation. Additional supply of allocation onto the market may benefit buyers, because it is easier to source water, whereas sellers may be concerned about any reduction in demand side pressure.

The current minimum and maximum assessment process supports the consideration of both types of third parties.

Key finding #5: There are minor aspects in the VEWH's market engagement process where it has potentially been overly cautious with third party impacts.

In our view, relying on the backward looking and lagged information from the VWR as a basis for setting the weekly limits for prices and trade volumes has unnecessarily restricted the VEWH's flexibility in its market engagement.

Taking market connectivity of the southern MDB and current supply and demand conditions better into account in the trade planning and implementation process would result in beneficial outcomes to the VEWH, without adversely affecting markets or third parties.

Key finding #6: The current way of signalling the VEWH's trade intents and activities represents good and transparent practice, and provides a sufficient amount of detail to market participants.

To improve transparency in line with the intent of the *Basin Plan Water Trading Rules*, the VEWH should include specific trading zone details within its future trading activity announcements.

To promote market transparency, it would be prudent for the VEWH to consider informing the water market when after all sales are completed for the year, and to consider reporting trade results in more detail.

3.2 Introduction

The assessment of market impacts set out in the remainder of this chapter supports the key findings set out above. It includes:

- Quantitative assessment of trade impact that assesses whether trading actions are leading to price changes, by:
    i. assessing the price movements after VEWH trading activity, and
    ii. comparing the impacts against those predicted by our trade impact regression model.
- Qualitatively assessing whether the current trade processing and reporting arrangements have distortionary effects on markets.

3.3 Quantitative assessment of trade impact

We used Marsden Jacob's trade impact regression model to assess how any potential sale of VEWH-owned allocation water in trade zones in the southern Murray Darling Basin (MDB) could impact on allocation prices within the trade zone where the trade was placed, and in other inter-connected trading zones.

In addition to the regression model, we also compared average prices after the periods when the VEWH sold allocation to test whether statistically significant market movements occurred.

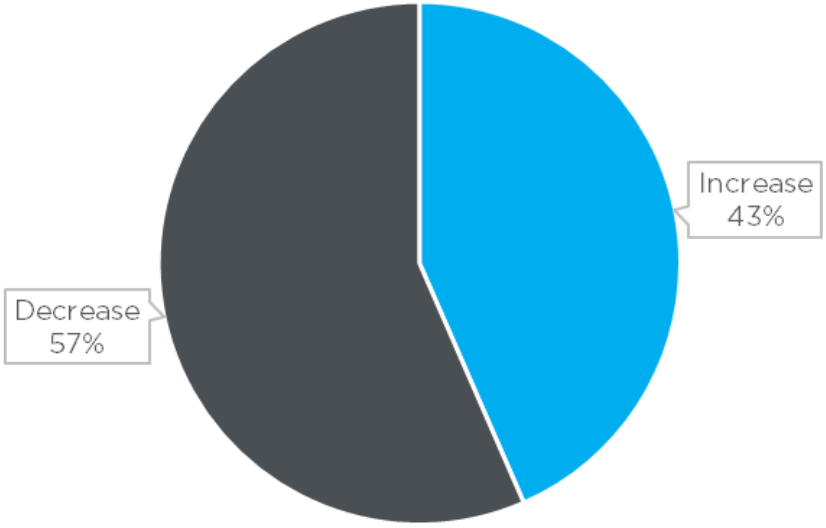
3.3.1 Price movements after VEWH trade activity

In the week directly after a VEWH trade, VWAPs increased on 73 occasions and decreased on 95 occasions (Figure 7). The average change in VWAP was a decrease of $0.8/ML, which represents a decrease of 2.5%.

Taking into account the relatively small sample size and difference in prices, this suggests that VEWH's participation in the market generally does not have a significant influence on market price, with prices largely being determined by other market forces.

This view is supported in the detailed trading figure (see Figure 5 earlier in the report) which showed that the VEWH's trading actions broadly occurred at market price, and that the increased supply of allocation on the market does not appear to have resulted in a market price decrease.

Figure 7: Direction of price movements in the week following VEWH's participation in the market



Source: Marsden Jacob analysis

3.3.2 Trade impact model

Marsden Jacob's in-house Allocation Water Market Model (AWMM) has been adapted for this project. Marsden Jacob's AWMM supports our work with Government, commercial and infrastructure operator clients to understand the impacts of trading strategies on markets in the southern MDB. It also helps our commercial clients identify opportunities and make more informed trading decisions.

Our AWMM model uses daily water-trade data observations and other relevant market data from inter-connected trading zones, and it estimates how temporary trades within a trading zone impact that zone's prices and trade volumes and those of the connected trading zones. The model also estimates short-run and long-run price and trade volume impacts within and across zones. The model uses a weekly timestep.

To support this analysis, the main trading zones of the southern MDB were grouped into four larger regions, defined as follows:

- Goulburn: Zones 1A, 3, 4A, 4C, 5A
- Above Barmah Choke: Zones 6, 10
- Below Barmah Choke: Zones 6B, 7, 11, 12, 14
- Murrumbidgee: Zone 13

Weekly price movements for each region (based on weekly VWAP for each region) were modelled as a function of the momentum of price movements resulting from earlier price changes in the region itself (own-price effect) and the three remaining regions (cross-price effect), changes to weekly trading volumes in each region, changes to southern MDB storage levels, and seasonal trends.

The model shows that own-price momentum in the southern MDB zones is quite strong in all seasons apart from winter. In Goulburn, 50% of a price movement in one week typically continues into the following week. For example, if the VWAP in Goulburn increased by 1% last week, it would be expected to increase by a further 0.5% this week, *all else equal*. This momentum effect is slightly lower, at 35%, for the three other regions. The cross-price momentum is strongest in Spring, Summer, and Winter, at 26% for all regions.

Crucially from VEWH's perspective, the effect of increased trade volumes, such as through VEWH's participation in the market, is relatively minor. Depending on the region and season, the regression model finds that the effect of a 1% increase in regional trade volume ranges from a 0.03% increase in price to a 0.09% decrease in price.

For reference, the price momentum associated with a 1% increase in own-price results in a 0.35% to 0.50% increase in the following week, *all else equal*. Importantly, this finding aligns closely with Figure 7 above, where it can be seen that the direction of price movements following VEWH's participation in the market is not connected to the VEWH's trading action because the likelihood of an upward or downward price movement is nearly 50:50.

A summary of the regression results is provided in Table 2.

Table 2: Summary of key findings from the trade impact model

	Season	Region			
		Goulburn	Above Barmah Choke	Below Barmah Choke	Murrumbidgee
Price response to a 1% increase in the VWAP for the chosen region in the previous week	Summer	0.50%	0.35%	0.35%	0.35%
	Autumn	0.50%	0.35%	0.35%	0.35%
	Winter	0.10%	-0.06%	-0.06%	-0.06%
	Spring	0.50%	0.35%	0.35%	0.35%
Price response to a 1% increase in the VWAP for all other regions in the previous week	Summer	0.26%	0.26%	0.26%	0.26%
	Autumn	0.02%	0.02%	0.02%	0.02%
	Winter	0.26%	0.26%	0.26%	0.26%
	Spring	0.26%	0.26%	0.26%	0.26%
Price response to a 1% increase in total trade volume for the chosen region in the current week	Summer	0.00%	0.03%	-0.03%	0.00%
	Autumn	-0.06%	-0.03%	-0.09%	-0.06%
	Winter	0.00%	0.03%	-0.03%	0.00%
	Spring	0.00%	0.03%	-0.03%	0.00%
Price response to a 1% increase in the southern MDB storage level in the current week	Summer	0.00%	0.00%	0.00%	0.00%
	Autumn	0.00%	0.00%	0.00%	0.00%
	Winter	-2.03%	-2.03%	-2.03%	-2.03%
	Spring	0.00%	0.00%	0.00%	0.00%

Source: Marsden Jacob analysis

3.4 Qualitative assessment of trade processes and reporting

In Marsden Jacob's experience, there are three main areas to consider when assessing the market impact of trading processes and reporting arrangements used by the VEWH:

i. How trade intent is signalled?

ii. How trade activity is announced and what type of market mechanisms are utilised?

iii. How trade outcomes are reported?

Before the market impact is assessed against the above, or the effectiveness and appropriateness of VEWH's current business processes are evaluated, it is prudent to discuss protocols and methods that are currently used by the federal and state level environmental water holders and managers.

3.4.1 Introduction to alternative approaches to trade environmental allocation water

Broadly speaking, most environmental allocation trades occur through:

1. Running off-market tenders

2. Utilising existing market mechanisms (brokers and exchanges)

The state government environmental water managers such as the VEWH and the NSW Office of Environment and Heritage (OEH) use the market method to sell or purchase allocation, whereas the Commonwealth Environmental Water Office (CEWO) has run tender processes for their allocation sales.

Off-market tenders

In Marsden Jacob's experience, the benefit of the off-market tender approach is that it can be the most cost-effective method to implement when the internal processes are efficient and/or if the market prices are high. Higher market prices mean brokerage fees for commission-based intermediaries are higher.

From a water buyer's perspective, tenders can be cost-effective since buyers may only have to pay transfer application fees. This has an upside to the seller as well – buyers do not have to pay commission, so they can afford a higher unit price ($/ML) compared to buying water through an intermediary.

Using existing market mechanisms

In Marsden Jacob's experience, using existing market mechanisms (i.e. exchanges and brokers) to sell environmental allocation water is the preferred approach for most market participants. The underlying sentiment is that using existing mechanism places environmental water managers on the same playing field as other allocation sellers.

There are two broad ways to use existing mechanisms to trade environmental water: (1) trade as a silent participant but announce trade strategies or actions publicly (the "announced" approach) or (2) use existing mechanisms without explicitly announcing or reporting at all (the "unannounced" approach).

Where reporting of trade outcomes is concerned, it should be noted that even when trade outcomes are not announced by the environmental water holder, the trading activity can be tracked from the public state water registers in South Australia, NSW and Victoria.

A benefit of not announcing trade intents is that this approach would arguably have the lowest market distortion impact. If the market does simply not know of the environmental water managers' trade actions in advance, and trade volumes do not materially distort prices, then it is not possible to have a distortive impact on other participants' actions through market expectation or actual trades.

Trading without publicly announced intents and strategies will also allow trading throughout the water year without committing to any firm timelines. The VEWH can also react to changing market conditions in a flexible manner, giving more options to maximise revenue from water sales. Trading 'unannounced' would also allow the VEWH to use market instruments such as forward contracts and parking agreements.

The downside with the "unannounced" method is that participating in the market in the same way as other water users by using established water brokers and online water trading platforms requires dedicated personnel to liaise with the intermediaries throughout the water year. Hence, this method can be resource intensive.

It can also be argued that trade by a government entity without explicit announcements or strategies is generally not beneficial for water market transparency. It could be interpreted that "unannounced" trade would make agencies non-compliant with the *Basin Plan Water Trading Rules*.

The benefit of the "announced" method is that it can be still viewed to cause minimal market distortion, especially compared to off-market tender processes[5]. Public announcements can also be seen to provide clear transparency to market, reducing potential third-party impacts.

The limitations of the "announced" approach are related to the potential lack of trade flexibility compared to "unannounced" method, and to the fact that it still may be labour intensive to implement. Moreover, if actual trading activities differ from published strategies/announcements, this may create confusion amongst market participants.

3.4.2 Assessment of the market impact and general efficiency of the VEWH's processes

The assessment as to whether the current trade processing and reporting arrangements could have distortionary effects on water markets and are efficient in general, has been undertaken at two levels:

1. High-level assessment of the VEWH's processes
2. Specific assessment of several aspects of the VEWH's processes, namely: (i) trading method, (ii) maximum weekly trade volume, (iii) trade intent announcement, (iv) timing of trade.

3.4.3 High-level assessment of the VEWH's processes

Marsden Jacob has reviewed the allocation trade processes used in the past VEWH trades. Table 3 summarises the VEWH's annual trade processes during the three water years when sales occurred.

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[5] Marsden Jacob does not believe that it is commonplace to consider public trade announcements, whilst utilising existing market mechanisms, having a material effect on the market.

Table 3: Summary of VEWH trade processes in 2014-18

	2014/15	2016/17	2017/18
Timing	January 2015 (Sale 1) and March–May 2015 (Sale 2)	January–March 2017	March–May 2018
Source system	Goulburn (Zone 1A) and Murray (Zones 6 and 7) for Sale 1, Goulburn only for Sale 2.	Goulburn (Zone 1A) and Murray (Zone 7).	Murray (Zone 7).
Trade method[6]	Brokers/exchanges (no exchanges used in Sale 1, just brokers).	Brokers/exchanges. To ensure each broker met VEWH's minimum standards, each broker submitted an expression of interest form to VEWH prior to being engaged.	Brokers/exchanges. To ensure each broker met VEWH's minimum standards, each broker submitted an expression of interest form to VEWH prior to being engaged.
Min/max price (weekly)	Recent VWR data, supplemented by online exchange data, was used to determine weekly minimum and maximum prices. However, these were not strictly applied in each instance as the VEWH recognised the time lag involved with the register prices when demand was softening during their market engagement. VEWH also had the flexibility to accept buy offers that were above the weekly price guidance.	The VEWH sought to obtain prices as close as possible to the current week's reported average market price either in the VWR or online exchanges. However, these were not strictly applied in each instance as the VEWH recognised the time lag involved with the register prices when the market was dropping during the engagement period. VEWH also retained the flexibility to accept buy offers that were above the weekly price guidance.	The movement of the market dictated the approach to setting prices. On a regular basis the VEWH reviewed the average prices as per the VWR and online exchanges and set the minimum and maximum prices for accepting offers. However, as the market was rising quickly, it was noticed that the initial method could not keep up with the market movement, and it was adjusted to allow more flexibility.
Max vol (general)	The underlying approach to determine maximum volumes was based on the assumption that making large volumes of water available at one point in time could potentially impact the market, as it may signal a significant shift in supply relative to demand. To manage this risk, the VEWH did not make all approved water available at once and used multiple market intermediaries to deploy the water. The approach for how much was offered to each intermediary in any given week (including timing, volume and parcel size) was be continuously reviewed and revised to incorporate ongoing review of broker performance (i.e. efficiency of processes, prices obtained and volumes sold).		
Max vol (weekly)	Capped to a specified maximum of the total trade volume in Zones 1A, 6 & 7 over the past 7 days (excluding $0 trades) as per the VWR data.	Capped to a specified maximum of the total trade volume in Zone 1A, 6 & 7 over the past 7 days (excluding $0 trades) as per the VWR data.	Initially capped to a specified maximum of the volume sold in the previous week in the same trading zone the water is being sold from (7 Murray) as per the VWR data. However, it was noticed that in a supply-poor market relying on old VWR data resulted in a perverse outcome where the VEWH was unnecessarily withholding supply to the

[6] In relation to brokers and exchanges, only members of the Australian Water Brokers Association (AWBA) were considered.

	2014/15	2016/17	2017/18
			market even though there was demand. Hence, the method was adjusted to allow for better response to the high water demand.
Max parcel size (for individual trades)	As a rule of thumb, parcel sizes were not to exceed or be less than a specified volume when making a sell offer on the web-based exchanges. For brokers who do not have online platforms it was considered that they are able to split the total volume into smaller or larger parcels depending on the demands they have at hand. Parcel size was viewed to be less of a concern if accepting buy offers, as the offers represent actual demands.	A similar approach was taken as in 2014-15, with market demand largely driving the size of the parcels sold. Medium sized parcels were targeted, however, large and small parcel trades were considered where they met VEWH's minimum price limits[7]. As a rough rule large parcels (to a specified limit) were not offered at any one time but accepting larger offers from others to meet an existing order in the market was an option.	The overall parcel size strategy was to: • Primarily target selling parcels in a specified range • Limit large parcel sales to a specified maximum of the total volume offered for sale. Larger parcels were considered on a case-by-case basis, with the view that the VEWH will not offer large parcels for sale, but it may accept a buy offer of a large parcel from a broker or on an exchange as accepting large parcels can significantly reduce the time the VEWH spends on administrating trades. • Sale of parcels below a specified volume should only occur as a component of a larger sale (e.g. split the sold volume between two licences) or to sell a small remaining volume of water at the end of sale process
Trade intent announcement	No separate intent (strategy) released prior to announcing trade activities.	Trading strategy released in July 2016 to flag intent and vague timing ("typically November onwards").	Trading strategy released in July 2017 to flag intent and timing ("typically November onwards but this year early sale may be possible").
Trade activity announcement	Two website announcements released on 22 Dec 2014 and 26 Mar 2015. Announcements provide activity details around volumes (8 and 5GL), timelines ("next few months" and "during autumn") and methods ("via selected brokers and web-based exchanges").	Website announcement for activity released on 12 Dec 2016, stating that "up to 20 GL of water will be made available in northern Victoria via selected brokers over the six month period from December 2016 to May 2017".	Website announcement for activity released on 12 Feb 2018, stating that "up to 15 GL of water will be made available in northern Victoria via selected brokers from February to June 2018".

[7] Indicative definitions being as follows: Small <50 ML, Medium 50-500 ML, Large >500 ML.

	2014/15	2016/17	2017/18
Reporting of results	Case study in the 2015 VEWH Annual Report and mention in the Reflections report – both provide an overview of the trade activities.	Case study in the 2016 VEWH Annual Report and mention in the Reflections report – both provide an overview of the trade activities.	Case study in the 2017 VEWH Annual Report providing an overview of the trade activities.

Based on the above review, VEWH's market impact can be assessed from a qualitative perspective. As mentioned, in Marsden Jacob's experience there are three main areas to consider when high level market impacts are analysed – trade intend, trade announcements and trade outcome reporting.

i. How trade intent is signalled?

ii. How trade activity is announced and what type of market mechanisms are utilised?

The way the VEWH has interacted with the water market mitigates the adverse third party impacts:

- specific trade intents and activities are only announced when they are known to happen for sure (i.e. not even vaguely announce something that could cause turmoil and then withdraw the intent); and
- using existing, well-functioning market mechanisms and acting as a silent market participant is not perceived to distort the water market, as the VEWH's market engagement is not seen as a separate market activity by market participants.

iii. How trade outcomes are reported?

Reporting of trade outcomes as such is unlikely to cause adverse market impacts if trade activities are conducted in a similar fashion as the VEWH has done so far. In Marsden Jacob's experience, participants are less interested in trade results if existing market mechanisms are used, because the result is generally based on underlying supply and demand balance.

However, in some cases publishing the tender results may cause annoyance amongst market participants if they learn through reporting that sellers made a windfall gain and/or 'beaten the market' with off-market tenders. This can also lead into negative perceptions in relation to subsequent tenders.

As mentioned earlier, tender results can also artificially inflate market prices. This can happen when participants take the price signal from the tender results after the tender has been completed, and high prices have been achieved.

Taking the above into consideration, whenever the VEWH is in the market selling allocation, in Marsden Jacob's view it is unlikely that market participants' trade decisions are adversely being impacted by it if the VEWH continues to follow the same general processes.

3.4.4 Specific assessment of several aspects of the VEWH's processes

Following the high-level market impact review, this section provides a more detailed assessment in relation to the effectiveness and appropriateness of the VEWH's trade processes and protocols.

Marsden Jacob agrees that the VEWH's strategy to avoid being a 'market maker' whilst retaining the ability to be a 'market taker' is a good approach to avoid adverse market impacts. However, Marsden Jacob also believes that there are some aspects in the VEWH's market engagement process where it has potentially been overly cautious with third party impacts.

Trade method

As discussed previously, there are two principle methods for an environmental water holder to engage with the water market – existing mechanisms and off-market tenders.

Marsden Jacob finds that the current process of putting water gradually onto the market using multiple market intermediaries has the least potential to result in market distortion, so it is preferred.

The VEWH has also given multiple market intermediaries the opportunity to be involved in selling their environmental allocation and has been open for new entrants to have a go if they have fulfilled the selection criteria. Marsden Jacob also thinks that having the AWBA membership as part of that criteria has been beneficial, as the industry needs a strong peak body to support continued improvement to market service provision.

Maximum weekly trade volumes and individual parcel sizes

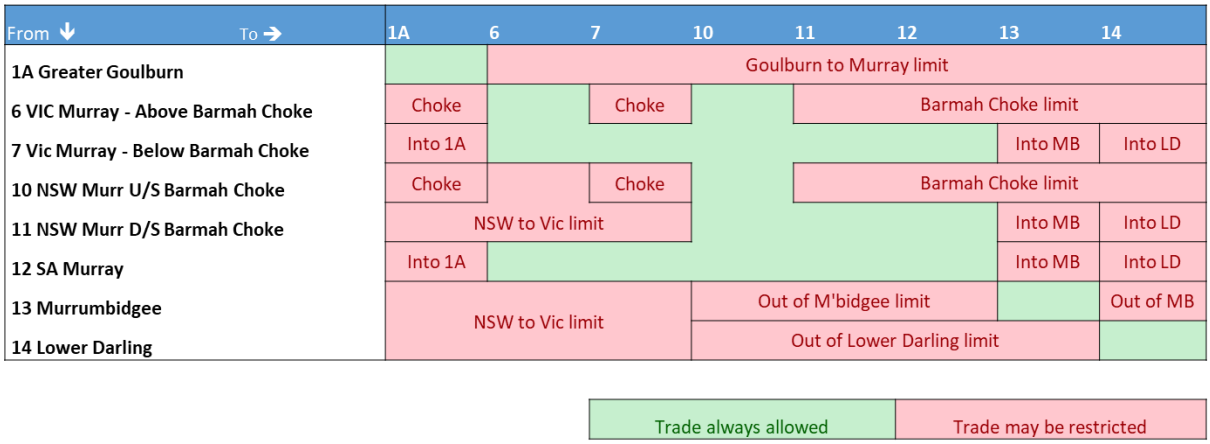
To avoid any potential adverse impacts on the market, the VEWH is only making relatively small volumes of allocation available each week. The VEWH does not make significant volumes of water available at once via one intermediary, given this could potentially outweigh buyer demand. The VEWH's individual sale offers have been capped at a volumetric limit, while also having the ability to accept existing larger volume buy orders.

Overall volumes sold by the VEWH in the past are a very small percentage of total market activity. Total VEWH trade volumes in the years we have looked at represented 1.7-3.2% of the total annual volume traded in the southern connected MDB markets. On a weekly basis the total volume of VEWH trades represented between 1 and 19% of total trade volume within trading zones that were connected at the time when the VEWH was trading (Figure 6).

Marsden Jacob considers that the methods the VEWH has used to determine maximum weekly trade volumes and the minimum and maximum offer prices do not fully account for market connectivity. The VEWH could enhance these methods. Increased flexibility could be achieved by the VEWH redefining rules while maintaining the same third-party risk mitigation outcomes.

Above all Marsden Jacob considers it important to always consider the southern connected MDB as an interconnected market. The southern interconnected MDB should form the basis for the VEWH's metrics related to trade volume. In this connected system, of which the Victorian Goulburn and Murray regulated rivers are part, trade of allocation is allowed across state boundaries in Victoria, SA and NSW. However, the tradability of allocation is subject to trade limits at any one time within a water year (summarised in Figure 8).

Figure 8: Summary of applicable trade limits in the southern connected MDB



Source: Marsden Jacob analysis

Regardless of the trade limits, at any one time there is a degree of connectivity for all trading zones where from the VEWH has sold water in the past (especially with Zone 7 as per Figure 8). In our opinion, viewing Victorian Goulburn or Murray markets in isolation is unnecessarily restricting the VEWH's market options in terms of trade volumes. In addition, as the market is connected, it should be noted that the potential third party impacts are not limited to Victorian water owners and users.

Moreover, in Marsden Jacob's assessment, using the historical VWR trade volumes (i.e. backward looking, lagged information) as a sole basis of the weekly limit fails to take into account the current supply and demand balance. Marsden Jacob believe that the weekly trade volume limit should be constructed based on:

a) **Market connectivity** taking into account all the potential source and destination zones that are applicable at any one time to VEWH's source systems where the water is sold from; and

b) **Current buy listings** from the major intermediaries in all applicable zones.

A more thorough market view will give the VEWH more flexibility with weekly trade volumes, and will also account for potential market impacts across the connected system. Also, if current market demand is accounted for, the limit should adapt to situations where demand has exceeded supply.

In terms of setting the minimum parcel sizes, Marsden Jacob agrees with the VEWH's preference to avoid very small parcel sizes due to the administrative effort associated with offering a large number of small parcels. In our view, this does not discriminate against any market participants.

However, the VEWH has avoided directly offering large parcels for sale since it has been viewed that they attract a lower price in the market (although it may have accepted a buy offer of a large parcel from a broker or on an exchange on a case by case basis).

In Marsden Jacob's opinion, the VEWH's hesitance towards larger parcels due to a potential downward price bias is unfounded. In our experience, larger parcels are not uncommon in the market, and lower prices are not the norm for them. Based on historical trade data, the so called "large parcel" bias can work both ways, and generally depends on whether the market is stable, rising or falling.

We also note that, during recent years, the allocation markets have evolved and matured. Many market participants now routinely consider purchasing tens of gigalitres of water at a time if there is

supply. Marsden Jacob believes that the VEWH could safely offer larger individual parcels for sale without much risk. This is especially the case with online exchanges where sellers can nominate acceptable split sizes for the parcel to be sold in more than one lot.

Minimum and maximum prices

As far as setting the minimum/maximum price is concerned, in past sales the VEWH has generally used the VWR 7-day average price as a basis to determine limits. However, this method has only been functional in a stable market, and whenever the market has moved rapidly up or down there have been issues with it.

In addition to these issues, Marsden Jacob notes that in principle the VWR data represents a lagged and a backward-looking view to the market. Recent and current prices from intermediaries would constitute a better basis for setting minimum or maximum prices. Platforms such as Marsden Jacob's Waterflow (www.waterflow.io) water market information platform can provide this recent and current price information through a single platform.

Trade intent/activity announcement and reporting of results

Marsden Jacob considers that the current way of signalling VEWH trade intents and activities represents good and transparent practice and provides sufficient detail to market participants.

As discussed previously, the alternative to announcing trading strategies and activities is to do it "unannounced" like some other state environmental water holders have chosen to do in the past. However, since the VEWH has started to release trade strategies and activities, in our view it would be hard for the VEWH to switch to "unannounced" mode as the optics of this would not be ideal.

One consideration in this regard is to investigate whether the current VEWH practices comply with relevant water legislation. Specifically, we have assessed whether the *Basin Plan Water Trading Rules* (WTR) pose any obligations to the VEWH that are currently unmet.

Section 12.50 of the WTR stipulates that 'water announcements' must be made generally available, whereas section 12.51 states that persons should not trade water if they are aware of a water announcement before it is made generally available.

After reviewing the WTR and related documents, Marsden Jacob's interpretation is that section 12.51 is not in contradiction with the VEWH's trade processes, so long as the VEWH makes its trade activity statements public before entering into a contract to trade.

Regarding section 12.50, our assessment is that if the current public trading strategies of the VEWH are supplemented with the additional information found in the public VEWH trade announcements, then this combination would align with the WTR intent.

There is one exception to this overall assessment of section 12.50. The previous VEWH announcements have not included specific information about the trading zones, but the trade areas have been stated on a general level (e.g. "*in the northern Victorian water market*"). To improve transparency, the VEWH should consider including specific trading zone details within its future trading activity announcements.

As far as reporting of trade outcomes is concerned, Marsden Jacob's review suggests there is no legislated responsibility in the WTR or in any other piece of legislation that would impose any obligations on the VEWH. At the moment, the VEWH reports on trade outcomes at a high level e.g. in its Annual Reports.

Even though there is no obligation for the VEWH to publish detailed trade activity results, it is prudent to discuss what constitutes good practice. There are two broad angles to consider:

1. **Market participants:** In Marsden Jacob's experience, participants are less interested in environmental water holders' trade results if existing market mechanisms are used to trade that water, as the result is generally based on underlying supply and demand balance. However, if more emphasis is put on publishing the results, there is a chance that the participants may adversely react if it is perceived that the VEWH has "beaten the market". This potentially negative perception may be softened by explaining how the generated funds are being used to benefit the environment.
2. **Market transparency:** If the objective is to increase market transparency, then publishing detailed trade results would be justified. However, Marsden Jacob notes that environmental allocation trades can already be separated from the VWR data on a trade by trade basis using the raw data from the Access to Allocation Trade Data tool on the VWR website.

Hence, one option for the VEWH is to redirect people to this data source to view the trade results. Regardless of the way the VEWH chooses to inform the market about the trade results, Marsden Jacob considers that it would be good practice to announce at sales completion that the VEHW's trade activities have ceased for the season. This would signal to the market that no more VEWH supply will enter the market.

Timing of trade actions

Marsden Jacob understands that timing of trade actions is highly dependent on the VEWH's internal processes in relation to water portfolio management and supply and demand assessments. In previous years the internal trading strategies and plans have been prepared between November and March. This is in line with environmental water demand being commonly highest in winter and spring, meaning that trading activity typically occurs once the peak demand has passed.

As the VEWH's objectives are based on maximising environmental outcomes, Marsden Jacob acknowledges that there may not be a lot of flexibility in relation to timing of trade. However, as the VEWH trading strategy states that the principle is to 'trade if it benefits the environment', it is prudent to consider this matter from different angles:

- **Price peaks**: Historically allocation prices have typically peaked during the peak irrigation period, i.e. summer months, which is well in line with the VEWH's typical trade periods, and beneficial for maximising the sales revenue (for the environment).
- **Market trading patterns**: There has been a change of paradigm in relation to allocation trading behaviour in the southern MDB. Whereas previously very little trading occurred in the early months and prices peaked in the summer, over the last couple of years buyer have been getting in earlier ("July is the new October"). As a result, market prices can peak at different times within the season. This means selling allocation earlier in the year may now result in good results price-wise, whereas previously this wasn't typically the case.
- **Crop planning**: Some external drivers can also be considered regarding timing of trade. For instance, in our previous work some market participants have commented that the best timing for environmental water holders' trades would be early on during the season to support planting decisions.

If the VEWH were able to bring its trading activities forward, or in general have more flexibility to trade at different times during the year, this could be beneficial in terms of revenue for the VEWH and for supporting irrigated production.

However, in Marsden Jacob's opinion there is ample justification for the VEWH to trade at any stage within a year to support irrigated production:

- Quarter 1: support growers' preparation to current season
- Quarter 2-Quarter 3: support growers' current season's programs
- Quarter 4: support growers' preparation to next season.

4. Conclusion

The Victorian Environmental Water Holder (VEWH) is the independent statutory body responsible for holding and managing Victoria's environmental water entitlements. The use of these entitlements for environmental watering is critical in ensuring Victoria's rivers, wetlands and floodplains continue to maintain and improve the environmental benefits that communities value most.

Our evaluation shows that the VEWH has performed well relative to the market during the three seasons the VEWH has been trading its environmental allocation water.

VEWH trading actions have not materially impacted the market and trading processes are effective and appropriate to mitigate the potential adverse third-party impacts.

The VEWHs approach of using existing market mechanisms (i.e. exchanges and brokers) to sell environmental allocation water is the preferred approach for most market participants. The underlying sentiment is that using existing mechanism places environmental water managers on the same playing field as other allocation sellers

Our review shows there are minor aspects in the VEWH's market engagement process where the VEWH has potentially been overly cautious with third party impacts. Addressing these aspects can increase the VEWH's trade flexibility, and potentially deliver better outcomes for market participants.