



Murray–Darling Basin Authority Submission to the Australian Competition and Consumer Commission Inquiry into Murray– Darling Basin Water Markets

Introduction

The Murray–Darling Basin Authority (MDBA) welcomes the opportunity to provide a submission to the Australian Competition and Consumer Commission (ACCC) Inquiry into Murray–Darling Basin (Basin) Water Markets.

Under the Murray–Darling Basin Agreement and the Basin Plan, the development of water markets within the Basin has been encouraged and supported by successive state and federal governments. Basin water markets provide the mechanisms for competing interests to engage and trade, and for available water resources to be moved to their most productive use.

The growth of water markets in the Basin is at least partly a result of the unique characteristics of the water resources and industry mix in the Basin: large interconnected water systems, extremely variable inflows and a diverse mix of agricultural industries (with different water requirements), all make the Basin particularly conducive to water trading. Water trade offers water users enhanced flexibility. It allows them to manage risk and improve business outcomes, providing options to better respond to changes in water availability and market conditions.

Water markets in the Basin continue to evolve and grow. In the 12 months to 30 June 2019, the total turnover of surface water allocation and entitlement trade across the Basin grew to \$3.97 billion¹. The MDBA considers that Basin water markets are, in general terms, working and water is moving to higher valued uses as intended.

However, the operation of the market can and should be improved.

The MDBA considers that there are several issues impeding water market functionality, including:

- the large number of agencies, both state and federal, involved in Basin water markets

¹ Bureau of Meteorology (BoM) 2019. [Water Market Dashboard](#)

- inconsistent market arrangements, policies and administration practices within, and between, Basin States
- misinformation and lack of transparency of information
- physical and environmental constraints impacting the ability to deliver traded water
- climate change and its impact on water supply

These issues are examined in more detail in the body of this submission.

The Basin Plan

Water is an increasingly scarce resource that must be carefully managed. The Basin Plan provides an agreed framework for managing the water resources within the Basin and is designed to meet critical needs whilst optimising and balancing competing social, economic and environmental demands. It does this by:

- increasing water for the environment
- improving the way in which water for the environment is managed
- improving the efficiency of water distribution and use

The Basin Plan employs a cap-and-trade model to meet its objectives. Within the Basin Plan, the water trading rules provide the disciplines by which Basin water markets must operate – with water trade the mechanism that distributes the water available within sustainable diversion limits among competing uses.

The Basin Plan water trading rules have evolved from the National Water Initiative’s water markets and trading outcomes.² These outcomes are captured and legislated in Schedule 3 of the *Water Act 2007* (Cwlth) and Section 5.07 of the Basin Plan:

- a. to facilitate the operation of efficient water markets and the opportunities for trading, within and between Basin States, where water resources are physically shared or hydrologic connections and water supply considerations will permit water trading; and
- b. to minimise [the] transaction cost on water trades, including through good information flows in the market and compatible entitlement, registry, regulatory and other arrangements across Basin States; and
- c. to enable the appropriate mix of water products to develop based on water access entitlements which can be traded either in whole or in part, and either temporarily or permanently, or through lease arrangements or other trading options that may evolve over time; and
- d. to recognise and protect the needs of the environment; and
- e. to provide appropriate protection of third-party interests.

The MDBA is responsible for ensuring compliance with the Basin Plan, including the Basin Plan water trading rules. Effective compliance is essential for building confidence that communities, businesses and

² National Water Initiative 2004. [Intergovernmental agreement on a national water initiative](#)



governments are fulfilling their obligations in sustainable water management. The [MDBA compliance and enforcement objectives](#) are to:

- support the achievement of the environmental, social and economic outcomes sought by the Basin Plan by ensuring compliance with its rules.
- strengthen the integrity of the Basin Plan and associated Basin State and Australian Government water management arrangements.
- provide independent assurance of compliance with the Basin Plan.

Basin States

Under the Constitution, each Australian State maintains authority for its water resources. Within the Basin, each Basin State must ensure its own legislative arrangements are consistent with Commonwealth legislation, including the Basin Plan.

Each Basin State is responsible for managing water in its jurisdiction and has individual frameworks to do so. Each framework includes: water resource management legislation, water entitlement and licensing regimes, water allocation policies and regulatory and compliance frameworks.

Water trade in the Basin

Water trade is an important tool that allows irrigators to respond to variable seasonal conditions and changing business needs. Water trade allows water users to move water to different locations, generate income and restructure debt, and support sound economic business decisions.

In 2014, National Water Commission analysis found that between 2006–07 and 2010–11 water trade reduced the impact of the drought on regional gross domestic product in the southern Basin from \$11.3 billion to \$7 billion³.

The northern Basin has more variability in water availability than the southern Basin, and hence more volatile allocation levels. This variability in supply, coupled with limited connectivity between systems, has led to the development of smaller, disconnected water markets. In response to water variability, agricultural enterprises in the northern Basin rely on large on-farm storages to secure water needs for crop growing by pumping when water is available in the river or through floodplain harvesting. There also tends to be more reliance on groundwater sources in these regions⁴.

The importance of water trade across the whole Basin has increased as water recovered for the environment under the Basin Plan has reduced the overall volume of water available for consumptive use. Today, many irrigators are reliant on allocation trade and carryover to service existing plantations

³ National Water Commission 2014. [Impacts of water trading in the southern Murray–Darling Basin between 2006–07 and 2010–11](#)

⁴ Aither 2019, [Water Market Intelligence: Final Report prepared for the Natural Resource Access Regulator](#)

and farms⁵. It is estimated that at least 75% of irrigators had used water allocation trade at least once by 2015–16, with more than half of irrigators having used entitlement trade⁶. The MDBA considers that this is a sign of the market working to deliver positive outcomes for participants.

Supply and demand factors affecting water price

Water prices in the Basin are a function of multiple supply and demand factors, with the current high water prices primarily driven by lack of supply and poor rainfall forecasts. This is not considered to be an indication of market failure, but rather a sign of the market responding to supply and demand factors.

Market data shows that allocation prices are most strongly influenced by water availability; and that significant increases in allocation prices since early 2018, are mainly driven by the ongoing drought condition^{7 8}.

Changes in demand do contribute to changes in the price of water, although the impact of demand factors are small compared to the effect of water availability⁹. Figure 1 below demonstrates the strong inverse relationship between the allocation water price and storage volumes in the southern Basin. Changing demand factors that increase competition for water include:

- the influence of water recovery – the act of recovery of water for the environment has meant increased competition for allocation that is available to the market
- increased demand from an evolving agriculture sector is making water markets less elastic and subject to greater price fluctuation
- market composition and participation are changing.

Figure 1 below demonstrates the strong inverse relationship between the allocation water price and storage volumes in the southern Basin. As water in storage increases water prices fall and remain low. Conversely, as storage level decreases, price increases. High prices also dominated the millennial drought, where water allocation prices in the southern Basin exceeded \$1000/ML. However, Basin States' water allocation policies may also be a factor that compounds water availability issues and affects price.

⁵ Gupta. M. & Hughes. N. (2018). [Future scenarios for the southern Murray–Darling Basin water market](#), ABARES

⁶ Grafton. R. Q & Wheeler. A. (2018). [Economics of Water Recovery in the Murray–Darling Basin, Australia](#), Annual Review of Resource Economics 10, 487– 510

⁷ Aither 2016. [Supply-side drivers of water allocation price](#)

⁸ Australian Bureau of Agricultural and Resource Economics (ABARES) 2019. [Lessons from the southern Murray–Darling Basin water allocation market 2000–01 to 2015–16](#)

⁹ Hughes, N 2019. [Drought and climate change are driving high water prices in the Murray–Darling Basin](#)

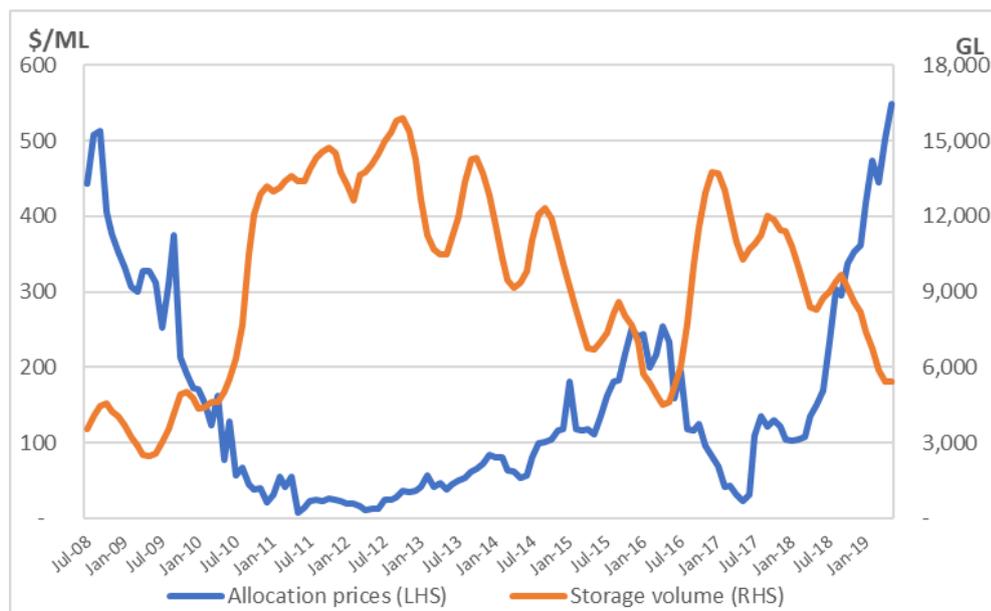


Figure 1: Southern Basin Allocation Prices vs Storage Volume. Source: MDBA (Price); ABARES (Storage)

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- increased demand from an evolving agriculture sector is making water markets less elastic and subject to greater price fluctuation
- changing market composition and participation.

A snapshot of current water availability

Water availability in the Basin has been significantly impacted by eastern Australia’s most recent drought (beginning in early 2017). The period from January 2017 to October 2019 has been the driest 34 months recorded in the Basin, with rainfall 36% below the long-term average. The dry conditions of the last three years have been particularly acute during the cool season (April to October) when historically many regions generate runoff.

The current drought appears to be part of long-term trend beginning in the late 1990s due in part to a fundamental shift in climate conditions in the Basin¹¹.

Figure 2 shows that rainfall deciles between 1 November 2016 to 31 October 2019 were predominately below average across the Basin.

¹⁰ Hughes, N 2019. [Drought and climate change are driving high water prices in the Murray–Darling Basin](#)

¹¹ Bureau of Meteorology, CSIRO 2018. [State of the Climate 2018](#)

Murray-Darling Rainfall Deciles 1 November 2016 to 31 October 2019
Distribution Based on Gridded Data
Australian Bureau of Meteorology

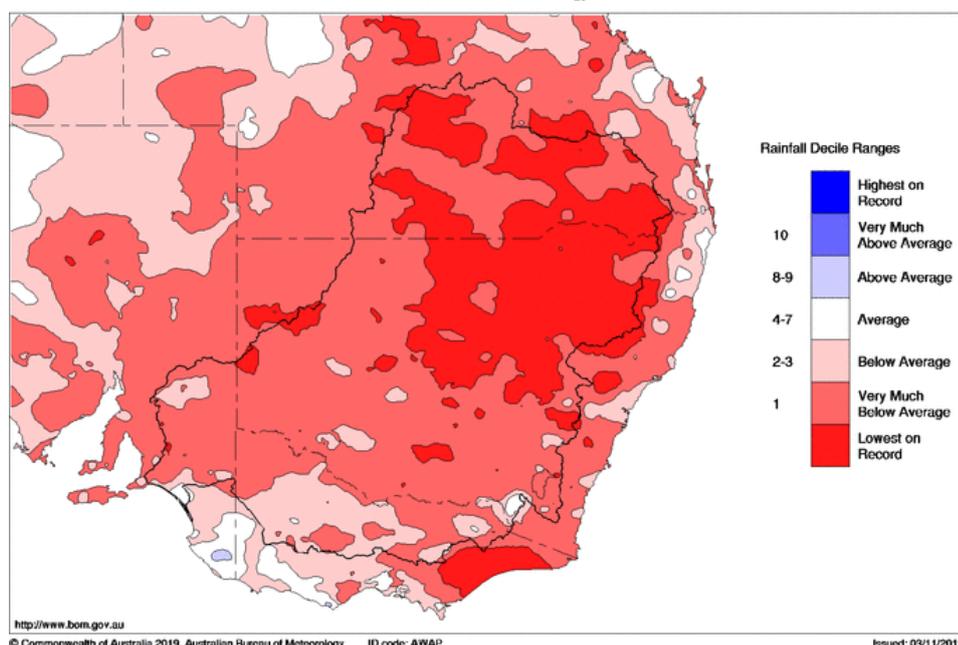


Figure 2 Murray–Darling Basin Rainfall Deciles: 1 November 2016 to 31 October 2019. Source: Bureau of Meteorology

High temperatures provide added stress on water availability in the Basin. In 2018–19, annual mean temperature was the second highest on record for Australia – with unusually extended periods of heatwaves over the summer period. A new annual mean temperature high was recorded for New South Wales, while Victoria recorded its third highest annual mean temperature¹².

For the southern Basin water availability for irrigation has been at the lowest level since 2009–10¹³. River Murray System inflows during the 2018–19 water year were in the lowest 7% of years on record. This follows a very dry 2017–18 when Murray inflows were the driest 13% of years on record.

Due to the drought, water storage in the northern Basin has declined to critically low levels, which is a significant driver for allocation prices. For NSW northern valleys, the price information available shows that large price increases have occurred in the NSW Border River, Macquarie and Cudgegong, and Lower Namoi River¹⁴. However, due to the lower trade volume in the north, allocation prices are, statistically, subject to higher uncertainty and volatility. For the Queensland MDB, there is no price information available.

A snapshot of current water demand

Increases in demand for water from all industries in the Basin has contributed to higher allocation prices. Permanent plantings, with ongoing and inflexible demand, have expanded significantly in the

¹² Bureau of Meteorology (BoM) (2019). [Climate of the 2018–19 financial year](#)

¹³ Australian Bureau of Agricultural and Resource Economics (ABARES) 2019. [Water Market Outlook - August 2019](#)

¹⁴ Marsden Jacob Associates (MJA) 2019. [Trade Report – Temporary Water](#)

Victorian lower Murray¹⁵. In the Mallee catchment, permanent plantings increased from 1,745 ha in 1997 to 24,485 ha in 2018¹⁶. This expansion is on top of the Mallee’s existing large areas of grapevines. As plantings mature, the region’s water demands are expected to rise. In addition, permanent plantings have also increased rapidly in the New South Wales Murray and the Murrumbidgee in recent years¹⁷.

New horticulture developments combined with trade has significantly shifted where water is drawn and used within the southern Basin – with increased volumes of water drawn from major Murray tributaries for use in the Murray below the Barmah Choke. In partnership with southern Basin States, the MDBA is currently undertaking detailed analysis of capacity in the Murray through the capacity constraints project.

The roles of governments in Basin water markets

The governance of water markets in the Murray–Darling Basin is complex.

At the federal level, the MDBA, the ACCC, the Department of Agriculture, ABARES, and the Bureau of Meteorology all have roles and responsibilities in relation to Basin water markets.

Within Basin States usually more than one agency is involved in administering water markets. It is not uncommon for one agency to develop water market policy and rules, while a separate agency has operational responsibility for the processing of trade applications and water management and delivery. These arrangements can impact on information quality and availability; and confuse potential water traders trying to understand differences in terminology, practices and systems across the Basin.

The current arrangements are inadequate, inconsistent and are hindering water market development and evolution. As a starting point, the Commonwealth, the MDBA and Basin States must improve the coordination, regulation and management of the market – particularly the inter-operability of the Basin State water registers.

As part of its Inquiry, the ACCC is examining regulation and institutional settings. The MDBA considers that federal agencies should coordinate and develop clearer public positions on their roles and responsibilities in Basin water markets.

Basin water markets are increasing in economic value and sophistication. The MDBA considers that without appropriate resourcing at both a state and federal level, it will be difficult to provide the administrative and regulatory support that Basin water markets require.

¹⁵ Aither 2019. [Water supply and demand in the southern Murray–Darling Basin](#)

¹⁶ Mallee Catchment Management Authority. (2018). [2018 Mallee Horticulture](#)

¹⁷ Australian Bureau of Statistics (2019). [Agricultural Commodities, Australia, 2017–18](#)

Role of the MDBA

At the broadest level, the MDBA has responsibilities for:

- implementing the Basin Plan
- operating the River Murray system and efficiently delivering water on behalf of partner governments
- measuring, monitoring and recording the quality and quantity of Basin water resources
- research into Basin water resources and dependent ecosystems
- advising the Australian Government on Basin issues
- educating the Australian community about Basin water resources.

Under the Basin Plan the MDBA manages and regulates the Basin Plan water trading rules that apply across the Basin. Basin-wide rules ensure all Basin water markets are subject to uniform rules designed to ensure a competitive, level playing field.

The water trading rules cover different aspects of water trade and regulate a range of entities including Basin States. The water trading rules comprise of three main elements:

- managing restrictions on trade
- increasing water market transparency
- maintaining market confidence.

Since 2008 the MDBA has been responsible for facilitating and coordinating interstate and inter-valley trades in the southern-connected Basin. The rules around these arrangements sit in the Protocols to Schedule D of the Murray–Darling Basin Agreement, which appears as Schedule 1 in the Water Act.

Areas of responsibility include:

- assisting Basin States to coordinate and facilitate of interstate and inter-valley water trade and reviewing and updating interstate and inter-valley trade arrangements
- maintaining a record of Basin State shares that reflects interstate and inter-valley water trade.

The MDBA’s responsibilities in relation to operating the River Murray system and efficiently delivering water on behalf of partner governments has the potential to effect water markets. To manage our diverse roles, the MDBA has put in place internal policies and procedures to manage the distribution and management of sensitive water market information and manage any conflicts of interest.

Information availability and quality

The scope and quality of water market information available within the Basin is largely limited by the data collected and maintained within Basin State registers. It is the MDBA’s observation that these systems have been historically principally focussed on the registration and tracking of water moving between accounts. To allow water traders to make sound business decisions, significant improvements must be made to these systems, and the information they generate. These observations are consistent with the findings of the MDBA’s 2019 [Water Trade Price Reporting Audit](#) (Price Audit).

The Price Audit found that no Basin State has robust arrangements in place to ensure comprehensive, accurate price reporting. The Price Audit also found that the number of agencies involved in the trade space can lead to errors. Accurate, publicly accessible price information is an essential element of a well-functioning market.

The Basin Plan includes rules that aim to address some of these gaps in general water market information, although the scope is limited. The MDBA:

- provides a central point in which all Basin State and major irrigation infrastructure operator trading rules are available
- publishes information on the characteristics of the 70 most traded water entitlements in the Basin.

The MDBA has responsibilities across the whole of the Basin, providing users with a central point for accessing information about Basin water markets.

The MDBA publishes entitlement information to participants so they may examine and compare different entitlements using common terminology and methods. Maintaining and improving this information is part of the MDBA’s ongoing work program.

The MDBA works with Basin States to identify and make improvements to water market information. However, coordination and cooperation by all Basin State agencies is essential for there to be improvements in information transparency under the current framework.

Options for improving the operation and management of water markets

Standardising approach and data sharing

At present the ability of Basin State registers to share information is limited – this is compounded by Basin States having differing approaches and legacy issues in relation to water trade. Within disconnected water markets this is not too much of a concern, however the inability to share information presents significant issues in water markets that extend across Basin State boundaries. Differences in approach in connected water markets create confusion and information asymmetries, and biases in the direction of water trade and water availability.

Standardising approaches to trade, and improved data sharing of trade information in real time would go some way to addressing these issues. The MDBA is holding workshops with Basin States to identify future technological opportunities to enable Basin State trading registers to be able to share information close to real time. However, before technological solutions to improve trade can be undertaken, standardised information collection processes would have to be agreed between Basin States.

Price reporting

The MDBA’s Price Audit identified several issues relating to the reporting of trade prices in the Basin. The Price Audit found that Basin State registers do not capture and classify the diverse nature of trades and have not kept up with newly developed products in the market.

Over time water markets have evolved and new products emerged. In addition to markets for primary products such as allocations and entitlements; several secondary products offered by other entities (including water brokers) have emerged including: leases, forward allocations, call options and deferred deliveries.

The MDBA does not consider the development of these products as a detriment to Basin water markets. Rather, the development of these secondary products is an indicator of innovation and consistent with Basin water market and trading objectives.

However, the MDBA is concerned that there are minimal frameworks in place to properly provide for these products in the market. At a retail level, these secondary products are facilitated by Basin State allocation or entitlement trades. This means that they are treated the same and appear alongside normal allocation trades, although the price is vastly different. The Price Audit found that Basin State systems, processes and applications do not have provision to appropriately capture or recognise the range of products that have emerged in Basin water markets. The absence of this information can be another barrier to people making informed decisions.

The MDBA has released its [Management Response](#) to the Price Audit and commenced a forward work program to address some of the Audit’s findings. This includes work on identifying secondary products and examining ways in which they can be accurately captured in Basin State systems.

Secondary products may create a delivery liability over longer time periods. Historically, river operations have assumed that traded water is for use within the current water year at the location receiving the trade. These assumptions are part of the water delivery considerations undertaken by river operators and no longer hold true. Improvement of information around trade and the reason for it may help to inform river operation decisions.

The MDBA considers that a number of issues raised in the Price Audit would benefit from a consistent policy and regulatory approach across the Basin, including:

- a consistent approach to identify reasons for a \$0 trade
- identify new water market products and develop a consistent approach to capturing and reporting their price
- identify the price of water when land and water are transferred together.

Ongoing regulation of Basin water markets

The nature of markets constantly evolves to service the needs of users. The evolution of markets is not detrimental, but government policy and regulation can have difficulty keeping up with the market.

The MDBA recommends that when Basin States are considering regulatory changes, that the MDBA and other Basin States are consulted to ensure a more even playing field for all water market participants. As an example, there is a notable shift of traded water before the end of a given water year to the Victorian side of the river for participants to use Victoria's more generous carry-over provisions. An aligned policy on carryover would stop the need for this movement of water.

Water management practices in the Basin have evolved over the last 100 years, while the development of water markets only dates to the 1980s. This has meant that trade policy has developed as an adjunct to water management. There is a question if existing market design within current water management constraints can meet emerging challenges. For example, growth in trade is actively changing delivery and use patterns, while water management practices remain relatively static.

This is an ongoing challenge for governments regulating water markets in the Basin.

Water Allocation Policies

Water allocation policies impact not only the volume of water available to the market, but the shares available to different entitlement types. State government water allocations are underpinned by data and policies contained in water sharing plans for various river systems. These policies provide a hierarchy of rights for different entitlement holders, where the planned level of risk for each entitlement type has a consequential impact on water allocated to entitlements with lower risk levels. In general, larger water allocations for higher reliability products means less water is made available for holders of lower-reliability entitlements.

The development and testing of water allocation and water management policies, and assessment of the reliability of supply for different entitlement holders, are undertaken using hydrological models. These river system models have been collaboratively developed by Basin States and the MDBA. Hydrological models calibrated and validated during the late 1990s may not be reflective of current irrigation practices and farmer behaviour, and consequently may have poor predictive capacity for low-flow periods.

Under the Council of Australian Governments National Hydrological Modelling Strategy, all Basin States have committed to transitioning their river systems models to a SOURCE modelling platform. However, progress to this transition and consequent revisiting of model calibrations, especially for low flow periods such as millennium drought, has been slow.

Key water management, sharing and compliance decisions are based on these models. As such, it is important that these models are recalibrated using a contemporary modelling platform; and that the models are made publicly accessible for transparency, and available to the research community for furthering science and improving predictive capability.

Constraints on physical delivery

The reality of water markets is that physical constraints affect the deliverability of traded water. Trading arrangements should reflect these delivery constraints to ensure that trade does not have negative third party impacts on other water access right holders or the environment.

In the southern Basin, trading arrangements need to not only consider state impacts but impacts on the system as whole. Basin States need to further consider the impact their trading rules have on deliverability in the River Murray.

Barmah Choke

The Barmah Choke is a physical constraint which limits the flow of the River Murray downstream of Yarrawonga weir. This physical constraint provides a challenge to southern Basin river management as it has the potential to limit the delivery of water to entitlement holders during periods of peak demand (December to March).

Allocation trade is allowed from above to below the Barmah Choke if an equal or greater volume has been traded in the opposite direction, i.e. trade is allowed only as a back trade. Tagged trade is only allowed from downstream to upstream of the Barmah Choke, with any usage adding to the Barmah Choke balance. The MDBA publishes the live [Barmah Choke trade balance](#).

The Barmah Choke trading rules aim to protect downstream user's deliverability. Unfettered trade downstream would likely lead to shortfalls of water delivery for all three states as it may not be physically possible to deliver this water. With this rule in place in the River Murray, the higher demand downstream of the Barmah Choke is currently being supplied, for the most part, through Basin State tributary trade. As such it is imperative that any changes to River Murray or Basin State tributary trading rules that interact, should consider risks around capacity and deliverability in the River Murray for all users.

Additionally, deliverability and capacity considerations cause real world impacts to other users. Any change to trade arrangements should be undertaken with input from the MDBA and Basin States in the southern connected Basin to achieve better outcomes for the market as whole.

Issues around trade across the Barmah Choke are becoming more significant as the ability to trade water downstream of the Barmah Choke may become more limited as reviews into trade limits and rules may be tightened in the future. The MDBA is working with Basin States specifically on the topic of shortfall risk and the many drivers and variables involved. Dependent on the findings of the capacity constraints project, a review of the Barmah Choke restriction may be warranted.

Inter-Valley Transfer (IVT) Limits

In the Southern Basin, the MDBA believes that both the New South Wales and Victorian trading rules and arrangements relating to inter-valley trade need review.

Any review should consider the future operation of the sustainable diversion limit adjustment mechanism projects and rules changes, the program to relax the physical constraints to the operation of the river, and the Basin Plan water trading rules. This would include any potential benefits or negative impacts on the environment(s) of the lower Goulburn, Darling and Murrumbidgee Rivers.

Any review should also consider any third party impacts on the River Murray and other water market participants and users through changes in trade arrangements.

As described above in the Barmah Choke rule interactions, it is possible that any unilateral change to a Basin State’s tributary trading arrangements can directly affect River Murray water users through unnecessary price differentials and individuals’ access to traded water in the River Murray.

The MDBA, through the trade adjustments project, has provided a useful forum to discuss issues associated with trades from the Basin State tributaries, and options for their potential resolution. However, it is for the relevant Basin States to administer the trading and delivery operations, subject to the Basin Plan water trading rules. Without the cooperation of all Basin States, an efficient and effective ‘one market’ will be difficult to achieve.

Conclusion

The MDBA remains committed to improving Basin water markets.

The MDBA is working with Basin States to identify and harmonise inconsistencies in policy and practice and ensure compliance with water trade regulation.

Ensuring ever-changing water markets have access to good information remains an ongoing challenge. The MDBA is working with Basin State to ensure that as markets evolve, sufficient market information is being collected and presented; and that information deficits and asymmetries are identified and corrected.

New water products are constantly emerging in Basin markets. The MDBA has commissioned a scoping study to identify the breadth of products available in 2019. The study will be provided to the ACCC Inquiry as well as being used in educational material for water market participants.