IPART
Independent Pricing and Regulatory Tribunal
New South Wales

Our reference: 17/138

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The Commissioner
Australian Competition and Consumer Commission
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Dear Commissioner

Submission to inquiry into water markets in the Murray-Darling Basin (MDB) Issues Paper

Thank you for the opportunity to provide a submission to the ACCC inquiry into water markets in the Murray-Darling Basin (MDB) Issues Paper (the Issues Paper). IPART is the independent economic regulator in New South Wales. We determine maximum prices to be charged for declared government monopoly services provided by certain water utilities. Related to this Issues Paper, we are accredited by the ACCC, under Part 9 of the *Water Charge (Infrastructure) Rules 2010* (WCIR), to determine or approve WaterNSW's bulk water charges in the MDB valleys. We also determine the NSW Water Administration Ministerial Corporation's (WAMC's) water management charges to water entitlement holders in the MDB, under the NSW *Independent Pricing and Regulatory Tribunal Act 1992*. Our role and experience makes us well-placed to contribute to your review.

We support the ACCC's investigation of the use and trade of water in the MDB, with particular focus on the five areas: market trends and drivers, market transparency and information, regulation and institutional settings, market participant practices and behaviours, and competition and market outcomes.

In 2018, we engaged Aither, a consultant, to undertake a review of water trading in NSW in order for us to understand how IPART's current regulatory settings may facilitate (or impede) efficient water trading. We have attached a copy of the full report, titled *Review of water trading – The impact of IPART's regulatory framework on water trading markets* with this submission. The full report is also available on our website. We consider the following key findings from this review may be relevant to the ACCC's inquiry:

Regarding issue 1 on market trends and drivers:

- The most important determinants of the market price of *water entitlements* are the reliability and other characteristics of the entitlement, economic conditions such as commodity prices and the relative availability (or scarcity) of different entitlement types.[1]
- The key drivers of prices of *water allocations* are the value of water in different types of production (which drives demand for water), rainfall and total water allocated (supply).[2]

Regarding issue 2 on regulation and institutional settings (and focusing on price regulation):

- Market participants considered regulated charges for bulk water services a *cost of doing business* and not something that would materially alter their decisions on how to invest,

1 Aither, *Review of water trading – The impact of IPART's regulatory framework on water trading markets, Final report*, August 2018 (referred to as Aither's Report), p 16.
2 Aither's Report, pp 17-18.

trade and use water. This is because the magnitude of regulated charges is quite small in relation to water trade prices.

- Market participants considered the drivers (as outlined above) to have a more material influence on trading prices. Further, market participants considered government policy could have greater influence on cost and investment decisions than regulated charges for bulk water services.
- The difference in the price structure of rural bulk water charges in NSW and Victoria may affect the (interstate) trading of water at the margin. Our consultant noted that WaterNSW's variable (usage) charges are being applied on all trades that occur in NSW, including trades with interstate water users and non-water users (eg, investors). The impact on efficient trade is likely to be marginal because there is a low quantum of variable charges in key valleys (eg, Murray and Murrumbidgee) and refunds are available to non-water users if water allocations are subsequently sold back to water users in NSW.[3]

Regarding issue 3 on market transparency and information:

There are several ways to increase market confidence in the water trading market:[4]

- The utilities and the regulator should provide greater transparency around the utilities' expenditures and pricing considerations to improve market participants' understanding of the cost to supply their services.[5]
- The government should ensure better quality of allocation announcements, forecasts and other water availability announcements to enable better decision-making for participants.
- The government should improve its trade processes (including the refund application and eligibility processes) and public price reporting practices (including the zero-value water allocation trades) to enable better valuation of the water trading market.
- The utilities and the regulator should improve the level of customer engagement during price reviews to enable better information sharing with stakeholders and increase the level of confidence in the process.

To the extent they are relevant to our water price determinations, we intend to further consider and consult on these findings when we next review WaterNSW's rural bulk water charges and WAMC's water management charges. These reviews are currently scheduled to start mid-2020, for new prices to take effect from 1 July 2021.

We look forward to reviewing the ACCC's interim report in mid-2020. If you would like to discuss this submission further, IPART's contact officer for this matter is Matthew Mansell, Director Water Pricing, who is contactable on (02) 9113 7770.

Yours sincerely

Liz Livingstone
Chief Executive Officer

3 Aither's Report, pp v and 28-34.
4 Aither's Report, pp 35-39.
5 Aither's Report, p 36.

Review of water trading

The impact of IPART's regulatory framework on water trading markets

A Final Report prepared for IPART

Thursday 9 August 2018

AITHER

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Executive summary

The Independent Pricing and Regulatory Tribunal (IPART) engaged Aither to undertake a strategic review of the impact that its regulatory frameworks may have on water markets in New South Wales (NSW). The scope of this review consisted of the following four components:

1. Provide an overview of bulk water markets (both within NSW and between NSW and other jurisdictions).

2. Identify and discuss the factors affecting trading in these markets, including (but not limited to) regulatory frameworks.

3. Assess the impact that IPART's regulatory approach (licensing and pricing) has on trade, including whether the current framework facilitates or impedes efficient trade.

4. Where applicable, make recommendations to amend IPART's regulatory approach to remove impediments to efficient trade or facilitate efficient trade.

IPART's scope of work emphasised the need for a broad strategic scan and prioritisation of key issues. Detailed analysis of all potential issues was not within scope.

Overview of bulk water markets

Water markets are a 'cap and trade' mechanism designed to ensure sustainable water resource management and enable efficient allocation of water between users and over time. There are many water systems and water markets across NSW, however, not all systems are material in relation to overall water use or trade. The scope of this project covers an examination of *major* NSW regulated surface and groundwater water systems which can be classified into four main regions or groups.

1. **Southern Murray-Darling Basin** – including the NSW Murray and Lower Darling, and Murrumbidgee. The southern Murray-Darling Basin is characterised by the interconnected nature of the major surface water systems, which enables intra and interstate trade, and contains a large proportion of NSW's irrigated agricultural activity. Groundwater also supports agriculture in this region, although not to the same extent as surface water.

2. **Northern Murray-Darling Basin** – including the Lachlan, Macquarie, Namoi, Gwydir and NSW Border Rivers. The systems grouped as northern Murray-Darling Basin are often more discrete than in the south because there is little or no connectivity between water systems. There tends to be more reliance on groundwater sources in these regions. There is a wide range of types of irrigated agricultural industries spread across these water systems.

3. **Coastal and unregulated systems.** These systems do not share similar characteristics and are only grouped this way given they differ more markedly from the other systems (either in physical geography, or the nature of water management in the case of the unregulated system) – noting that there are some regulated coastal water systems.[1]

[1] For analysis in this report we have included the Hunter (coastal) and Barwon-Darling (unregulated) systems under the coastal and unregulated systems region.

4. **Sydney and Hunter metropolitan urban areas.** In this region water supply is based on commercial agreements with WaterNSW and self-supply (Hunter Water).

Active water markets for both entitlements (ongoing perpetual rights) and allocations (actual water available for use each year) are largely confined to the southern and northern Murray Darling Basin. As a result, our assessment has focused on these areas, including interstate trade, primarily in the southern MDB with users in South Australia and Victoria.

Scope of IPART's role in economic regulation that could influence bulk water markets

IPART's regulation of water pricing is set out through its own act (*Independent Pricing and Regulatory Tribunal Act 1992* (NSW)) (the IPART Act) and also its accreditation under the Commonwealth's *Water Charge (Infrastructure) Rules 2010* (Cth) to regulate WaterNSW's bulk water prices within the NSW Murray-Darling Basin. Within these frameworks, IPART applies both pricing and licensing regulatory requirements across a number of different water service providers.

Given our focus on active markets in the Murray Darling Basin, it is apparent that WaterNSW and DoI (with respect to WAMC functions) are the key IPART-regulated service providers that have the potential to be able to influence existing active water markets in a meaningful way. In saying this, the potential impact is limited to the allocation markets as the entitlement markets have longer-term considerations and are highly unlikely to be influenced by IPART-regulated charges. As a result, our subsequent analysis on IPART's impact on water markets predominantly focuses on IPART's economic regulation of those two service providers:

- WaterNSW (water access licencing, trade dealings and pricing) – related to its role as bulk water service provider; WAMC water access licensing authority; processor of trades in accordance with rules; and billing of users for service fees.
- Water Administration Ministerial Corporation (WAMC)[2] — related to the functions of setting allocation policy; making rules across all of NSW; corporate licensing and responsibilities for a limited range of water access licensing functions.

Through our analysis and consultation with stakeholders, there were two key types of findings:

- **Direct impacts:** These are direct impacts on trading in the market that generally relate to pricing of services provided under the regulatory framework
- **Indirect impacts:** These impacts do not directly impact on markets, but influence the level of confidence stakeholders have with the market which subsequently impacts on whether trades are occurring efficiently

This informs the following discussion of findings and recommendations.

Findings from our review

The key finding from our review and the stakeholder consultations was that while the IPART-regulated charges were incurred by market participants, they are generally viewed by stakeholders as a 'cost of doing business' and therefore not something that would materially alter decision-making with respect to investment, trade and use. Stakeholder views and other evidence suggests that other drivers such

[2] This relates to the functions performed be the relevant divisions of the Department of Industry (DoI) that is the Department of Industry – Water (DoI Water) and the Natural Resources Access Regulator (NRAR).

as climate and economic conditions affecting irrigation industries have a much greater influence on trading decisions in both the entitlement and allocation markets.

Based on our review, the most important determinants of the price of entitlements are the reliability characteristics of the entitlement, economic conditions such as commodity prices, relative availability of different entitlement types and the characteristics of the entitlements themselves. The key drivers of prices for allocation markets are the value of water in different production types (demand), and rainfall and total water allocated (supply). Evidence for these drivers is provided in more detail in the report.

Other findings in relation to the IPART-regulated tariffs include:

- WaterNSW's tariff structure creates revenue risk for them as a business
- IPART's recent price determination provided WaterNSW with a revenue volatility allowance to manage the risk associated with having a 40:60 fixed to variable tariff structure relative to an 80:20 tariff structure.
- The tariff structure has also resulted in WaterNSW applying the variable usage charge on all trades where the purchaser does not hold a NSW Works Approval. This approach was designed to manage any revenue impacts of interstate allocation trade out of NSW but now applies to a wide range of participants that do not hold NSW Works Approvals, including non-water users such as investors.
- The application of this usage charge by WaterNSW on trades is likely to impact on efficient trades with interstate users and NSW non-water users at the margin. This margin has been reduced since the quantum of the variable usage charge in key valleys (Murray and Murrumbidgee) has recently been reduced.
- Refunds can be provided by WaterNSW to non-water users if water allocations are subsequently sold back to water users in NSW. Some stakeholders that were consulted considered that there was a lack of transparency regarding how refund applications are assessed. If this process is not effective, there is a risk that WaterNSW receives usage revenue twice for the same parcel of water.
- Historically, NSW has tended to be a net exporter of water to Victoria and South Australia however the development of the (relatively more profitable) cotton industry in the Murrumbidgee has seen this trend reverse in recent years. WaterNSW collects variable usage charges on this water that is traded in to NSW upon use.
- The pricing impacts of the application of the usage charge to buyers without a NSW Works Approval are unclear, however the demand forecasts are based on usage and therefore should be a reasonable basis, so long as the usage forecasts are accurate and the refunds policy is applied appropriately.

Aside from the specific issues associated with the variable usage charge, several stakeholders commented that IPART's role in ensuring performance, accountability and transparency of information could be further clarified for some customers and market participants. Some stakeholders have the perception that, as IPART determines the charges for WaterNSW and DoI (in delivering WAMC functions), it should be responsible for holding these agencies to account in delivering the required levels of performance. The following provides some examples in relation to this issue where there were either procedural or performance concerns.

- Some stakeholders considered that there was potential to improve the level of transparent cost information provided by WaterNSW and/or IPART in price review processes.

- Stakeholders considered that in comparison to other jurisdictions (e.g. Victoria), the quality of the DoI and WaterNSW allocation announcements, forecasts and other market information about water availability could be improved and that this would increase confidence of market participants.
- The significant proportion of $0 per ML trades in the market is impacting on the transparency of the true size of the allocation market.
- WaterNSW's trade processing fees and allocation processing timeframes are considered reasonable and are likely to help promote efficient trading. The processing timeframes for permanent entitlement trading could be improved however delays are due to complicated regulatory requirements involving WaterNSW, the NSW Office of the Registrar General and NSW Land Registry Services, which are not generally the subject of IPART regulation.
- Whilst our consultation for this project was limited, some stakeholders considered that the level of customer engagement from WaterNSW and IPART could be improved, likely leading to more optimal decisions and a higher level of confidence.
- Overall, while not IPART's direct responsibility, there may be opportunities to enhance oversight of the agencies responsible for key market announcements and trade processing and reporting to better ensure appropriate outcomes for customers and market participants.

Recommendations from our review

Based on this review, we have identified a number of recommendations in relation to IPART's economic regulation frameworks and its role in water markets:

Recommendation 1

IPART to consider a more detailed review of whether the usage charge is being applied by WaterNSW as intended.

Recommendation 2

As part of IPART's next pricing determination for WaterNSW, IPART should consider the most appropriate way to deal with the future application of usage charges as it relates to water allocation trade. This could include:

- Tariff structure
- Reviewing the refund application process
- Reviewing the method for demand forecasting.

Recommendation 3

Where the variable usage charge is to continue to be applied where the buyer does not hold a NSW Works Approval, IPART could help ensure that further information is provided to market participants regarding the processes involved, including in relation to refunds by WaterNSW.

Recommendation 4

IPART should clarify and communicate its role in relation to performance accountability for WaterNSW services and WAMC services provided by WaterNSW, DoI and NRAR for market participants.

Recommendation 5

IPART should work with WaterNSW and DoI to identify opportunities to improve the accountability of performance for WaterNSW services and WAMC services provided by WaterNSW, DoI and

NRAR for market participants where such opportunities are within the purview of the IPART regulatory framework. This could be considered as part of developing output measures or indicators for the next pricing determination.

Recommended next steps

In considering the next steps for IPART in addressing the recommendations from this review, the following provides some high-level next steps that could potentially be applied:

- Further investigate the application of WaterNSW's refund mechanism as part of the next WaterNSW rural price review.
- Review IPART's demand forecasting techniques in preparation for the upcoming price determination for WaterNSW.
- Review the WaterNSW Operating Licence to determine whether further clarification is required regarding any of the issues raised by stakeholders through this review.
- Communicate clearly with customers on IPART's role in water markets and in oversight of WaterNSW services and WAMC services provided by WaterNSW, DoI and NRAR.

1. Introduction

Over the past three decades, Australia has undertaken world-leading reforms in water policy and management. The development of legally secure property rights to water and the ability to efficiently trade these rights through functioning water markets has been central to these reforms. The water management framework enabling water markets, underpinned by government legislation and statutory control, has proven effective in securing the interests of competing demands for scarce water resources in times of drought and promoting more efficient water investment, allocation and use.

In the Murray-Darling Basin, including in NSW, water markets are now a well-established part of water management for irrigated agriculture, urban utilities and the environment. Given this, it is important to ensure that there are no unnecessary impediments to efficient trading within these water markets as this can result in sub-optimal outcomes.

1.1. Scope of the review

The scope of this review consisted of the following four components:

1. Provide an overview of bulk water markets (both within NSW and between NSW and other jurisdictions).

2. Identify and discuss the factors affecting trading in these markets, including (but not limited to) regulatory frameworks.

3. Assess the impact that IPART's regulatory approach (licensing and pricing) has on trade, including whether the current framework facilitates or impedes efficient trade.

4. Where applicable, make recommendations to amend IPART's regulatory approach to remove impediments to efficient trade or facilitate efficient trade.

IPART's scope of work emphasised the need for a broad strategic scan and prioritisation of key issues. Detailed analysis of all potential issues was not within scope and could potentially be undertaken in further engagements if required.

1.2. IPART's regulatory framework

IPART's regulation of water pricing is set out through its own act (*Independent Pricing and Regulatory Tribunal Act 1992* (NSW)) (the IPART Act) and also its accreditation under the Commonwealth's *Water Charge (Infrastructure) Rules 2010* (Cth) to regulate WaterNSW's bulk water prices within the NSW Murray-Darling Basin. Within these frameworks, IPART applies both pricing and licensing regulatory requirements across a number of different water service providers:

- WaterNSW (licence and pricing) – bulk water service provider, WAMC water access licensing authority (shared with the Natural Resources Access Regulator (NRAR)), processor of trades in accordance with rules; billing of users for service fees. WaterNSW operates across all of NSW and is responsible for the processing of all trades (referred to as 'dealings' in Chapter 3, Part 2, Division 4 of the *Water Management Act* 2000 (NSW)).

- Water Administration Ministerial Corporation (WAMC) – as its functions are performed by the relevant divisions of the Department of Industry (DoI), that is the Department of Industry – Water (DoI Water) and NRAR (corporate licencing, some water access licensing and pricing) – sets allocation policy, makes rules across all of NSW and is also responsible for a limited range of licensing functions
- Sydney Water (licence and pricing) – very limited interactions with formal water markets, operating exclusively across the metropolitan Sydney region.
- Hunter Water (licence and pricing) – very limited interactions with formal water markets, operating exclusively in the Hunter region.
- WICA licensees (licensing for each, with pricing for Sydney Desalination Plant) – very limited interactions with formal water markets and generally operating within the metropolitan Sydney and Hunter regions.
- Essential Energy Broken Hill (pricing) – holds Water Access Licences but has limited trading activity
- Central Coast Council (pricing) – no involvement in markets.

From this overview, it is apparent that WaterNSW and DoI (with respect to WAMC functions) are the key IPART-regulated service providers that have the potential to be able to influence existing active water markets in any meaningful way. In particular, while water access licensing is shared between WaterNSW and DoI (specifically NRAR), WaterNSW is responsible for processing trades / dealings. Given this, our subsequent analysis on IPART's impact on water markets predominantly focuses on IPART's economic regulation of those two service providers.

IPART's role in relation to pricing is to regulate prices and review pricing policies for each of the utilities that it regulates for pricing purposes. In regulating these prices, the IPART Act requires that IPART consider the following:

- the cost of providing the services
- the protection of customers from abuses of monopoly power
- the appropriate rate of return on public sector assets
- the effect on general price inflation over the medium term
- the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers
- the need to maintain ecologically sustainable development by appropriate pricing policies that take account of all the feasible options available to protect the environment
- the impact on pricing policies of borrowing, capital and dividend requirements of the agency concerned
- the impact on pricing policies of any arrangements that the agency concerned has entered into for the exercise of its functions by some other person or body
- the need to promote competition in the supply of the services concerned
- considerations of demand management and least cost planning
- the social impact of the determinations and recommendations, and
- standards of quality, reliability and safety of the services concerned.

These matters are required to be taken into account only when IPART determines prices under the IPART Act, they are not required to be taken into account where IPART sets prices under the Water Charge (Infrastructure) Rules 2010 in respect of the Murray-Darling Basin (MDB) valleys.

In terms of its licensing approach, IPART recommends the terms and conditions of operating licences for the three State-owned water utilities (WaterNSW, Sydney Water and Hunter Water) and the privately-owned utilities established under the *Water Industry Competition Act 2006* (NSW). These operating licences set out the performance and service quality requirements of the utilities and allow for auditing of performance for the utilities against these requirements.

1.3. Our approach to assessing IPART's impact on water markets

To address the scope, we have segmented our approach into two key aspects:

1. Understanding the materiality of IPART's regulated charges in relation to other key drivers that may be impacting on the NSW water markets
2. Understanding how the IPART regulatory framework can impact on the market and developing recommendations for IPART to address the key findings.

The first aspect is to get a clear understanding of NSW water markets and provide insights into the size of the charges that are regulated by IPART relative to other factors such as climatic conditions, policy positions and economic conditions which have an impact on water markets and incentives for trade. This is demonstrated in chapters 2 and 3 of the report.

Following this we considered the specifics of the IPART regulatory frameworks to understand the potential for them to impact on the market. This was based on our own analysis and information gathered through stakeholder consultations.[3] This assisted us in assessing whether there were aspects of the framework that impeded efficient trades and identify appropriate recommendations for IPART. This analysis can be found in chapters 4-6 of the report.

1.3.1. Facilitating and impeding efficient trades in water markets

The key focus for IPART for this review is to understand whether the current IPART regulatory framework facilitates or impedes efficient trade in the NSW water markets. This is an important distinction from simply whether the regulatory framework impacts on the water markets. While the regulatory framework may be more likely to impact a water market, this may not necessarily mean that it is impeding efficient trades within that market.

The key factors that underpin whether a regulated price for a bulk water service is impeding on efficient trade within a market are:

- whether the expenditure to be recovered is prudent and efficient and accurately reflects the full cost of providing the service
- whether the tariff structure is based on the underlying cost drivers (thereby providing an appropriate pricing signal to customers).

In addition to the pricing consideration, there are a number of non-price factors that will need to be considered. These essentially focus on whether any conditions, or services, provided by the service

[3] Through this review process, we undertook select stakeholder consultations with six key stakeholders. These stakeholders included brokers, large customer, customer representative groups and a key service provider.

providers through the IPART regulatory framework inappropriately delay or prevent trades from occurring.

1.4. Report structure

The remainder of this report is structured as follows:

- Chapter 2 provides a background to water markets in NSW
- Chapter 3 outlines the key drivers behind water market prices
- Chapter 4 describes the regulatory frameworks applied by IPART that have the potential to impact on water markets
- Chapter 5 provides an overview of our findings from the review
- Chapter 6 outlines our recommendations for IPART.

2. Background to water markets in New South Wales

This section provides a brief background to Australian water markets, describing the different types of markets that exist, and how water reform and the development, implementation and optimisation of water markets has led to the existence of secure and tradeable property rights to water.

2.1. Types of water markets and trade

2.1.1. Cap and trade approach

Water markets in Australia – including NSW – reflect a 'cap and trade' approach. The cap represents the total pool of water available for consumption in a given water system. Caps are set through government water resource modelling and water planning processes and are enforced through legislation. The ultimate purpose of setting sustainable limits for consumption is to ensure both surface and groundwater systems are not over allocated.

Once a cap is set for a system, individual rights to water can then be more clearly defined. In systems that are fully allocated, which includes the majority of the Murray-Darling Basin, the combined volume of all rights to water in an available water resource is equal to the consumptive cap. In surface water systems, a volume of water is held outside of the consumptive cap which is used to run the system, ensure water can be conveyed to users and meet planned environmental water commitments – i.e. the consumptive cap is not necessarily the entire volume of water that exists in the water system.

Pursuant to various planning arrangements and rules, the different types of rights to water under the cap can be traded between market participants. This reallocation of water between water users (which for example could be irrigators, investors, licenced environmental water holders or urban water authorities) allows competing demands for scarce water resources to be balanced in a way that ensures efficient water investment, allocation and use.

2.1.2. Types of water entitlements

There are several different water entitlement types on issue across Australia and specifically NSW. Differences between entitlement types generally relate to:

- which state jurisdiction the water is managed by
- whether the entitlement is for water in a regulated or unregulated surface water source (which is determined by whether or not there is a major public water storage or irrigation infrastructure and a water ordering system in place for the water system), or groundwater
- what level of reliability the entitlement has for receiving allocations on an annual basis (within each water system there are generally a number of different entitlement types on issue of higher or lower reliability).

Each water system typically has several entitlement 'classes', such as higher and lower reliability, and the characteristics of individual entitlements within a given class are normally homogenous.

Unbundling of rights to water and land

A crucial step in the Australian water reform process and the development of functioning water markets involved the 'unbundling' of rights to water from ownership of land. Prior to this unbundling process, rights to water were coupled with property rights to land. This meant that rights to water could only be traded between parties via the trade of specific parcels of land.

Rights to water in NSW have now, for the most part, been unbundled from land. The unbundling of rights to water means that the perpetual right to a share of water from a consumptive pool (water entitlement), the right to have a volume of water allocated to this share every year (water allocation), the right to have this water delivered to a property (delivery share), and the right to use water on a certain piece of land for a specific purpose (water use licence) are independent of each other. The implication of this unbundling is that rights to water can now be traded between water users in a more efficient and flexible manner.

There are a variety of different entitlement types (referred to as Water Access Licences in NSW) on issue across NSW, many of which can be traded. One of the key defining characteristics of the different entitlements is their level of reliability (or in another sense, their priority). This level of reliability provides a broad indication of how frequently the entitlement holder is likely to receive all of the water the entitlement stipulates in a given year. Because entitlements define access to a share of available water resources in a given year, it is not guaranteed that the full amount of the entitlement will always be available. Levels of reliability mean that some entitlements are more likely than others to receive the full share.

In NSW, there are four major classes mainly used for irrigation purposes – High Security, General Security, Supplementary and Aquifer, but these are not the same products across different water systems (they are homogenous within a water system however). Water access licences for town water supply and domestic and stock purposes have priority over other types of licences. The key types of entitlements on issue in NSW include:

- Regulated river (High Security) access licence
- Regulated river (General Security) access licences
- Supplementary water access licences
- Regulated river (conveyance) access licences
- Aquifer access licences (groundwater)
- Major water utility access licences
- Local water utility access licences
- Domestic and stock access licences
- Aboriginal cultural heritage licences.

2.1.3. Types of water markets

Australia's water markets are comprised of two distinct but related water markets – the entitlement market and the allocation market. There is no single national market for these products, but rather a number of individual separate markets. Where hydrological connectivity exists, such as in the southern Murray-Darling Basin and Border Rivers in northern NSW, trade between different Australian states, water systems and markets is possible.

Both types of water markets are regularly used by irrigation enterprises to secure water as an input to agricultural production, and by other users such as investors, urban water utilities, environmental water holders and governments. The two markets are quite distinct, with the entitlement market based on meeting participants' long-term, permanent water requirements while the allocation market is the short-term need for water.

Entitlement market

Water entitlements can be traded permanently or leased, and there are separate markets for each different entitlement type. Water entitlements can be held by virtually any party in any location, but water use is tied to site-specific regulatory controls, and inter-valley or interstate trade is contingent upon hydrologic connectivity, water sharing plan trade rules and other factors.

Trade in southern Murray-Darling Basin surface water entitlement types and associated products represents the majority of all water entitlement trade across Australia on an annual basis (see Section 2.2.1). The rural water entitlement market is largely used by irrigated agricultural producers, but is increasingly being used by investors, water utilities (including urban suppliers) and environmental water holders. These users use the entitlement market to modify their long-term arrangements for facilitating production, or meeting environmental requirements, or urban demand. Trade in water entitlement is often also driven by the need to manage risk associated with securing supply and may also occur due to changes in business strategy or structure (such as retiring debt).

Allocation market

Water allocations are the volumes of water allocated to water entitlement holders during the water year (1 July to 30 June). They are a physical good analogous to a commodity. Water allocations can be traded on the spot market or through forward contracts (i.e. an agreement to take delivery of a physical water allocation at a future point in time with a predetermined price). There is also some developing interest in 'futures' products, which may be subject to financial services regulation where these products move away from the trade of a physical commodity and towards derivative type products.

The water allocation market is mainly used by irrigated agricultural producers (including rice, dairy, horticulture, cotton and others), and environmental water managers. Irrigators use the market to sell water surplus to individual requirements, or buy additional water during dry periods or when temporarily expanding production. Environmental water holders may similarly buy or sell water allocations when they have short-term surpluses or deficits.

Australian water allocation markets were developed to allow entitlement holders and water users to effectively and efficiently manage variability in water availability within production years. The intention of this framework was to enable water to move (be traded) to water users with a higher willingness to pay during dry years or drought periods. For example, this would allow an annual crop such as rice or cotton to stop production and sell water (generating a financial return) to a citrus or grapevine grower who needed to water permanent crops.

2.1.4. Types of water market participants

Across Australia's water markets, including in NSW, there are several types of participants that can own or trade both water entitlements and allocations across different water systems and markets. Major groups of market participants and types of trade include:

- rural (irrigator or non-water user) to rural – for example a rice grower in the Murray system selling excess water allocation to a cotton irrigator in the Murrumbidgee system or a water investor (non-water user) leasing a water entitlement to an almond enterprise

- rural (irrigator) to urban (including local councils and major water utilities) or vice versa in the case of local councils with Local Water Utility or irrigation licence types – for example a local council selling excess water allocation to an irrigator or buying water entitlement from an irrigator on the open market to secure the council's future water security
- urban to urban – for example a local council selling water allocation to another council that may need additional supply in a given year.

2.2. Overview of NSW water systems and markets

There are many water systems and water markets across NSW, however, not all systems are material in relation to overall water use or trade. The scope of this project covers an examination of *major* NSW regulated surface and groundwater water systems and therefore to aid the presentation of analysis and draw insights, we have classified the water systems within the scope of the project into four main regions or groups (Figure 1).

1. **Southern Murray-Darling Basin** – including the NSW Murray and Lower Darling, and Murrumbidgee. The southern Murray-Darling Basin is characterised by the interconnected nature of the major surface water systems, which enables interstate trade, and contains a large proportion of NSW's irrigated agricultural activity. Groundwater also supports agriculture in this region, although not to the same extent as surface water.

2. **Northern Murray-Darling Basin** – including the Lachlan, Macquarie, Namoi, Gwydir and NSW Border Rivers. The systems grouped as northern Murray-Darling Basin are often more discrete than in the south because there is little or no connectivity between water systems. There tends to be more reliance on groundwater sources in these regions. There is a wide range of types of irrigated agricultural industries spread across these water systems.

3. **Coastal and unregulated systems.** These systems do not share similar characteristics and are only grouped this way given they differ more markedly from the other systems (either in physical geography, or the nature of water management in the case of the unregulated system) – noting that there are some regulated coastal water systems.[4]

4. **Sydney and Hunter metropolitan urban areas.** In this region water supply is based on commercial agreements with WaterNSW and self-supply (Hunter Water).

[4] For analysis in this report we have included the Hunter (coastal) and Barwon-Darling (unregulated) systems under the coastal and unregulated systems region.

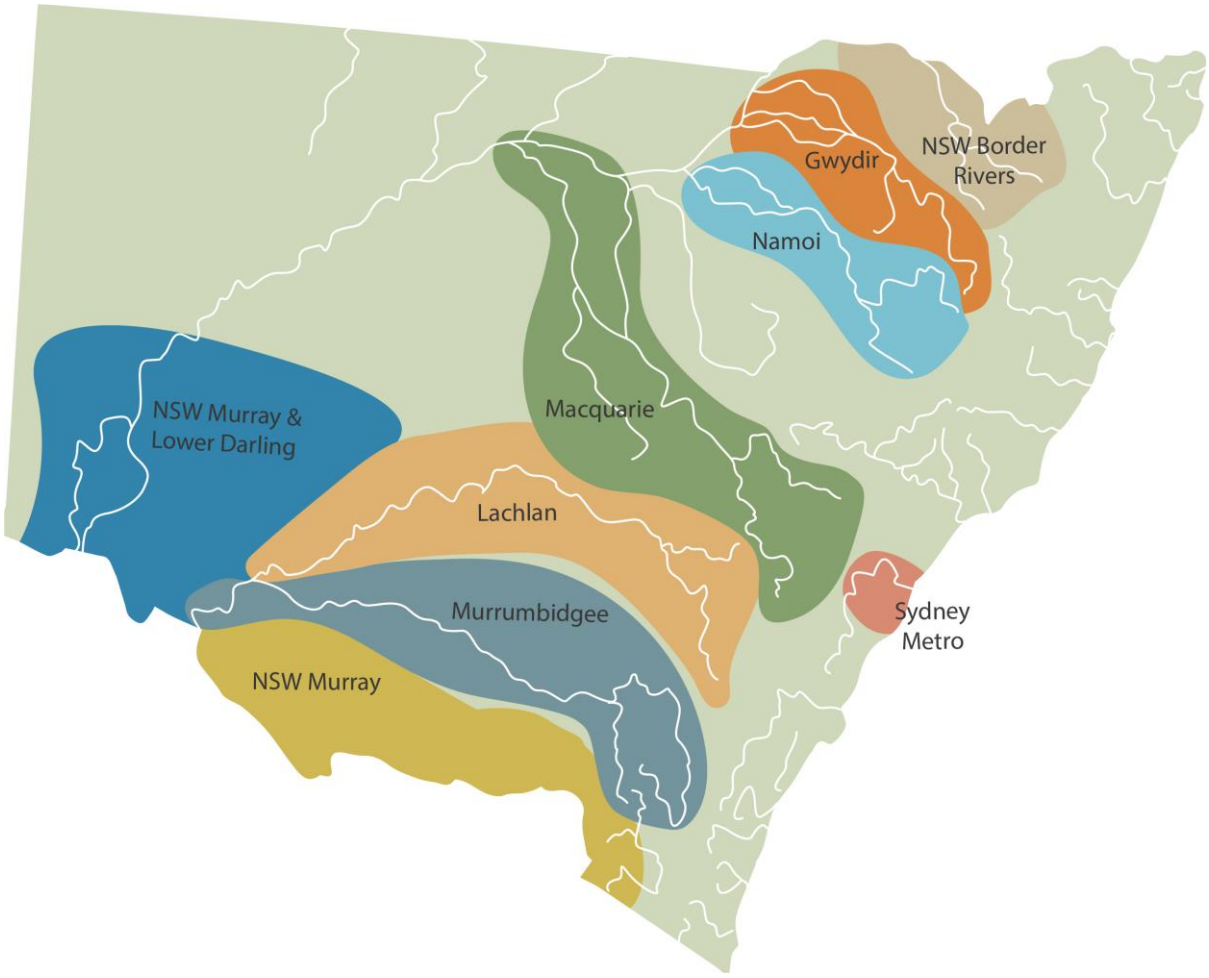


Figure 1 Major New South Wales water systems

2.2.1. Market size

By volume, the majority of water entitlements on issue NSW (both surface water and groundwater) are contained within the southern Murray-Darling Basin region, followed by the northern Murray-Darling Basin, and costal and unregulated regions respectively (Table 1).

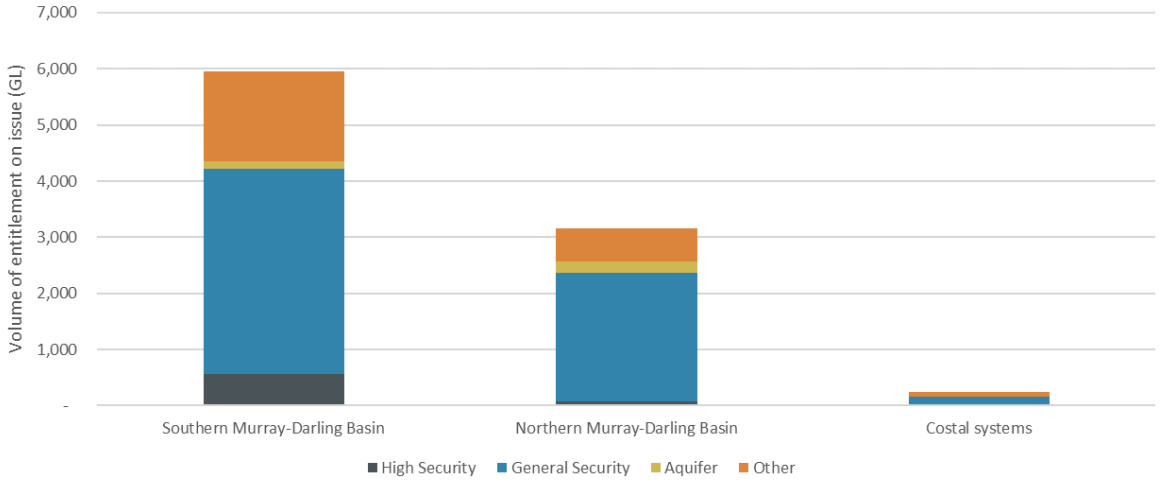
Table 1 Volume of entitlement on issue comparison between water system regions, surface water and groundwater

Region	Total entitlement on issue (GL)	Proportion of total entitlement on issue (%)
Southern Murray-Darling Basin	5,946	42%
Northern Murray-Darling Basin	3,151	22%
Coastal [1]	248	2%
All other systems (not analysed)	4,957	35%
Total	**14,302**	**100%**

Source: Aither 2018. Based on Aither and NSW DPI 2016.

Notes: Figures in this table include both surface water and groundwater for each respective region. 1) For analysis in this report we have included the Hunter (coastal) system only.

Figure 2 provides a graphical interpretation of the proportion of key entitlement types across the different regions analysed. This reinforces the concentration of available water in the southern Murray-Darling Basin. It also shows there is a relatively small proportion of High Security water, and a relatively large proportion of General Security water, across the included regions.



Source: Aither 2018. NSW Water Register, 2018

Note: 1) Please note that 'Other' includes both supplementary, domestic and stock, and local water utility entitlement types. Excludes entitlement on issue in water systems that are outside of the project scope. 2) For analysis presented here we have included the Hunter (coastal) system has been included under the coastal systems region 3) For analysis presented here we have excluded unregulated systems.

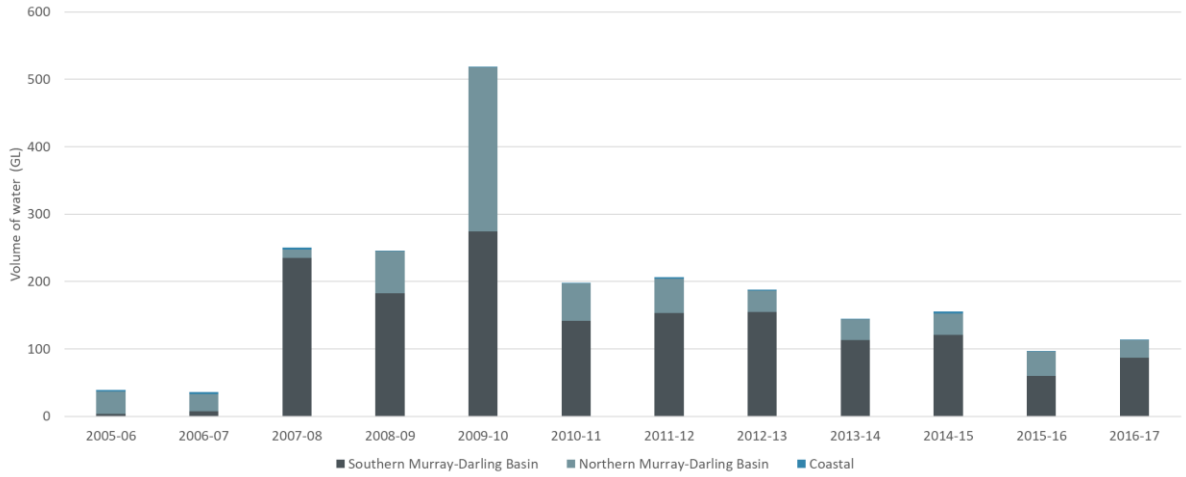
Figure 2 Entitlement on issue comparison between water system groupings

2.2.2. Volume of trade

Water entitlement markets

Within NSW, entitlement trade by volume is predominantly located within the southern Murray-Darling Basin region (Figure 3). In the 2016-17 water year the volume of entitlement trade within the southern Murray-Darling Basin exceeded that in the northern Murray-Darling Basin by 283%. Figure 3 highlights that this is consistent with historical experience in most years.

Volumes of reported entitlement trade in 2009-10 and adjacent years are likely influenced by water purchases made by the Australian and state Governments in relation to environmental water recovery programs. These high volumes of annual trade are unlikely to be reflective of normal market turnover or behaviour.



Source: Aither 2018. Based on data obtained from the NSW Water Register, 2018.

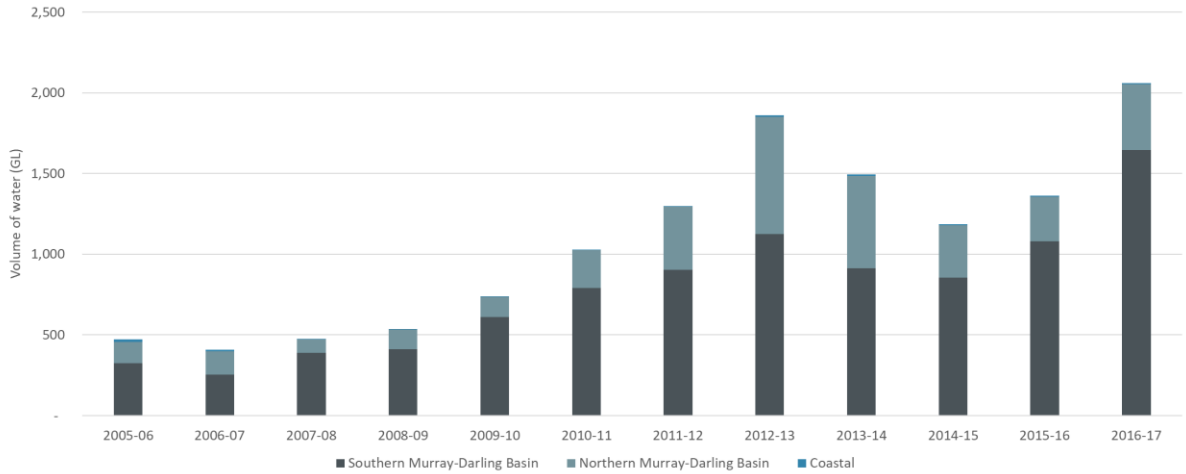
Note: 1) Excludes entitlement trades in water systems that are outside of NSW but would otherwise be considered part of the Murray-Darling Basin 2) For analysis presented here we have included the Hunter (coastal) system has been included under the coastal systems region. 3) Please note that 'Other' water sources include supplementary entitlements.

Figure 3 Entitlement trade volumes for New South Wales sMDB, nMDB and coastal surface water, groundwater and other zones, 2004–05 to 2016–17[5]

Water allocation markets

Similar to entitlement markets, water allocation trade by volume is predominantly located within the southern Murray-Darling Basin region (Figure 4). For example, in the 2016-17 water year the volume of surface water allocation trade within the southern Murray-Darling Basin was 336% higher than the volume surface water allocation trade in the northern Murray-Darling Basin. Figure 4 highlights that this is consistent with historical experience with the volume of allocation trade in the southern Murray-Darling Basin significantly exceeding that in the northern Murray Darling Basin in most years.

[5] These trades are related to 71Q trades only.



Source: Aither 2018. Based on data obtained from the NSW Water Register, 2018.

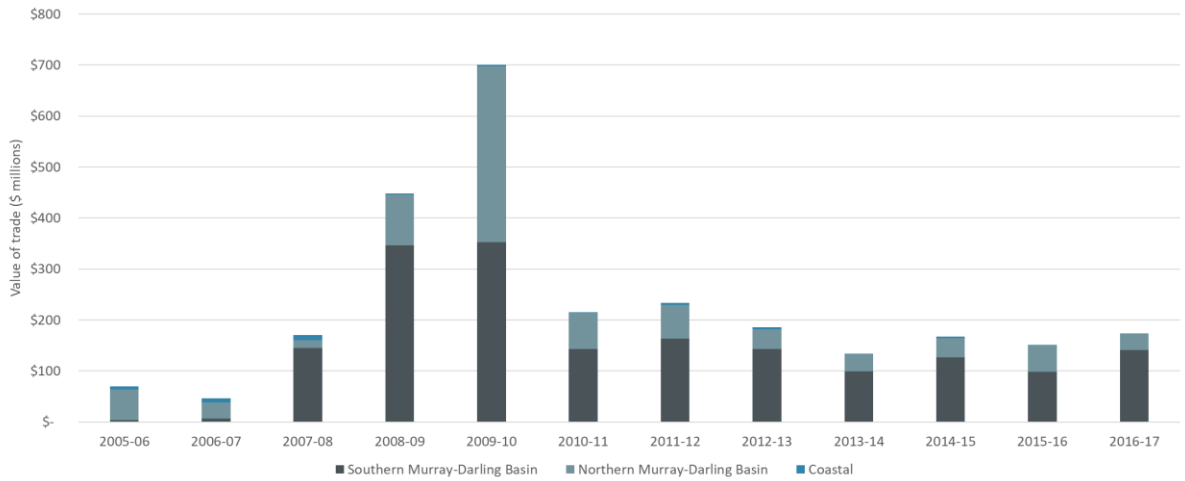
Note: 1) Includes all trades into and within zones and includes interstate trade. Excludes allocation trades in water systems that are outside of the project scope. Also excludes trades with $0 and outlier prices. 2) For analysis presented here we have included the Hunter (coastal) system has been included under the coastal systems region

Figure 4 Allocation trade volumes for New South Wales sMDB, nMDB and coastal surface water, groundwater zones and other zones, 2005–06 to 2016–17

2.2.3. Value of trade

Water entitlement markets

Within NSW, entitlement trade by value, similar to that by volume, is predominantly centred within the southern Murray-Darling Basin region (Figure 5). In the 2016-17 water year the value of trade within the southern Murray-Darling Basin was 355% greater than the value of trade within the northern Murray Darling Basin. Figure 5 highlights that 2016-17 water year, in terms of the value of the entitlement trade, is reflective of the historical experience within the NSW Murray-Darling Basin.



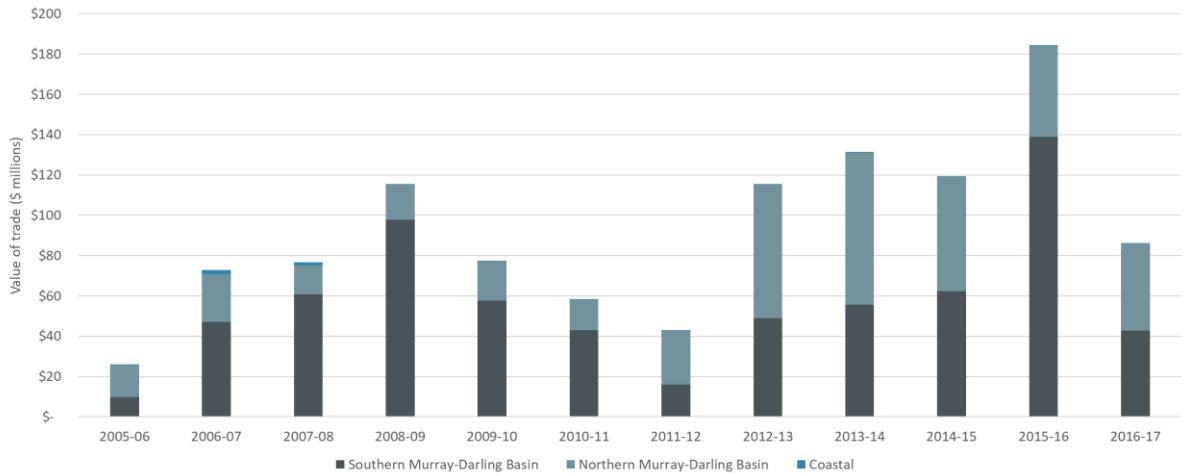
Source: Aither, 2018. Based on data obtained from NSW Water Register, 2018.

Note: 1) Excludes entitlement trades in water systems that are outside of the project scope. 2) For analysis presented here we have included the Hunter (coastal) system has been included under the coastal systems region. 3) Please note that 'Other' water sources includes supplementary entitlements. 4) Values have been determined using the total volume of trade per year multiplied by the annual volume weighted average price in a given water year.

Figure 5 Entitlement trade value for New South Wales sMDB, nMDB and Coastal surface water, groundwater and other entitlement types, 2004–05 to 2016–17

Water allocation markets

Unlike NSW entitlement markets within the Murray-Darling Basin the value of allocation trade in the southern Murray-Darling and northern Murray-Darling has tended to fluctuate year on year (Figure 6). This is primarily due to allocation prices being driven by water availability within a given region over the course of the year which can be enhanced if a region has hydrological connectivity with other regions, as is the case in the southern Murray-Darling Basin.



Source: Aither, 2018. Based on data obtained from NSW Water Register, 2018.

Note: 1) Excludes entitlement trades in water systems that are outside of the project scope. 2) For analysis presented here we have included the Hunter (coastal) system has been included under the coastal systems region. 3) Values have been determined using the total volume of trade per year multiplied by the annual volume weighted average price in a given water year.

Figure 6 Allocation trade value for New South Wales sMDB, nMDB and coastal surface water and groundwater zones, 2005–06 to 2016–17

2.3. Focus of assessment

Aither has used the analysis presented above to focus the analysis contained in the remainder of this report about the potential impact on water markets that IPART's regulatory framework could have. The logic being that we are most likely to observe material impacts in regions where water markets are largest and most active. In this context, Aither has focused on identifying impacts in relation to entitlement and allocation markets in the southern Murray Darling-Basin and across the rural water sector – meaning water trade between irrigators, other water users such as the environment and irrigation corporations and non-water using owners of water such as investors (Table 2).

Table 2 Prioritisation of focus for water market analysis in this report

Types of markets	Types of water systems	Sector	Types of participants	Level of water market activity
• Entitlement • Allocation	• Regulated surface • Unregulated surface • Groundwater	Rural	• Irrigators • Irrigation corporations • Environmental water holders • Water investors	High
			• Other (local water utilities, mining, industry, etc.)	Low
		Urban	• Major urban water authorities	Non-existent

Source: Aither 2018.

3. Drivers of water markets

This section describes and explains drivers of price and water market activity across NSW water markets, with a focus on the southern Murray-Darling Basin. It provides context for the following section which explores whether IPART's regulatory framework impacts water market outcomes.

Several fundamental factors drive water market activity and ultimately market outcomes. These include the scarcity of available water; variability in water availability within and across years and regions; connectivity of different water systems; number and type of water users or market participants; whether water demand is increasing, and; if there is pressure for change within industries. Some of these features are threshold requirements for active and liquid markets and others help explain why different trade activity is observed in different locations across NSW.

3.1. Drivers of water entitlement markets

The water entitlement market is made up of the trade of water entitlements from one owner to another on a permanent basis. Water entitlements can generally either be traded in whole or in part (i.e. an enterprise could own a 100 ML entitlement and either sell the whole entitlement or some portion of that entitlement to another party).

The value of water entitlements is primarily driven by the expected future value of allocations made to the entitlement into perpetuity. The value of water entitlements is therefore largely determined by:

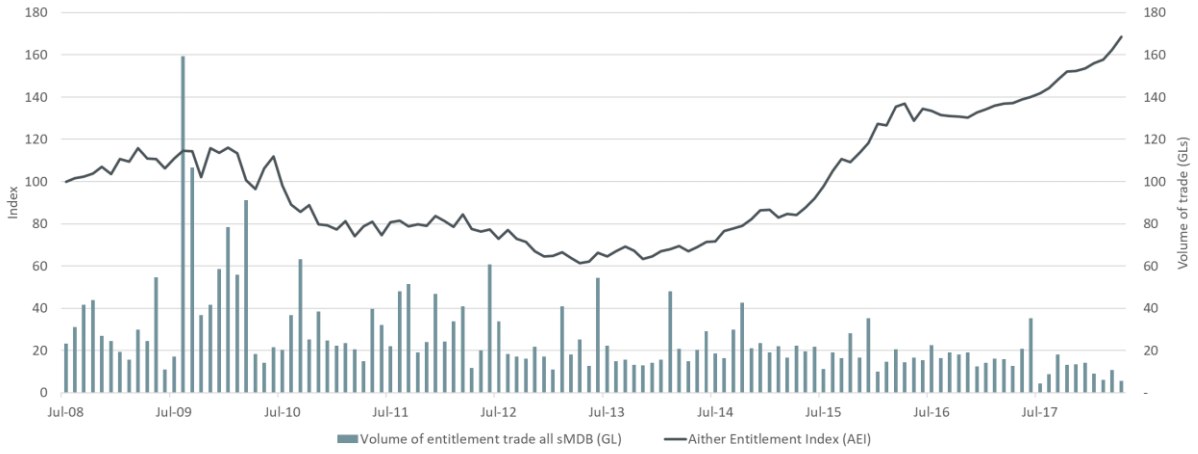
- **The reliability characteristics of the entitlement** – generally, entitlements with a high reliability will typically be priced higher. This reflects both their increased likelihood of allocations and the premium placed on water supply security by industries such as horticulture that cannot afford to experience high variability in annual water supply.
- **The relative scarcity of different entitlement types and demand for these entitlements** – for example, the total volume of NSW High Security entitlement types on issue across many catchments is generally small and they are very tightly held by current owners.
- **Other material entitlement characteristics** – water entitlement characteristics (such as cost of ownership (government fees), trading rules and transaction costs) also drive entitlement value to differing degrees and at different points in time.

The volume of trade in entitlements, or the redistribution of entitlement between participants, is mostly driven by longer-term investment decisions and economic conditions (both at a local and macro level). For example, positive economic conditions in the form of high returns to almond and cotton in the Murrumbidgee combined with low interest rates and longer-term perceptions about scarcity has in part driven increases in entitlement prices in this region and driven the movement of entitlement from crop types with lower returns to those with higher returns (such as from rice to cotton). Furthermore, purchases of water on behalf of the environment have also driven market activity in recent years.[6]

In 2017-18, southern Murray-Darling Basin market turnover (which is representative of NSW markets) has dropped. Anecdotal evidence collected through Aither's market intelligence work suggests that

[6] Please see here for more details <http://www.agriculture.gov.au/SiteCollectionDocuments/water/aither-supply-side-drivers-final-report.pdf>.

entitlement holders have become increasingly unwilling to sell entitlements as the value of water is now more widely appreciated and the underlying entitlement is now recognised as a key input into production by irrigators. This has seen a proportion of the entitlement market become locked to production as irrigators are increasing unwilling to trade. In addition to this there are currently fewer entitlement holders with entitlement volumes more than their needs in comparison to prior years. The combined effects of these trends are resulting in an overall recent trend towards lower volumes of entitlement trade per month across all major water entitlement types in the southern Murray-Darling Basin (Figure 7). In our view, the reduction in entitlement trade activity may be a reversion to a more average level after a period of major adjustment following the Millennium drought which coincided with the Commonwealth water purchase program.



Source: Aither 2018. Based on data obtained from the NSW Water Register, 2018.

Figure 7 Surface water entitlement market turnover in the Southern Murray-Darling Basin, 2008-09 to 2017-18

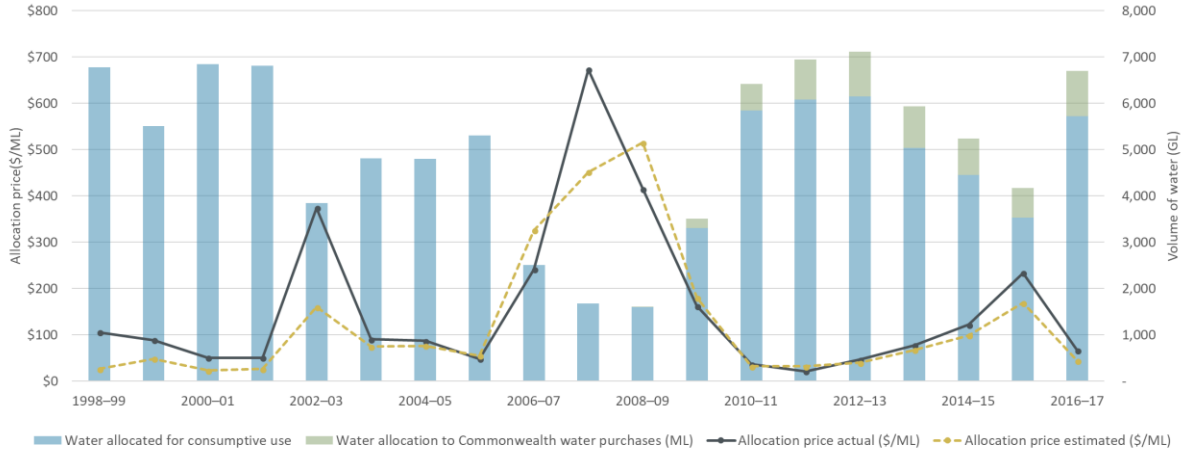
3.2. Drivers of water allocation markets

Water allocation prices are highly variable at both an inter and intra-year time scale. While prices are highly variable, to a certain extent the variability is explainable and able to be modelled. In aggregate, prevailing water availability conditions have historically been the primary drivers of annual water allocation market prices and trade activity.

The most important factors to determining water availability and therefore water allocation prices include (Figure 4):

- **Water allocated for consumptive use** – this is primarily driven by rainfall and inflows in relevant catchments, as well as volumes held in major storages. The volume of water allocated that is available for consumptive use is important because it constrains the supply of irrigation water, and when matched with annual demand, this is a key driver of water allocation market volumes traded and prices. As shown in Figure 8 observed allocation prices have closely correlated with inter-annual shifts in water allocated that is available for consumptive use. In years of low water availability, allocation prices are generally high and vice versa.
- **In-crop rainfall** – Irrigators use water allocated that is available for consumptive use in a given year as a controllable water supplement to in-crop rainfall. Rainfall also influences dryland agricultural conditions, including the production of hay, which is a substitute for water as an input

to dairy farming. It is considered that the dryland drought conditions in 2002-03 were the major driver of increased allocation prices, as dairy farmers needed to purchase additional water in the absence of limited hay and other fodder.



Note: Prices reported are annual volume weighted average prices and are real – adjusted for inflation based on annual CPI data from the Australian Bureau of Statistics ($ per ML). The total volume of water allocated to Commonwealth water purchases is reported based on the year to year cumulative portfolio growth (i.e. it is not just purchases in that year).

Source: Aither 2018. New South Wales Water Register, South Australian Water Register and Victorian Water Register. Based on Commonwealth water purchase data provided to Aither by the Department of the Environment.

Figure 8 Observed and modelled historical water allocation prices against water allocated to all consumptive and Commonwealth purchased entitlements, 1998-99 to 2016-17

As a result of the relationship between total water allocated and in-crop rainfall, in years with high rainfall (wet years), the price of water allocations can be expected to reduce due to both an increase in water availability (supply) and a decrease in water allocation demand (more in-crop rainfall and lesser need to supplement with irrigation water). The opposite is the case in dry years. When these factors are combined with demand (primarily agricultural production), outlooks and climatic events, within-season water allocation price trends can be explained. Thus, other drivers of water allocation market prices include:

- **Value of water to different production types** – In some agricultural industries, water trading decisions are made progressively throughout the irrigation season as irrigators adjust their water use and production decisions in response to prevailing conditions. Many irrigators plan for a proportion of their irrigation requirements to be met from in-crop rainfall, and if this does not eventuate, some of these irrigators need to access water allocation markets to secure additional water to finish off their crops – effectively increasing demand for water. Alternatively, if it rains towards the end of the season, irrigators may have excess water requirements that they can sell. The variable cost of using additional water will determine a small component of these production decisions and therefore market activity.
- **Competition for carryover water** – In years when the outlook for water allocations to entitlements is poor, there can be high demand and competition for water available on the allocation spot market in the concluding months of the water year (typically March to June). This type of competition has historically led to increases in annual and monthly water allocation prices.
- **Hydrological connectivity** – The hydrological connectivity that one system may have with others can also impact water allocation prices. Hydrological connectivity refers to the extent to which one system is connected to one or more other systems. When a system is connected in this way it facilitates trade of allocations between different systems, which under certain conditions can

provide a buffer for allocation prices. Water systems with no hydrological connectivity are limited to within system allocation trace, and allocation prices can be more volatile and susceptible to within-system conditions (such as drought, rainfall, flooding events or short-term agricultural production changes).

The water allocation market is mainly used by irrigated agricultural producers (including rice, horticulture, cotton and others), and environmental water managers. Irrigators use the market to sell water excess to requirements or buy additional water in during dry periods or when temporarily expanding production. Environmental water holders may similarly buy or sell when they have short-term surpluses or deficits. Overall, market activity (volume of water traded) is driven by the complex relationships between different usage requirements and willingness to pay for water, and this varies year to year.

4. IPART regulatory framework

This section provides an overview of how economic regulation framework can influence water markets and a specific discussion on IPART's regulatory approach for both WaterNSW and WAMC functions. As outlined in Section 1, our focus is on WaterNSW and DoI (with respect to WAMC functions) as these are the IPART-regulated entities that are more likely to have an impact on water markets.

4.1. Potential impacts that regulatory frameworks can have on water markets

Markets are exposed to influences from a variety of policy instruments and regulatory frameworks that can facilitate, or impede, efficient trading within the market. In terms of the Australian water markets, trading can be impacted by economic regulatory frameworks that impose or encourage inappropriate tariffs (or tariff structures), and/or inappropriate service standards. This can result in:

- inefficient investment and adjustment decisions for market participants
- inefficient water use decisions
- inefficient service provision from infrastructure operators.

In a general sense, these impacts can be driven by price and/or non-price elements of economic regulation. Price factors (i.e. related to regulated charges, not to market prices) are likely to be factored in to investment decisions by market participants while non-price factors have the potential to influence decisions through the level of performance required of the service provider.

While the focus of the assessment is on the economic regulation of WaterNSW and DoI's delivery of WAMC functions, the potential impact of economic regulation on other aspects of the market should also be considered.

Impact of trading on metropolitan utilities

At present, the metropolitan urban water utilities (Sydney Water and Hunter Water) do not hold tradeable entitlements and are not market participants. If this were to change in the future then IPART would need to consider how it would incorporate these additional factors into the regulatory framework. This discussion focuses on what may be required from an economic regulation perspective if this were to change.

Where urban water utilities are regulated by an economic regulator (whether that be deterministic or a lighter-handed form of regulation), there is likely to be some form of oversight on expenditure for the utility. For example, those urban water utilities that operate under a deterministic framework will have their forecast expenditure assessed by the economic regulator for the upcoming regulatory period.

Where that utility is likely to purchase water from the market, the economic regulator would need to forecast the expected costs involved in meeting their supply requirements through the market. These costs are then factored in to the utility's revenue allowance and recovered through customer prices. Given this, water utilities may be unwilling to purchase water from the market (even if it is the most economically efficient supply of water) if they do not have the costs factored into their revenue allowance.

One way of mitigating the risks associated with that is to have a re-opening or true-up mechanism that can ensure that the utility (and its customers) do not bear the forecasting risks associated with the water market. This type of approach has been adopted by IPART in relation to the Sydney Desalination Plant due to the uncertainty regarding its modes of operation throughout a regulatory period.

Similarly, where the utility has excess water available, it could look to sell the available water on the temporary (allocation) market. Where this excess water was not forecast as part of the price determinations, this may lead to an increase in revenue. This additional revenue could be used to offset prices for customers, increase dividends for shareholders or be retained within the business.

4.2. Overview of IPART's regulation of WaterNSW

As outlined earlier, the key consideration in the regulatory frameworks is the pricing and non-pricing aspects of the framework. In relation to WaterNSW the following are the key considerations in understanding IPART's role:

- The setting of WaterNSW's charges and cost recovery
- WaterNSW's tariff structure
- WaterNSW Operating Licence.

The remainder of this section provides an overview of these components.

4.2.1. *Setting of WaterNSW charges and cost recovery*

WaterNSW's charges for its rural bulk water services are regulated through IPART. The setting of these prices is based on the WCIR (in Murray-Darling Basin valleys) and the IPART Act (in other areas).

The prices are set in a way that is designed to recover the forecast expenditure requirements for WaterNSW in delivering its services over the regulatory period. In setting these prices, IPART must assure itself as to the prudency and efficiency of the forecast expenditure to ensure that prices are set to recover an appropriate level of costs. To do this, IPART undertakes a detailed expenditure review as part of its price determination process to review the forecast expenditure provided by WaterNSW.

MDBA and BRC pass-through

One of the other key factors in determining WaterNSW's charges is the costs associated with the Murray-Darling Basin Authority (MDBA) and the Border Rivers Commission (BRC). These two agencies are responsible for co-ordinating and managing water resource management and bulk water activities from a 'whole of system' perspective.

The tariff structure for these two charges is a fixed and variable structure, with IPART recently determining that the structure should be 80:20 fixed to variable.

4.2.2. *WaterNSW tariff structures*

In 2006 the NSW Minister for Water Utilities inserted a clause in WaterNSW's Operating Licence requiring it to "recover no more than 40 per cent of expected revenue from fixed charges by 2009-

10".[7] This policy decision was not based on the underlying cost drivers for WaterNSW, but rather by concerns from some customers that they were paying large fixed fees irrespective of the volume of water that they were using. As a result of this, IPART approved a tariff structure for WaterNSW's 2006 determination that was based on a 40:60 fixed and variable split. This clause of the Operating Licence has since been removed however the tariff structure has remained for most valleys. IPART's most recent determination resulted in the South Coast valley, FRWS, Peel valley (from 1 July 2018) and the MDBA and BRC costs moving to an 80:20 fixed to variable ratio, while North Coast valley has moved to a 90:10 fixed to variable ratio. However, it was noted by IPART that the majority of valleys remained at the 40:60 fixed and variable split.

This current approach is likely to produce a disconnect between WaterNSW's underlying cost drivers and the pricing signals that are provided to its customers. While the cost drivers of the business are largely fixed, the charges being applied to customers are based on recovering a majority of revenue from a variable usage charge. As a result of this disconnect there is a higher degree of revenue risk for WaterNSW, especially where NSW is a net exporter of water on the markets. This has led to two issues:

- IPART introducing a revenue volatility allowance for WaterNSW (see section 5.3.1)
- WaterNSW applying the variable usage charge on any trade where the buyer is not linked to a NSW Works Approval (this is generally inter-state trades and trades involving non-water users) (see section 5.4).

4.2.3. *Non-price conditions within WaterNSW Operating Licence*

WaterNSW has an Operating Licence that is recommended by IPART and sets out a number of conditions and performance standards for WaterNSW.[8] The Operating Licence includes *CSR* (that is Capture - Store - Release) *Water Account Processing Performance Standards* in clauses 4.35 – 4.37. These performance standards are lower than those in Victoria (though higher than South Australia) and are limited to Temporary Trades – both intra- and inter-state.

4.3. Overview of IPART's regulation of WAMC functions

IPART determines the maximum prices for the WAMC water management services provided by DoI, through both DoI-Water and separately, the recently established NRAR. These services include ensuring available water is shared according to the agreed water sharing rules, that the integrity of water rights is protected and water resources are managed sustainably. Based on these services, IPART determines prices for:

- Water management prices – an annual charge to recover the costs of water planning and management and apply to all categories of water access licences
- Consent transaction charges – charges for one-off services such as amending water access licence, issuing works approvals, etc. (functions which have largely been conferred upon WaterNSW)
- Meter service and reading charges – annual charge for maintaining and reading water meters (functions which have been completely conferred upon WaterNSW).

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7 IPART, 2009, *Public submission to the ACCC's Bulk Water Charge Rules: Issues Paper*, p.29

8 The Operating Licence is approved by the Minister.

IPART is only responsible for setting the maximum prices for the WAMC services, and there is no Operating Licence for DoI's delivery of WAMC services. This means that IPART does not have the same level of influence over the WAMC services that are provided by DoI as it does for WaterNSW (where there is an Operating Licence).

The previous (2012 - 2016) IPART determination was based on (the then) DPI Water providing all of the WAMC services, however we note that these services are now delivered by a combination of DoI Water, WaterNSW and the NRAR.

5. Assessment of impacts

The section initially sets out our approach to the review, followed by the findings of the review. These findings are based on analysis of the regulatory frameworks in place, market information and information gathered through stakeholder consultations.

5.1. Approach to the review

5.1.1. Strategic approach

Our analysis and the select consultation with stakeholders have focused on key issues regarding tariffs and tariff structures, and whether any service standards or performance as part of IPART's regulatory framework are likely to impact on trading decisions from market participants. This has meant that the review has focused on:

- The materiality of the IPART-regulated charges in relation to the market value of water
- The tariff structures that are determined by IPART for WaterNSW and DoI in performing WAMC functions
- The levels of service provided by WaterNSW and DoI in performing WAMC functions.

To inform the review, we have undertaken analysis on publicly available information and our own market data. We have supplemented this analysis with stakeholder consultation to get a broader understanding of the potential issues facing market participants that may be as a result of the IPART regulatory framework.

5.1.2. Types of findings

Through our analysis and consultation with stakeholders, there were two key types of findings:

- **Direct impacts:** These are direct impacts on trading in the market that generally relate to pricing of services provided under the regulatory framework
- **Indirect impacts:** These impacts do not directly impact on markets, but influence the level of confidence stakeholders have with the market which subsequently impacts on whether trades are occurring efficiently

The following sections outline our findings.

5.2. Materiality of the IPART-regulated charges

The key finding from our review and the stakeholder consultations was that while the IPART-regulated charges were incurred by market participants, they are generally seen by stakeholders as a 'cost of doing business' and therefore not something that would materially alter decision-making with respect to investment, trade and use. In addition to this, the general consensus was that the materiality of the IPART-regulated charges meant that other drivers such as climate and economic conditions affecting irrigation industries have a greater influence on trading decisions in the entitlement and allocation markets.

To demonstrate materiality, Table 3 provides an overview of the market values of water entitlements and allocations and IPART-regulated charges for each of the key NSW water systems. This information highlights the difference between the IPART-regulated charges and the overall trade prices for investment and use decisions. As an example of the materiality of the IPART-regulated charges on trade investment decisions:

- the annual entitlement holding costs for a High Security entitlement in NSW Murray system represents approximately 0.2 per cent of the market value for High Security entitlements in that system.
- the total usage charges for the NSW Murray system represent between 2 and 3 per cent of the value of allocation prices in the system.

The magnitude of these charges in relation to the trade prices is quite small and is consistent with the stakeholder consultations and our discussions on key drivers of water markets in section 3.

Table 3 Overview of market values and IPART-regulated charges for NSW regulated river systems

Water System	Market-determined values					IPART-regulated charges		
	31 March 2018 entitlement market value ($/ML)			Three-year allocation spot price average ($/ML)	Allocation 2018-19 forward delivery ($/ML)	Entitlement holding costs ($/ML)		Usage Charges ($/ML)
	High	General /Low	Sup	Allocation		High	General	
NSW Murray	$4,050	$1,550	$260	$125	$160 - $230	$10.48	$5.89	$4.54
NSW Murrumbidgee	$4,150	$1,800	$750	$115	$190 - $250	$5.96	$3.06	$4.55
NSW Lower Darling	$1,720	Limited trade	Limited trade	$43	Limited market	$10.48	$5.89	$4.54
NSW Lachlan	$1,850	$750	-	$111	$100 - $200	$17.09	$4.18	$21.30
NSW Macquarie	$3,700	$1,350	$180	$232	Limited market	$15.44	$4.56	$15.86
NSW Namoi	$3,250	$2,000	$460	$206	Limited market	$20.08	$10.77	$22.18
NSW Gwydir	Limited trade	$2,200	$1,325	$304	Limited market	$12.79	$5.03	$13.41
NSW Border Rivers	Limited trade	$3,300	$1,100	$168	Limited market	$12.36	$5.98	$8.08

As demonstrated, in section 3, the most important price drivers for entitlements are the reliability characteristics of the entitlement, relative scarcity of different entitlement types and the characteristics of the entitlements themselves, while the value of water for different production types (demand), and rainfall and total water allocated (supply) are the key drivers of prices for allocation markets.

5.2.1. Other government policy

A significant factor that influences trade decisions that was identified by stakeholders was external government policies, other than those related directly to IPART's role in economic regulation.

Several views were put forward that government policies were likely to have a much greater impact on costs and investment decisions than the decisions arising through IPART's regulatory framework.

Some examples of current policies that were identified that are likely to influence the decisions and confidence of water market participants more than IPART's regulatory frameworks include:

- The further implementation of the Murray-Darling Basin Plan

  This plan includes Water Resource Plans, compliance requirements, and most importantly for water markets, uncertainty around future investments in on-farm water use efficiency programs associated with the 'efficiency measures' component of the Basin Plan to recover an additional 450 GL of entitlements, including through grants for investments in on farm water use efficiency that result in entitlement transfer to the Commonwealth at a multiple of the current market price.

- Water Reform Action Plan (NSW Government)

  This plan sets out four key goals for NSW:

  - Introduce best practice for water management
  - Ensure transparency in how water is shared, allocated and managed
  - Build a compliance and enforcement regime that ensures strong and certain regulation
  - Build capability to support implementation of water reforms.

  The implementation of the *Water Management Amendment Bill 2018* (NSW), which was passed on 20 June 2018 may have significant implications for water market participants relating to the provision of water market information.

- Trading decisions by Environmental Water Holders

  The Commonwealth Environmental Water Holder (the CEWH) is the largest entitlement holder in the Basin as a result of past water recovery efforts. Looking forward, given its size, the CEWH (and OEH to a lesser extent) has the ability to influence water markets. This includes their potential to buy and sell allocation (particularly the sale of allocation which could place downward pressure on allocation prices). CEWH can also influence the market by transferring water between accounts and utilising limited capacity associated with inter-regional trade constraints in the southern MDB. Uncertainty about the intentions of the CEWH, and resultant impacts on market expectations, has been raised by stakeholders in many forums.

Finding 1

While IPART's regulatory framework directly impacts on the charges that are applied by WaterNSW, these charges are relatively low in comparison with the value of water in the market. Other drivers have a bigger impact on investment decisions in water markets. These other drivers of entitlement markets include economic conditions (e.g., the value of returns available), interest rates, longer-term perceptions of scarcity and government policy expectations (e.g., buy-backs and on-farm water use efficiency programs). Major drivers of allocation markets include climatic conditions and the value of water in different irrigation industries at any point in time.

5.3. Tariff structures and cost drivers

In theory, efficient tariff structures are based on the underlying cost drivers of the service provider. In practice however, this can be difficult to implement. In some cases, customer preferences dictate that other structures are in place, or government policy mandates an alternative structure. Where the tariff structure does not align with the underlying cost drivers it creates financial risks to the service provider from changes in demand.

Given this theory, usage charges should reflect the variable costs associated with providing that service (e.g. a cost per ML) based on either a short-term or long-term basis. There are two reasons for this:

- it provides an appropriate pricing signal to the user of the cost impact that it has on the network
- it minimises the demand-side risk to the service provider (i.e. a reduction in usage revenue is offset by a reduction in variable costs).

There is however, an issue in terms of the timeframe for measuring the variable costs and the appropriate pricing signal. While pricing signals may be based on a long-term perspective, if it leads to a reduction in demand, the service provider only reduces their costs by the short-run marginal costs of providing the unit of demand (i.e., ML). In most cases, the short-run marginal cost will be less than the long-run marginal costs used for water pricing, thereby resulting in a loss of revenue that is greater than the immediate reduction in the costs to serve.

In the case of WaterNSW, the reduction in costs through lower demand on the network is likely to be quite low (because its cost base is largely fixed). This, combined with the high usage charge means that WaterNSW is exposed to changes in water availability. This risk has led to IPART introducing the revenue volatility allowance (section 5.3.1 below).

During the stakeholder consultations for the review, some stakeholders raised the tariff structure as an issue to be addressed. However, these discussions raised differing views as to whether the current tariff structure for WaterNSW should be maintained or not into the future as there was a view that many customers prefer to have a higher proportion of their bill through the variable charge. One stakeholder noted that this preference for customers was likely to be different depending on each valley and that it would require considerable effort to gain a comprehensive understanding of customer preferences.

5.3.1. Revenue Volatility Allowance

IPART's Final Decision for the 2017 review of WaterNSW stated that WaterNSW faces revenue risk associated with unpredictable water sales and its current tariff structure. Given this, IPART incorporated a revenue volatility allowance of approximately $1.3m per year to mitigate revenue volatility risk. The allowance is designed to enable WaterNSW to manage the risk associated with having a 40:60 fixed to variable price structure relative to an 80:20 fixed to variable price structure. This can either be undertaken through the purchase of a Risk Transfer Product (RTP) from a third-party, or self-insurance. The Final Report considered that the estimated costs for purchasing the RTP through a third-party were efficient and therefore included as part of the revenue requirement.

This results in customers paying a cost-reflective premium where prices are set to recover more than 20 per cent of revenue in a valley through usage charges, rather than revising the tariff structure to mitigate the revenue volatility risk.

Finding 2

WaterNSW's tariff structure creates revenue risk for the business. As a result of this, IPART's recent price determination provided WaterNSW with a revenue volatility allowance to manage the risk associated with having a 40:60 fixed to variable tariff structure relative to an 80:20 tariff structure.

5.4. Application of variable usage charge

As outlined in Section 4.2.2, WaterNSW applies the variable usage charge to certain water allocation trades where the buyer does not hold a valid NSW WAL and associated Works Approval. Aither

understands that the application of this charge in this way is based on the revenue risk associated with WaterNSW's tariff structure.

The following address our findings in relation to some of the key issues associated with the application of this usage charge.

5.4.1. ACCC Review of Water Charge Rules – Final Advice

As part of its Final Advice to the Minister in relation to its review of the different water charge rules, the ACCC considered the application of WaterNSW's variable usage charge to buyers that did not hold a NSW Works Approval.

As part of this advice, the ACCC noted that:

> "while this practice does not altogether preclude trade from NSW interstate, it is likely to distort trade flows and the distribution of gains from trade. Further, the ACCC considers that this approach is not transparent because it is not clear what services interstate users are paying for.
>
> In view of the distortionary effect of this practice on water markets, the ACCC supports future reform of WaterNSW's tariff structure towards less distortionary arrangements over the longer term"[9]

However, the ACCC acknowledged that previous policy decisions had compelled WaterNSW to recover a portion of their fixed costs through variable charges. This resulted in WaterNSW levying a single variable charge to recover the costs for a bundle of infrastructure services.

Given these considerations, the ACCC's final advice was drafted to allow WaterNSW to continue its current practice of levying the usage charge when water is traded inter-state.

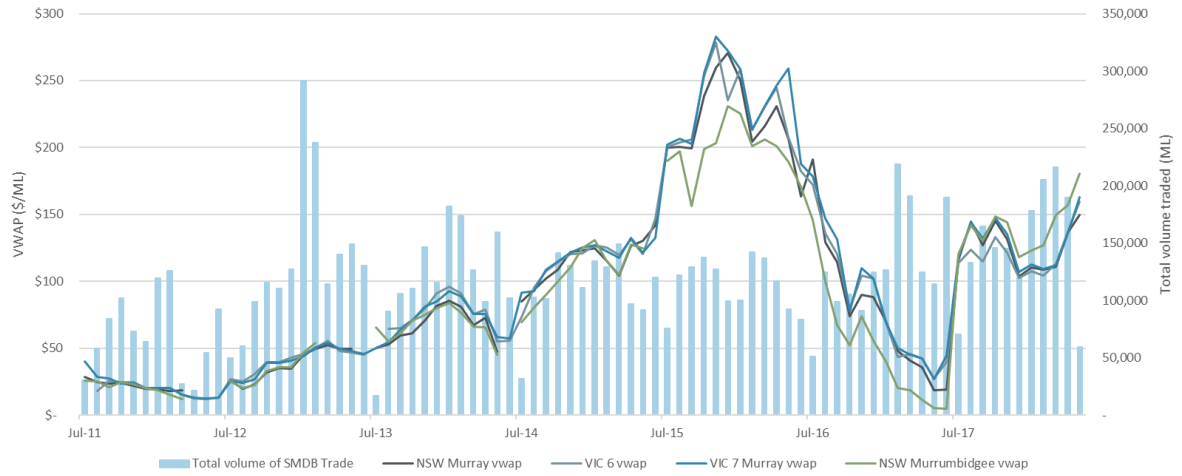
5.4.2. Discounting to other markets

To test this anecdotal feedback, we have undertaken analytical analysis of the market data to determine if there is a systemic discount that is applied by NSW sellers on the allocation market. Figure 9 shows the historical trend of the NSW Murray, NSW Murrumbidgee and Vic Murray systems. From this, it can be seen that the Murrumbidgee has historically tended to trade at a slight discount (mainly due to differences in water availability and trade out constraints), while there has not been much variation between the NSW Murray and Victorian Murray. This possibly reflects that these discounts are only applicable to interstate trades and therefore do not represent a high proportion of the overall trades. From this, we can conclude that the application of the variable usage charge is unlikely to be a major distortion on the value of water in the market and efficiency of trade between connected market.

It should be noted that since the commencement of the 2017-18 water year NSW Murrumbidgee allocations have traded at a premium to both other NSW allocations and Victorian allocation types. This is most likely due to the closure the of Murrumbidgee inter valley transfer mechanism (IVT) which sets a limit of 100 GL of trade in either direction between the Murrumbidgee and Murray Valleys. The closure of the IVT has prevented trade into the Murrumbidgee system during the 2017-18 water year limiting the available supply of allocation water to the system whilst demand has remained strong due

[9] Australian Competition and Consumer Commission, Review of the Water Charge Rules – Final Advice, September 2016, p.91.

to high cotton plantings. This further demonstrates that other factors tend to have a larger influence on the market than the IPART-regulated charges.



Source: Aither, 2018.

Notes: 1) Total volume trade is indicative of total trade within the southern MDB excluding $0 trades. 2) Breaks in price time series are attributable to no price being recorded in the given period due to a lack of trade.

Figure 9 NSW and Victorian historical allocation price comparison, 2011-12 to 2017-18

5.4.3. Upfront application of the variable usage charge to these trades

One of the concerns raised by stakeholders was the requirement for this charge to be paid for up-front, at the time of the trade. This is in contrast to the standard variable usage charge which is collected at longer time intervals (such as quarterly or annually) once actual usage is known.

While this is unlikely to impede efficient trades from occurring, the stakeholder feedback indicated that it added unnecessary frustration and cost to the trading process.

5.4.4. Forecasting revenue from the variable usage charge

Stakeholders raised concerns as to the potential for WaterNSW to receive more variable revenue than intended through the application of the variable usage charge to sellers that do not hold NSW Works Approval. The concerns that stakeholders held related to the fact that WaterNSW receives the variable usage charge on all trades going out of NSW and all trades coming in to NSW. We note however, that IPART has confirmed that it accounts for forecasts of both trades going into, and out of, NSW as part of its demand forecasting for setting the variable usage charge for WaterNSW. This means that WaterNSW is not getting 'bonus' revenue from the application of the usage charge on both directions of trade as this was factored into the demand forecasting when initially setting the charge.

The difficulty for IPART (and risk for WaterNSW) is that forecasting the volume of interstate trade is inherently difficult and can be exposed to considerable shifts in the market in short periods of time (see discussion on NSW water market in sections 2.2.2 and 2.2.3).

5.4.5. Process for obtaining refund of variable usage charge

In discussions with stakeholders, it was acknowledged that participants without a NSW Works Approval can apply for a refund of the variable usage charge if the parcel of water that was purchased from a NSW seller was subsequently on-sold to a NSW water user.

Where the refund mechanism is operating effectively (by ensuring that any usage charges applied to parcels of water that were subsequently on-traded to a NSW customer is refunded), there is no double-counting of the usage charge for WaterNSW. An issue only arises if this process is not effective and results in the usage charge being applied more than once to a parcel of water (due to no refund being applied on the initial trade being undertaken by the purchaser without a NSW Works Approval).

Stakeholders stated that the processes for determining whether a refund is applicable were unclear and created uncertainty for those potential buyers that were to be charged the variable usage charge if they purchased water from a NSW seller. The key issues related to difficulties around the required evidence of the use of water and matching the parcels of water in order to obtain the refund.

If the design and/or application of the refund mechanism creates uncertainty for non-NSW Works Approval buyers, this could result in uncertainty that has the potential to be factored in to the price that they are willing to buy from a NSW seller.

5.4.6. Scenario analysis of water market impacts

Discussions with stakeholders highlighted that while the variable usage charge is not a material charge in the scheme of investment decisions, they generally take it into account when considering selling on the allocation market to buyers without a NSW Works Approval (generally Victorian and South Australian buyers and non-water users, and mainly in the Murray and Murrumbidgee systems). This potential distortion is driven by the application of the different tariff structures across jurisdictions. Whether this subsequently impacts on the market price that they offer to these potential buyers depends on the market price for water in competing water systems.

Stakeholders noted that the impact of the charge has been mitigated to some degree in recent years through the reduction in the variable usage charge for Murray and Murrumbidgee (see Table 4). This reduction has been through a combination of reductions in the bulk water usage charge and changes in the structure of the MDBA usage charges (to an 80:20 fixed to variable ratio). Several stakeholders mentioned that this reduction, along with the gradual increase in understanding of the charge, has resulted in a significant reduction in the angst from stakeholders in regards to the charge.

Table 4 Breakdown of variable usage charge for Murray and Murrumbidgee ($/ML, $2016-17)

Component of usage charge	Murray		Murrumbidgee	
	2016-17	2017-2021	2016-17	2017-2021
Bulk water usage charge	2.31	1.91	3.53	3.31
MDBA usage charges	4.17	1.50	0.82	0.30
Combined usage charge	6.48	3.41	4.35	3.61

Based on the discussions in the stakeholder consultation, Table 5 provides a description of different scenarios for buyers and sellers in different locations and how it may impact the market in practice.

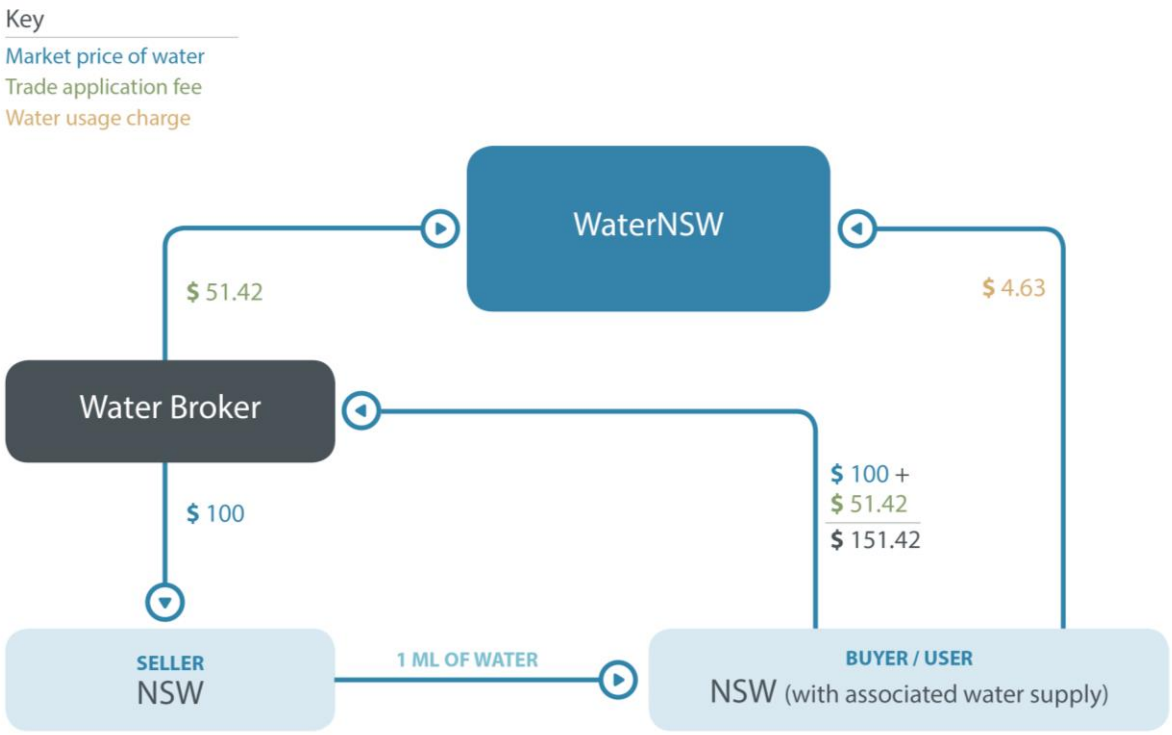
Table 5 Scenario for sellers and buyers in different locations

Seller Location	Buyer Location	Comments
NSW	NSW	The NSW buyer will be exposed to the variable usage charge at the time of use and therefore there is no impact on the market. The NSW seller transfers the obligation to pay a usage charge on the allocation to the buyer, but this is not at the point of trade.
	Victoria / SA	Through the trade settlement process, the Victorian / SA buyer will be required to pay WaterNSW's variable usage charge for the NSW seller. Depending on the market price for other water systems (such as Victorian / SA water systems), the NSW seller may have to offer a discount on the market price to account for the WaterNSW variable usage charge that will be passed on to the Victorian / SA buyer. If the difference between the buyer's willingness to pay and the seller's willingness to sell is less than the variable usage charge, this may result in an efficient trade not occurring. For example, if a buyer is willing to buy water allocations from the market at $102/ML and the seller is willing to sell their allocations at $100/ML, a trade should occur. However, if the seller is located in NSW Murray, the buyer would incur an additional $4.54/ML and thereby prevent the trade from occurring. While this has the potential to occur, it is at the margin and is unlikely to occur on a regular basis.
Victoria / South Australia	NSW	The Victorian / SA seller will not have to consider applying any discounting to the market price offered as the NSW buyer would incur the variable usage charge regardless of where the water has come from at the point of use.
	Victoria / SA	The Victorian / SA buyer will not be exposed to any usage charge and therefore no impact on the market price that is offered by the Victorian / SA seller.

Further to this, the following diagrams illustrate the potential impacts to different market participants under different scenarios.

Scenario 1 – NSW WAL to a NSW WAL with associated Works Approval

If a water allocation trade occurs between a NSW WAL to a NSW WAL with associated Works Approval, the variable water usage charge is not applied by WaterNSW to the seller of the water allocation at point of sale. This is because the buyer of the water allocation is assumed to be the 'user' of the water and the water usage charge will be recouped by WaterNSW at the point of usage (Figure 10). Under this scenario, the application of this usage charge at point of usage does not impact the price of the water allocation because it is not applied at point of sale.



Note: Aither has assumed 2018-19 Murray usage fee of $4.63 per ML, $100 per ML allocation price, the trade of 1 ML of water allocation and has not account for broker commission.

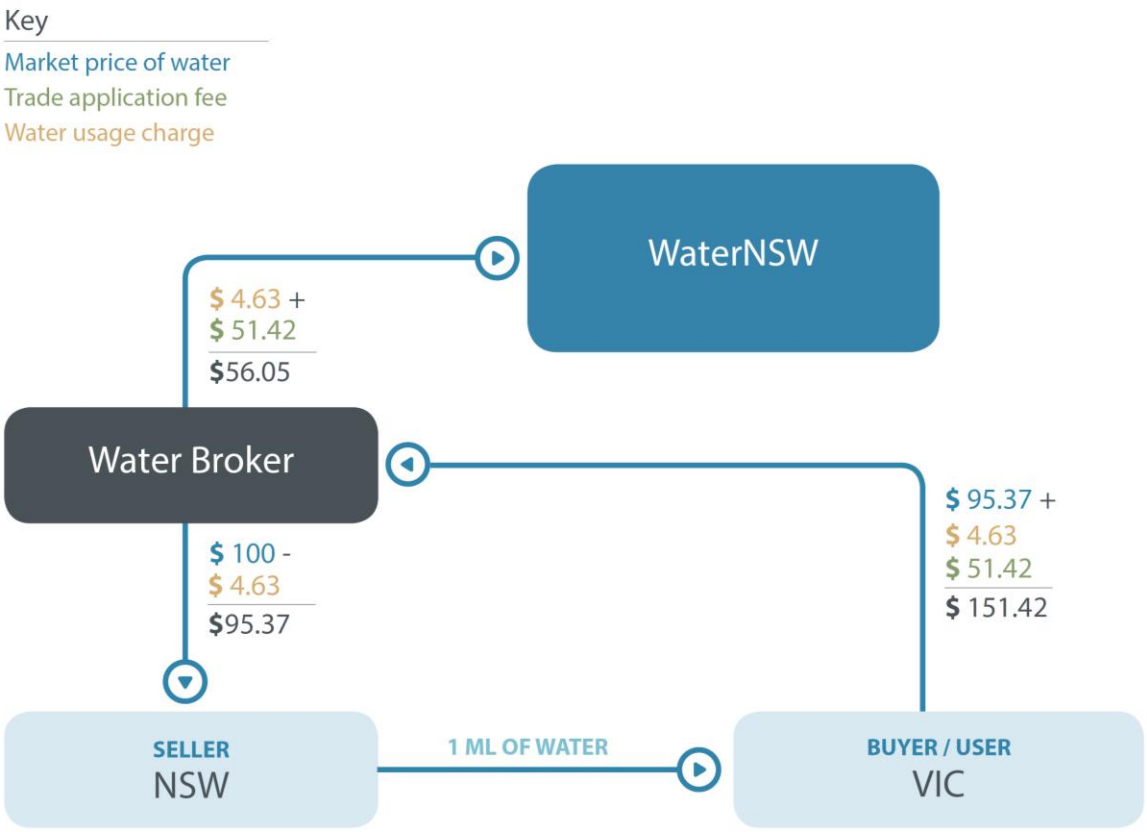
Source: Aither 2018.

Figure 10 Application of usage charge in water allocation trade – Scenario 1

Scenario 2 – NSW WAL to a Victorian water user

If a water allocation trade occurs between a NSW WAL and a Victorian water user, the variable water usage charge is applied by WaterNSW to the seller of the water allocation at point of sale. In practice, however, the buyer of the water allocation incurs the WaterNSW variable usage charge during the processing and settlement of the trade through a water broker.

If the Victorian water user had bought the same water allocation from another Victorian water owner, this usage charge would not be applied. As a result, and depending on the market price for water allocations in other water systems (such as Victorian / SA water systems), the NSW seller may have to offer a discount on the market price to account for the WaterNSW variable usage charge that will be passed on to the Victorian buyer. The result of this is that the seller receives a lower price for the water allocation but WaterNSW recovers the associated usage fee (Figure 11).



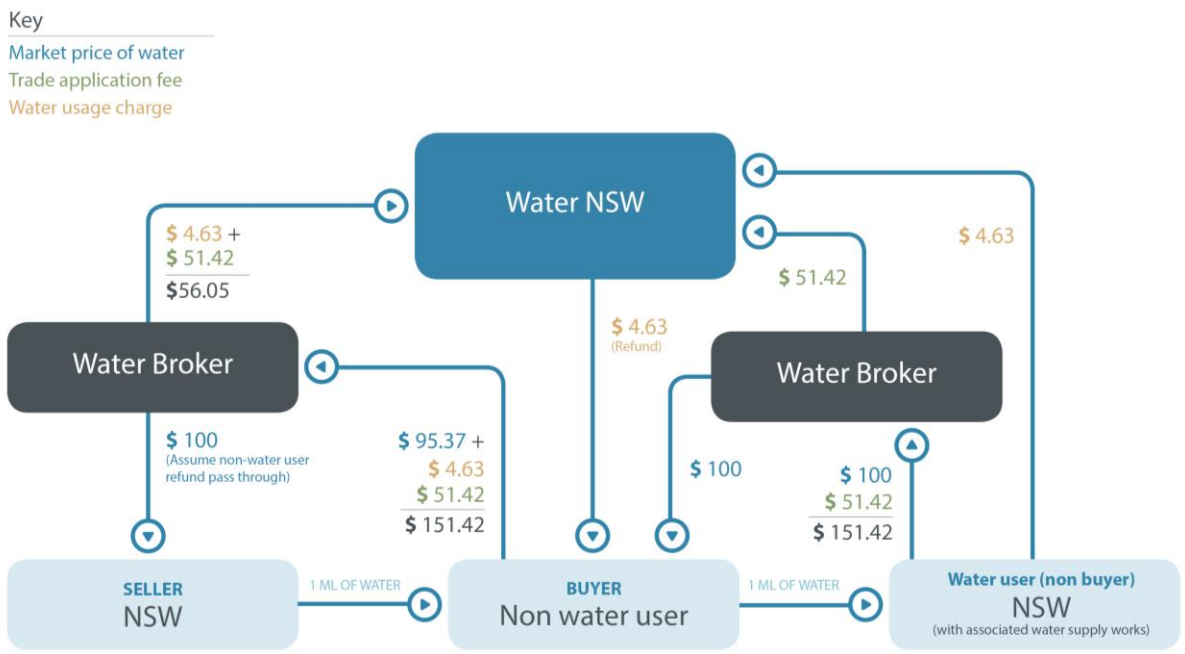
Note: Aither has assumed 2018-19 Murray usage fee of $4.63 per ML, $100 per ML allocation price, the trade of 1 ML of water allocation and has not account for broker commission.

Source: Aither 2018.

Figure 11 Application of usage charge in water allocation trade – Scenario 2

Scenario 3 – NSW WAL to non-water user to a NSW WAL with associated Works Approval

If a water allocation trade occurs between a NSW WAL to non-water user but is then on sold to a NSW WAL with associated Works Approval, the application of the variable water usage charge by WaterNSW is more complicated. Under this scenario, the water usage charge is applied twice by WaterNSW, however a refund is offered to the non-water user where they can demonstrate that the parcel of water is on-sold and will be used within NSW. As a result of this refund and unlike in Scenario 2, the original seller of the water allocation should not be forced to discount the price of the water allocation as the refund to the non-water user should be 'passed through' to the original seller through the market price of water allocation at point of trade (Figure 12).



Note: Aither has assumed 2018-19 Murray usage fee of $4.63 per ML, $100 per ML allocation price, the trade of 1 ML of water allocation and has not account for broker commission.

Source: Aither 2018.

Figure 12 Application of usage charge in water allocation trade – Scenario 3

As a result of this analysis, there is the potential for an incentive for NSW sellers to preference NSW buyers over inter-state buyers (or non-water use buyers). This is because the seller does not have to consider offering a discount to the potential buyer. This is not to say that the seller would not need to consider different market values, but they would not have to explicitly consider offering a discount to the potential buyer to account for WaterNSW's variable usage charge.

Finding 3

The tariff structure has resulted in WaterNSW applying the variable usage charge on all trades where the purchaser does not hold a NSW Works Approval. This approach was designed to manage any revenue impacts of interstate allocation trade out of NSW, but now applies to a wide-range of participants that do not hold NSW Works Approval.

The application of the variable usage charge by WaterNSW on water allocation trades that do not involve a NSW Works Approval is likely to impact on interstate allocation trades at the margin. This margin at which it may impact has been reduced since the quantum of the variable usage charge in key valleys (Murray and Murrumbidgee) has recently been reduced.

Refunds can be applied by WaterNSW if water allocations are subsequently sold back into NSW however some stakeholders considered that there was a lack of transparency regarding how refund applications are assessed. If this process is not effective, there is a risk that WaterNSW receives usage revenue twice for the same parcel of water, or that buyers without a NSW Works Approval factor in a discount to the price they are willing to pay to account for the uncertainty.

The pricing impacts of the application of the usage charge to buyers without a NSW Works Approval are unclear, however the demand forecasts are based on usage and therefore should be

a reasonable basis, so long as the usage forecasts are accurate and the refunds policy is applied appropriately.

5.5. Role of IPART in performance, accountability and transparency

Through the consultations with stakeholders, it was apparent that there was a perception that IPART was responsible for ensuring that WaterNSW and DoI (in performing the WAMC functions) were delivering to the desired levels of service. These performance considerations are likely to influence the confidence that market participants have in the market and also create a risk to IPART that stakeholder perceptions do not reflect its actual responsibilities in relation to performance monitoring and compliance.

These issues have been brought to the fore through the recent findings from the Matthews Report[10] whereby questions from stakeholders have arisen as to whether they are being delivered appropriate levels of services given the charges that they are paying. Regardless of whether IPART has jurisdiction in relation to these issues, there was a perception from stakeholders that IPART should be the regulator to hold the authorities to account, given that IPART approves the level of expenditure based on the services to be provided.

We note that while IPART has some jurisdiction over the performance of WaterNSW, it has limited oversight of DoI's performance of WAMC functions as DoI Water and NRAR do not have Operating Licences. Further to this, we note that while the price setting function for MDB valleys has been referred to IPART from the ACCC, the compliance function within the MDB valleys remains with the ACCC.

Finding 4

IPART's role in ensuring performance, accountability and transparency of information is unclear for some customers and market participants. Some stakeholders have the perception that, as IPART determines the charges for WaterNSW services and WAMC services (provided by WaterNSW, DoI and NRAR), it should be responsible for holding these agencies to account in delivering the required levels of performance.

The following sub-sections provide examples that arose through the consultations where confidence in the market could be enhanced through improvements in performance, accountability and transparency, again noting that stakeholders were generally unclear on IPART's specific role in implementing these improvements. Aither also notes that this does not represent a systematic assessment of all issues, rather a summary of those that were considered important by the limited set of stakeholders consulted for this engagement.

5.5.1. Transparency of cost information

One of the differences between the regulation of WaterNSW and WAMC functions with other IPART-regulated water utilities (e.g. Sydney Water) is that a considerable number of its customers (or their representatives) can be exposed to significant consequences from changes to water management

[10] See https://www.industry.nsw.gov.au/about/our-business/independent-review-water-management-and-compliance

plans and policy frameworks. As a result of this, some of the more sophisticated stakeholders indicated that they felt that the cost information that was provided to them from WaterNSW and through the IPART price determination process was inadequate.

For some of these stakeholders, water charges can be a significant cost and therefore there can be considerable resources dedicated to understanding the detailed expenditure and pricing considerations of WaterNSW.

This concern about transparency could lead to a loss of confidence in the institutions governing the market and uncertainty for stakeholders in understanding potential long-term trends in expenditure and pricing for WaterNSW and WAMC.

Finding 5

Some stakeholders considered that there was potential to improve the level of transparent cost information provided by WaterNSW and/or IPART in price review processes.

5.5.2. Allocation and other water availability announcements

One of the responsibilities of DoI is to publicly announce the allocations available to entitlement holders. These announcements and other water availability forecasts are important because they announce to the market the amount of water that each ML of entitlement is able to access. Market participants rely on this information to inform investment, planting and trade decisions.

Through discussions with stakeholders, there was consistent feedback that there was potential to improve the quality of information provided in allocation announcements and seasonal forecasts. Concerns about quality assurances in these processes can negatively impact on the confidence that stakeholders have in the market including with respect to confidence in trading decisions. Stakeholders had the perception that allocation announcements in Victoria had better and more predictable information and therefore enabled better decision-making for participants.

Finding 6

Stakeholders considered that in comparison to other jurisdictions (e.g., Victoria), the quality of the allocation announcements, forecasts and other market information about water availability could be improved and that this would increase confidence of market participants.

5.5.3. Zero-value trades

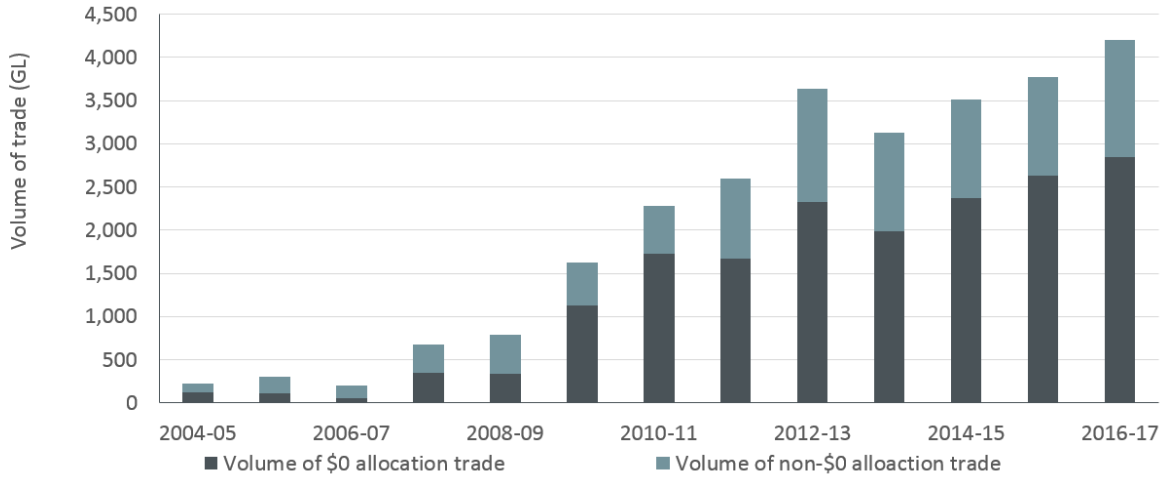
Based on current public reporting practices, it is difficult to identify different types of allocation transfers with certainty, timeliness and confidence in price reporting. For example, $0 trades can be reported by market participants and are accepted under current regulations. There are legitimate reasons for a $0 trade, such as a related party transfer, however, current government trade reporting systems cannot distinguish between these types of trade other than by the reported price.

In previous years, Aither has used trades reported at $0 per ML as a rough proxy for non-commercial trade (e.g., related party). However, we believe that some commercial trades are still being declared at $0, potentially skewing the results of using this method to determine the true commercial allocation

market size.[11] In 2016-17, the most recent completed water year, $0 allocation trades accounted for approximately 68 per cent of all reported allocation trades by volume in major southern Murray-Darling Basin zones (Figure 13). This 68 per cent is the equivalent of almost 2,850 GL of water allocations.

Since 2009-10, $0 water allocation trades have consistently accounted for between 60 and 70 per cent by volume of all allocation trades reported on state registers across major southern Murray-Darling Basin trading zones. Discussions with stakeholders highlighted that this is a significant transparency issue for the market as it can mask the true value of water in the market.

Where possible, state governments could significantly improve market information through better oversight of price reporting and improved categorisation of transfer types in real-time reporting (which has recently been implemented on the Victorian Water Register).



Source: Aither, 2017. Based on Victorian, New South Wales and South Australian water registers 2017.

Figure 13 Annual volume of $0 and non-$0 allocation trade, major surface water southern Murray-Darling Basin zones, 2004-05 to 2016-17

Finding 7

The significant proportion of $0 per ML trades in the market is impacting on the transparency of the true size of the allocation market.

5.5.4. Trade processing fees and timeframes

The trade processing charge was recently revised from a two-part tariff to a single tariff per application. This change was based on seeking to reflect the underlying cost drivers of the trade processing service (i.e., that the costs do not vary with the volume of water being traded). While there are difficulties in forecasting the level of trading activity over the regulatory period to derive a single charge per application, the setting of the charge is based on the recovery of an efficient level of revenue for this service. This process also resulted in a reduction in the charge from previous levels.

These changes in New South Wales are aligned with recent findings from the Australian Productivity Commission's inquiry into National Water Reform, specifically:

[11] Current regulations cannot force market participants to declare the truthful price for the trade.

> *"Ideally, processing of trades would be done as efficiently as possible, and trade application charges would reflect the full cost of this efficient service. If this were the case, charges across jurisdictions would be expected to vary to some extent, due to differences in the number of trades and the complexity of approval issues ….. accordingly, there would appear to be scope for some jurisdictions with high trade application charges, in particular South Australia, to move to more efficient systems and lower their charges over time" Australian Productivity Commission, 2018.*

Stakeholders in New South Wales confirmed that they considered the current trade processing fees to be appropriate (especially since recent reductions had been applied to the charge) and the timeframes to approve allocation trades to be appropriate. Stakeholders considered that the charges compared favourably with other jurisdictions. Table 6 confirms this perception by demonstrating that the processing fee in NSW is lower than other jurisdictions in the Murray-Darling Basin.

Table 6 Allocation trade processing fees across the Murray-Darling Basin

Jurisdiction	Processing Fee
NSW	$51.42 per application (regulated water)
Victoria	$85.90 per application (paper) $44 per application (online)
Queensland	$125.90 per application
South Australia	$253.00 per application

There was feedback from stakeholders that the trade processing times for permanent entitlement trades were often unacceptable, with anecdotal evidence provided of trade processing times of several months. These lengthy processes were attributed to the current complicated and duplicative statutory arrangements that require the involvement of both WaterNSW and the NSW Land Registry Services (LRS).

However, we note that while WaterNSW performs certain WAMC functions that relate to entitlement trade, the management of the NSW WAL Register has been delegated to LRS by the Minister and is not subject to IPART's regulatory framework and therefore unable to be influenced by IPART.

Finding 8

Trade processing fees and allocation processing timeframes are considered reasonable and are likely to help promote efficient trading. However, the processing timeframes for permanent entitlement trading could be improved however, this is due to complicated regulatory requirements which are not generally the subject of IPART regulation.

5.5.5. Customer engagement

A limited number of stakeholders provided anecdotal feedback regarding the customer engagement processes used by IPART during its pricing determinations for WaterNSW. These stakeholders considered that the manner of engagement, (e.g., public hearings) could be improved.

Finding 9

Whilst our consultation for this project was limited, some stakeholders considered that the level of customer engagement from WaterNSW and IPART could be improved, likely leading to more optimal decisions and a higher level of confidence.

6. Recommendations for IPART

Based on our findings of the previous chapter, we have identified a number of recommendations. These recommendations are focused on aspects that are within IPART's control to ensure that the recommendations are useful for IPART. The remainder of this section provides our justification for these recommendations.

6.1. WaterNSW tariff structure

Based on our findings in section 5.3, we recommend that IPART investigate the costs and benefits associated aligning WaterNSW's tariff structure with its underlying cost drivers. Through this process, we would expect that this would involve a consideration of the:

- fixed and variable components of WaterNSW's revenue base
- fixed and variable components of WaterNSW's cost base
- potential customer impacts from changes to the tariff structure
- materiality of the potential changes to the water markets.

Our recommendation is focused on IPART further investigating this issue as we understand that it is a key issue for many customers and any change to the tariff structure is likely to have considerable impacts for some customers. It is therefore important to ensure that appropriate analysis of the costs and benefits of such a change are considered to ensure the most efficient outcome.

If the tariff structure were to change to a more cost-reflective tariff structure, we would also recommend that IPART consider the ongoing application of the revenue volatility allowance. This is because this allowance is designed to allow WaterNSW to manage the risks associated with the current tariff structure and this is unlikely to be appropriate under a more cost-reflective tariff structure.

6.1.1. Application of variable usage charge

Depending on the outcome of Recommendation 1, IPART may need to consider the ongoing application of the variable usage charge to buyers without a NSW Works Approval:

- If the tariff structure is changed and results in a much lower variable usage charge, WaterNSW will be exposed to considerably lower revenue risk and the application of the charge to the non-NSW Works Approval trades is likely to no longer be required; however, if
- If the tariff structure remains relatively unchanged, IPART would need to determine if the charge should continue to be applied.

Where the tariff structure remains relatively unchanged, it is recommended that IPART undertake a more detailed investigation into the actual impacts from the imposition of the charge and the likely benefits of adjusting, or removing, the charge. We would suggest that this investigation be in the form of a cost-benefit analysis of the potential change.

In considering the costs and benefits of such an approach, IPART would need to, at least, consider the following factors:

- The revenue risk that WaterNSW is exposed to

- The ongoing need for the revenue volatility allowance
- The magnitude of the revenue recovered through the application of the charge to non-NSW Works Approvals and WaterNSW's overall revenue
- The size of the benefits likely to arise through the improved economic efficiency from the change in application of the charge
- The potential future growth in non-water users in the NSW water market

We note that, depending on IPART's approach to Recommendation 6.1, if there is a material change to the variable usage charge, the revenue risk issue for WaterNSW is likely to be reduced (if not removed) and this charge may not need to continue to be applied.

If the charge is to be maintained, we recommend that greater transparency is provided to market participants regarding the processes that are used, primarily in relation to refund applications. This increased transparency will provide a greater degree of confidence in the market and allow for more efficient decisions from market participants.

Recommendation 1

IPART to consider a more detailed review of whether the usage charge is being applied by WaterNSW as intended.

Recommendation 2

As part of IPART's next pricing determination for WaterNSW, IPART should consider the most appropriate way to deal with the future application of usage charges as it relates to water allocation trade. This could include:

- Tariff structure
- Reviewing the refund application process
- Reviewing the method for demand forecasting.

Recommendation 3

Where the variable usage charge is to continue to be applied where the buyer does not hold a NSW Works Approval, IPART could help ensure that further information is provided to market participants regarding the processes involved, including in relation to refunds by WaterNSW.

6.2. IPART's role in performance, accountability and transparency

We note that IPART's role in ensuring performance, accountability and transparency of information is unclear to some customers and market participants. Given this perception, it is important to investigate whether roles should be more clearly identified and whether specific performance conditions need to be incorporated within the IPART regulatory framework for WaterNSW services and WAMC services provided by WaterNSW, DoI and NRAR.

Improvements in the accountability of WaterNSW and DoI (in undertaking WAMC functions) is likely to lead to increased confidence in the market. Increased confidence in the market is likely to lead to increased market participation and thereby increasing the likelihood of more economically efficient outcomes. The issue for IPART is clarifying its role in implementing these improvements, whether it is necessary (and appropriate) to incorporate such improvements in Operating Licences, or other measures are more appropriate.

Recommendation 4

IPART should clarify and communicate its role in relation to performance accountability for WaterNSW services and WAMC services provided by WaterNSW, DoI and NRAR for market participants.

Recommendation 5

IPART should work with WaterNSW and DoI to identify opportunities to improve the accountability of performance for WaterNSW services and WAMC services provided by WaterNSW, DoI and NRAR for market participants where such opportunities are within the purview of the IPART regulatory framework. This could be considered as part of developing output measures or indicators for the next pricing determination.

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