

Submission to the Senate Rural and Regional Affairs and Transport References Committee Inquiry:

The integrity of the water market in the Murray–Darling Basin

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Summary

The integrity of Australia's water markets is important because of the significant public funding invested into their creation, development and sustainability over the last 30 years. Water markets have played a critical role in assisting Australia achieve actual water for the environment, and farmers to manage their own responses to water supply risk, and markets are expected to help farmers to continually adapt to future water supply uncertainty. Finally, any threat—perceived or real—to the integrity of the MDB water markets poses a very real risk to the success of the Murray-Darling Basin Plan.

This submission focuses on a couple of the key terms of reference raised by the inquiry into the integrity of water markets in the MDB. Our objectives are simple: to reflect on the development history of water markets in the MDB; the role water markets have played in providing greater risk management options to farmers and the environment in recent years; the risks posed to future market confidence and stability that could emerge if unlawful extraction of water persists; and the clear need in Australia for an independent water reform and market oversight organisation—with the power to enforce compliance and require restitution for any infringements on agreed rights and conditions.

Major Points:

- Clearly defined water access property rights underpin the water market. Unlawful extractions, without recourse, will undermine individual's integrity and confidence in water markets.
- There remains a need for an independent organisation to assess and report on progress against the NWI.
- Whilst the economic elements of property rights will often overlap with legal elements, they are fundamentally different frameworks. The differences between an economically acceptable property right and a legal property right can be quite profound. This creates some challenges for the protection of environmental water.
- Legal reform to support shepherding of environmental water will increase environmental water use efficiency, as well as providing benefits for the operation of water systems and supplying water to critical human needs. The events highlighted in the Four Corners program demonstrate that the current system is not providing adequate protection for instream uses of environmental water.
- The water market operates across state borders and requires a dedicated compliance and enforcement agency operating at the same scale, with the power to compel information and take legal action where there is evidence of inadequate action by state agencies.

Terms of Reference:

With regard to the original terms of reference we would like to concentrate our submission on the following:

- a. the allegations of theft and corruption in the management of water resources in the Murray-Darling Basin,
- b. the actions of member states in responding to allegations of corruption and the potential undermining of the Murray-Darling Basin Plan,
- c. the use of Commonwealth-owned environmental water for irrigation purposes, and the impact on Basin communities and the environment, and
- d. any other related matters.

Introduction

Australia’s water markets are the envy of the world. However, these water markets have taken considerable time and resources to put in place, and they require ongoing effort and resources to sustain and protect them. All water access right owners have gained wealth from the development of water markets; even if they have not participated in the market. This wealth gain has accrued as the value of water has been discovered within the market place—particularly during drought events.

Like financial markets, water markets are subject to the vagaries of public perception, political interference and transaction costs¹ that may hinder total market growth or transfers at the margin. But we would be wrong to think that water markets are exactly akin to financial markets; they are not.

Further, there is a fundamental principle on which all successful water markets are built: water ‘property’ rights that are a perpetual or open-ended share of the available resource in a given system and which are exclusive, tradable, mortgageable and enforceable, and that clearly specify the essential characteristics of the water product (Productivity Commission, 2017b). Technically, water entitlements in Australia are not property rights, but rather access rights protected by law. We will detail our thinking on this issue, and its importance, as we progress through the submission. We will also outline why the unlawful extraction allegations that triggered this inquiry (and four others to date) are so potentially detrimental to water markets in the MDB. Finally, we will provide some recommendations as to what might be done to avoid such issues in future and clarification of some continuing debates that relate to future water market integrity.

Allegations of water theft: how does this affect water market integrity?

The allegations of water theft in the Barwon-Darling catchment have been well summarised in an interim report on the matter to the New South Wales (NSW) government (Matthews, 2017). Any unlawful extraction of water constitutes either: i) the taking of someone else’s access rights, ii) a reduction in the security of a group of water access property rights, or iii) the theft of base flow water with significant social, economic, environmental and/or cultural harm. These outcomes reduce the confidence of water users (and users of the market).

¹ Transaction costs in market transfers may include non-monetary or time put into searching for available exchange partners, performing due diligence on the transfer requirements, negotiating prices, settling and/or enforcing the contract etc. They are thus any cost above and beyond the price paid. However, there are also institutional transaction costs, which are the investments in trade rules and regulations, registers, approval processes etc. which are all required to create, develop and sustain an effective and efficient market of any description.

Unlawful extraction may also: i) increase the value of the remaining water in the system, and/or ii) reduce the future value of water if the security of water access rights are seen by the market as unreliable. This is particularly the case where the owner of the affected property rights cannot seek or achieve redress to compensate them for that loss. If confidence and values are lowered, then this affects the integrity of the market with significant impacts nationally, for the states, and for private individuals as detailed below.

Significant national investment to date

Formal water markets began to emerge in Australia from the 1980s during exponential growth in water extraction and use. In response to multiple Basin-wide environmental concerns, Australia adopted sustainable water resource goals in line with much of the rest of the world. However, available water resources had been historically over allocated toward irrigated agriculture and we adopted market-based mechanisms to provide better economic outcomes and reallocate water back to the environment.

The reallocation concept behind water markets is simple: water will be shifted to whoever values it the most. If that is an almond grower, then they will buy the water. And more recently, if it is the environment then they will secure the asset, and so on. Whilst this may be a simple idea, creating and sustaining water markets is not.

There are fundamental requirements for successful and sustained markets that include: a cap on further extractions; accurate and timely data; the separation of water assets (as newly created rights) from land assets; robust arrangements to collect, assess and process trades; interstate agreements; registers and trade rules; water accounting systems; exchange platforms for buyers and sellers; investments to reduce or remove barriers to trade; and of course metering, monitoring and enforcement mechanisms to ensure accuracy and market equity. The complex nature of water means that these fundamental institutional arrangements are not straightforward—nor inexpensive—to achieve.

From the mid-1990s forward it is a conservative estimate that Australia has invested more than \$30 billion to achieve mature water markets in the MDB—and that investment towards sustainable management through the market continues (Figure 1). We have arguably reduced the total transaction costs associated with water transfers over time—particularly with regard to water allocation trades—and improved processing times consistent with CoAG requirements (Loch et al., under review). We have reduced the number of total barriers to trade and, although some persist, improved arrangements around exit fees, more streamlined trade rules, and market data (although accurate and complete price data for all trades is yet to be achieved). Access to markets has also provided irrigators with a valuable tool for addressing supply variability and risk in the Australian landscape.

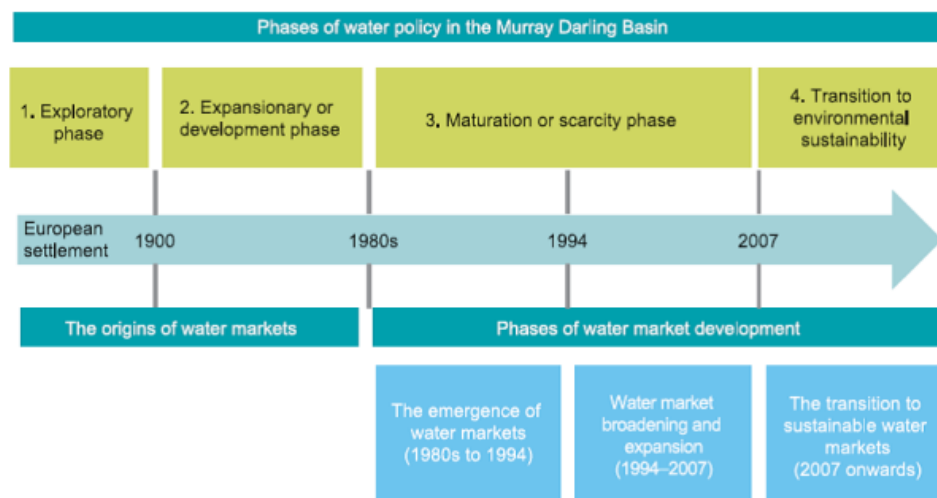


Figure 1: Transition of water markets over time in the MDB (Cummins and Watson, 2012)

However, if we allow unlawful extraction to go unchallenged, and even more importantly, unpunished it signals a weakness in our markets that goes to its heart: unenforced water access property rights. If we do not act to address this issue, with a corresponding strong message to those who rely on the water market, we threaten a waste of taxpayer’s money to date as well as significant future public spending to reclaim public and private confidence in the water market.

Reduced social welfare

Matthews (2017) points out that all water users in the MDB are concerned about the allegations of unlawful extraction, and how it impacts upon them longer-term. This makes sense when we consider the ramifications of a water market with diminished integrity.

For example, the total value of trade through the southern MDB water markets increased gross domestic product by around \$220 million in 2008-09 (NWC, 2010), and by 2016-17 this contribution was estimated at \$660 million (Aither, 2017). This is a conservative estimate, given the poor price data available and high number of zero-dollar trades still permissible and recorded in the current arrangements. During the Millennium Drought (1998-2010), it was estimated that the MDB water markets increased regional domestic product by \$4.3 billion (NWC, 2012), and despite a 70% reduction in water supply water trade, crop prices and other irrigation adaptation meant that the adjusted gross value of agricultural production only fell 20% (Kirby et al., 2014). Finally, the value of southern-MDB entitlements on issue in 2015-16 is estimated at over \$13 billion, with an annual turnover rate of 7% (Productivity Commission, 2017a). These figures highlight that the (increasing) value of water transfers between agricultural users, environmental managers, rural communities and investors as well as the expanded importance of water markets for Australia’s economic, social and environmental objectives. Any uncertainty surrounding the water market threatens to reduce these triple-bottom-line welfare gains.

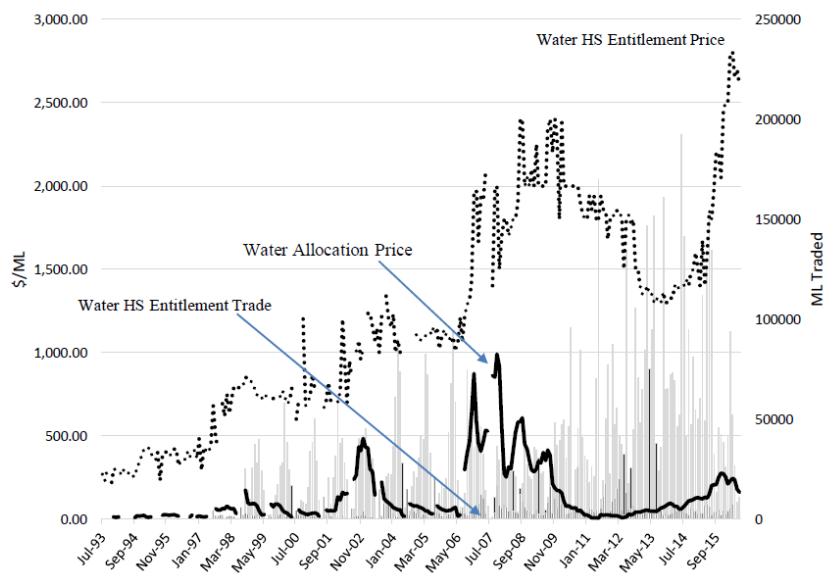


Figure 2: Growth in the volume and value of MDB water trade products (Loch et al., under review)

Further, agricultural water users have been made significantly wealthier as a result of the introduction of water markets in the MDB. This has come about through the separation of land a water assets to enable trade of water, rapid and exponential increases in the value of those water assets (particularly high security water entitlements as shown in Figure 2), and in response to the high variability and uncertainty of water supply in Australia. Agricultural users have borrowed against these increased asset values, invested in farm development, and driven corresponding regional growth. Any weakness in

market integrity jeopardises these investments, and their flow-on effects for rural communities, cultural assets, environmental objectives etc.²

The water market and improved environmental outcomes

The water market has also played a key role in reallocating resources to the environment in Australia that has provided net welfare gains throughout the Basin.

There is a long history of initiatives to improve the sustainability of water resource management in the Basin. This includes clear and agreed governmental principles valuing water for the environment (ARMCANZ, 1996); significant investments by state governments to establish water regulations and planning for sustainable water use including rules-based water for base environmental flows (NWC, 2011);³ national legislation in the form of the *Environmental Protection and Biodiversity Conservation Act* (1999) to create external powers for the Commonwealth to deal with environmental issues; and a *National Water Initiative* (2004) aimed at strengthening environmental water provisions and dealing with stressed water systems (COAG, 2004). Despite these initiatives, managers in the MDB struggled to recover/reallocate tangible volumes of water for sustainable management of Basin catchments based on recommended recovery levels (Jones et al., 2002).

Thus, from 2005 the MDB water market was used to recover (in part) water entitlements from willing sellers in both the *Living Murray Initiative* (2004-2009; ~\$1 billion funding) and (more broadly) the *National Plan for Water Security/Water for the Future* (2007-2015; ~\$13 billion funding) programs. This resulted in significant volumes of tangible water for the environment that provided far more secure, reliable and practical environmental flows than those of rules-based arrangements.

However, the Basin Plan (MDBA, 2012) is a first step in what is known as the contraction phase of water resource development in the MDB (Cummins and Watson, 2012). It is important to recognise that providing environmental water alone may not achieve positive ecological or biodiversity outcomes; but most scientists would agree that we stand no chance of reaching these national objectives if the water allocated to the environment is stripped away unlawfully.

The reason for improved reliability of supply for the environment following market-based recovery is straightforward. The MDB has the second-most variable inflows in the world (Khan, 2008). Any model, policy or investment strategy—including that of the environmental manager—that assumes supply will be ‘average’ is doomed to failure (Adamson et al., 2017). To deal with inherent water supply variability in the MDB three types of water entitlement exist with spatial and temporal characteristics defining their security: high, general/low and supplementary.

High security entitlements generally receive water supply in 95-100 years out of 100, and are typically the most expensive rights on the market. General/Low entitlements have a far less reliable nature, receiving water in around 35-50 years out of 100. These are relatively more numerous throughout the MDB, and of lower market value. Finally, supplementary rights are triggered during high river flows as a consequence of flood events. This entitlement provides irrigators with an opportunity to harvest water as the hydrologic ‘flume’ passes their property, within a regulated period announced by the Minister/Department. It was this type of event that the owners of ‘Rumleigh’ claimed they were taking

² The PC notes that any negative impacts of trade on rural communities have been assessed as modest at best.

³ In less developed systems water plans are able to cap consumptive use and specify (with some degree of success) rules for environmental flow provision to ensure future sustainability. However, in overallocated systems like the MDB rules-based systems are less successful and physical recovery of water to provide for environmental flows is required.

advantage of when their pumps were running along the river. Each of these entitlement types would be considered access property rights, as long as administratively defined and enforceable.

Other surface water in the MDB may not constitute access property rights in the traditional sense. For example, water for critical human needs (i.e. to support regional towns and rural communities, especially during drought), conveyance water to deliver irrigation and environmental rights, and rules-based environmental base flows (whilst protected in law under regulation, see Horne et al. (2017)) may not constitute property rights and, as such, are at higher risk of illegal extraction (Figure 3).

Importantly, if we allow environmental water of any form to be unlawfully extracted then we risk gains made to date toward achieving the Sustainable Diversion Limit (SDL).⁴ Reductions of base or other users' flows reduces the reliability of all water entitlements, and consequently creates detrimental—and potentially irreversible—negative impacts on all water users. Compliant water users suffer private losses; welfare losses are experienced in terms of environmental benefit reduction; townships face reduced water supplies; stock losses may occur; opportunities to adapt to scarce water supply will diminish; and (more expensive) sources of other water must be identified/provided. This is important, because the capacity for infrastructure to augment water supply in Australia has lessened dramatically in recent decades, offering few solutions to future water security—as some of the authors here outlined in a recent [submission](#) and [testimony](#) offered to the Parliamentary Inquiry into agricultural water use efficiency. Put simply, all the dams, weirs, channels, drains and pumps in the world cannot make it rain.

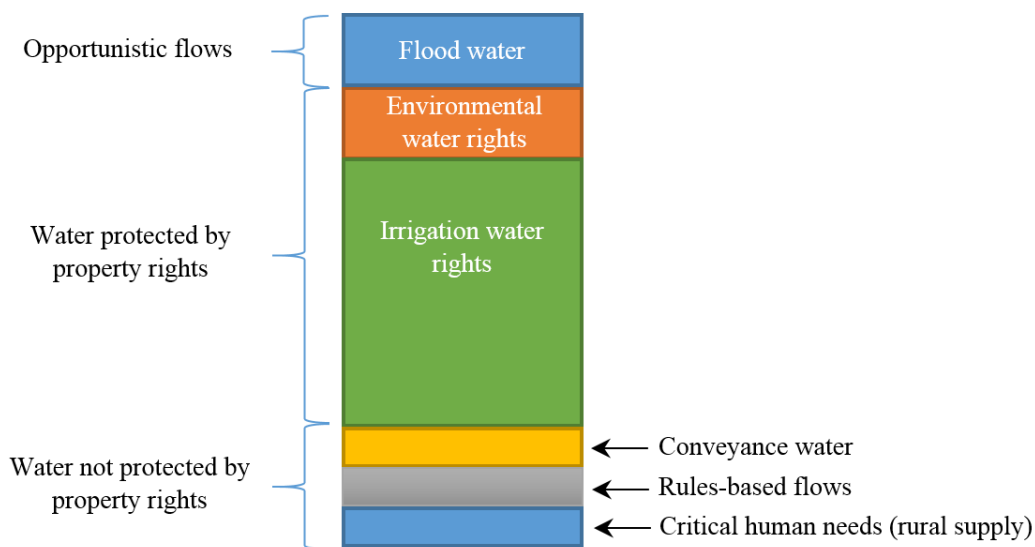


Figure 3: The water rights 'column' in the MDB

Therefore we must protect these access rights diligently and ensure compliance is carried out in a timely, transparent and effective (i.e. the punishment fits the crime) manner.

The market and environmental/national social welfare

Market-based reallocation has provided roughly ¾ of total SDL recovery to date. While additional market-based recovery is currently capped, any failure of efficiency projects to recover the required SDL volume may result in a return to market-based recovery in future (Adamson and Loch, 2017).

⁴ The portfolio of environmental entitlements in the MDB is the difference between the current diversion limits (i.e. extraction levels prior to the Basin Plan implementation), and the SDL which is the level of total extraction at which we expect to achieve long-term sustainable management of the river system as a whole. Progress toward the SDL and increased national welfare is occurring under recovery of water from irrigators in the Basin.

Thus, MDB water market integrity is important under any planned/unanticipated future intervention for environmental recovery.

In the case of this inquiry, the base issue is that water has been allegedly ‘stolen’ from the environment and used for productive gain—undermining the significant amounts of money expended on water recovery to date, and threatening national welfare gains from environmental protection. The problem of environmental water theft is not new, nor will this be the last time we experience it in the MDB. Yet “a threshold requirement is to deal with any illegal diversions affecting environmental entitlements ... arrangements are needed to be ready and clear by 2019 when the Basin Water Resource Plans are accredited and come into effect” (Matthews 2017, pg. 44).

This case has thus highlighted several important questions. How is it that the environmental manager or rural communities cannot hold another water user to account if their water is unlawfully diverted away from them? Is it the complexity of environmental water use which makes it hard to pinpoint unlawful extraction, and the costs of non-delivery? Is it that there is no single identified legal entity in NSW needed to bring action against unlawful extractors? Is the law insufficient in this regard to protect the rights of communities or environmental water holders? We address these questions below.

Legal versus administrative property rights

First, to the issue of whether the unlawful taking of water that is being used to provide environmental flows constitutes ‘theft’. This is a surprisingly difficult question to answer, and highlights a real deficiency in Australia’s statutory water frameworks. Is the ‘private property regime [in water entitlements] a fictitious instrument for managing resources, or a recognition of full beneficial ownership?’ (Fisher, 2006).

Australia’s water resource management largely depends on the NWI construction of water as legally defined assets, but the status of these assets as legal property rights remains uncertain (Fisher, 2010). The recent Productivity Commission review of water reform in Australia highlighted (among other issues) several points of key interest for our submission: the legal recognition of property rights (although no explicit mention of robust enforcement as such); mechanisms for managing uncertainty; minimised costs and delays in water trade; and that sustainable management of the environment is a critical component of water resources management (Productivity Commission, 2017b).

Whilst the economic elements of property rights will often overlap with legal elements, they are fundamentally different frameworks, and the differences between an economically-acceptable property right and a legal property right can be quite profound.

Economic property right analysis focuses on three elements: exclusivity, transferability and enforceability. Importantly, property rights are seen as the mechanism through which economically-efficient resource allocation can be achieved (Tietenberg and Lewis, 2006). Exclusivity of property reduces the capacity for market externalities (in which the consequences of one person’s actions which are felt not by the actor, but by another uninvolved person). Transferability enables shifts from low value to high value uses. Enforceability ensures that individuals will invest in their own property, to maintain its value over the long term. But economic analysis recognizes that property rights are only part of the equation: another important element is transaction costs (Coase, 1960). As a result, it is possible to trade off some of the legal elements of the property right, provided that (a) the construction remains consistent within the market framework and (b) that the state is not actively undermining the value of those pseudo-property rights by altering them without compensation. Thus, in Australia the statutory water frameworks, underpinned by ongoing investment in water registers, water trade processes and water accounting, can generate an economically-functional set of property rights in water.

The law defines property rights as the permissible power of a person over an object (which can be tangible or intangible), and is often referred to as a ‘bundle of rights’, including the right to use or enjoy

the property, the right to exclude others, and the right to sell or give it away (ALRC, 2015), where these rights are ‘vested in a clearly identifiable person or institution’ (Fisher, 2004). Fisher (2004) defines the legal characteristics of property as:

- the right can be enforced by the legal system;
- the substance of the right can be defined and identified;
- the right is exclusive to the holder of the right;
- the right is sufficiently permanent and stable to attract a sufficient degree of security; and
- the right is able to be transferred.

Private property rights are protected under Australia’s Constitution, which requires the Commonwealth Government to acquire property ‘on just terms’ (s51(xxxi)). As a result, property rights are extremely valuable, and the state would be wise to be somewhat wary in creating them. However, there are several reasons why water entitlements may not be legal property rights.

First, all state legislation vests water in the Crown in each state. Second, the states have created rights to *use* water under particular circumstances via their water legislation. In unbundled surface water systems, the status of these ‘use’ rights as legal assets which can be used to secure mortgages, as well as traded on a water market, certainly resembles property rights. However, as discussed above, other water rights are much less clearly defined and transferable, including planned environmental water, which is created by rules or limits imposed on the way that other water users can access water (Horne et al., 2017).

The creation of such rules means that water which was otherwise lawfully available to irrigators, is no longer available to them; but importantly, it does not create legal property rights that belong to the environment.

This lack of legal property rights in water means that, for example, the Commonwealth Environmental Water Holder (CEWH) has little to no recourse if the water is used unlawfully. There are two facts in support of these claims. First, the CEWH only holds water access entitlements, and does not hold planned environmental water. Second, even where the CEWH has used water available under water access entitlements to create an instream flow event, with the intent of extracting this water for use in a wetland downstream, once the water has been released from storage, it is no longer the CEWH’s water *until* they extract it for use at a particular location.

The CEWH has been working with state governments to improve legal protections for water that is being ‘shepherded’ downstream, so that it can be used to deliver multiple environmental benefits along the way (a laudable initiative which will greatly increase the efficiency of environmental water use). But without retaining property rights in the water as it moves, the CEWH remains dependent on state enforcement of compliance with water laws.

At its heart, this issue by this inquiry underscores the challenge of managing water efficiently in a system comprised of both private rights (water access entitlements) and public regulation (rules-based water). The Australian public has invested heavily in the creation of one of the world’s largest holdings of ‘private’ water access rights for the environment (held by various government environmental water holders, state government agencies and NGOs), and expects that environmental water holders will be able to enforce these rights (O’Donnell, 2012, 2013). But in many cases throughout the MDB, the legal issue is currently one of a breach of rules, rather than unlawful extraction of water, and the environmental water holders have no private recourse in these circumstances.

As outlined above, the environmental outcomes will depend on the efficient and effective use of all environmental water. Unlawful taking of planned environmental water will only increase the need for further water recovery for the environment. But most importantly, planned environmental water is often

indistinguishable from conveyance water and critical human needs water (Figure 2). Taking this water unlawfully undermines the entire system, including the integrity of the water market.

This regulatory failure is exacerbated by the complex regulatory arrangements in the MDB. The MDBA regulates water trade in the Basin under Schedule D of the Water Act (2007), but have limited (real) powers to enforce the regulations due to conflicts of interest (e.g. joint-programs for water management in the Basin, (Horne and O'Donnell, 2014)). There is also significant delay in the states' provision of accurate data to the MDBA, further limiting their capacity to monitor and report water market issues. Further, while trade rules are set and enforced by the ACCC, their capacity to monitor and assess compliance with the underlying rules defining when and where water can be taken is limited, and ultimately dependent on the states.

Therefore, we see a resolution to these challenges resting in two main approaches to reform. First, although the environmental water holders operate within water markets and water management frameworks as 'just another user' of water, they have fundamentally different needs. Legal reform to support shepherding of environmental water downstream will increase environmental water use efficiency, as well as providing benefits for the operation of water systems and supplying water to critical human needs. This reform should include a role for the environmental water holder to hold river operators or state agencies to account for protection of the environment's water instream. However, we are not arguing that it is the job of the environmental water holders to enforce compliance with water rules (this still rests with the relevant state and federal agencies), only that they need the capacity to protect their individual rights to water.

Second, there needs to be a dedicated compliance and enforcement agency with the power to compel information and take legal action where there is evidence of inadequate action by state agencies. We consider this in the section below.

Potential undermining of the Basin Plan

One of the key institutions charged with monitoring our progress toward the Basin Plan was the National Water Commission (NWC). The NWC was a statutory body created under the *National Water Commission Act* (2004) to provide independent assurance, monitoring and reporting on the progress of states and the Commonwealth toward national water reform; and in particular progressing the National Water Initiative (NWI) goals. The NWC was also responsible for allocating significant public funds aimed at improving national water standards and progressing water reform objectives—a role that may not have been best positioned within an independently oriented commission. That being said, the NWC focused all Australian governments, under the signed NWI agreement, upon cohesive national approaches to managing, pricing and trading water toward optimised social, economic and environmental outcomes. These included (among other things):

- Preparing water plans with provision for the environment
- Dealing with over-allocated and stressed water systems
- Introducing registers of water rights and water accounting standards, and
- Expanded water trading

Importantly, the NWC also had another power; the capacity to recommend that a state not receive its annual payments from the Commonwealth if they were found to be lagging or non-compliant with water reform objectives. They were free to comment publicly on these issues, and did so a number of times—although the Commonwealth ultimately never withheld payments on the basis of an NWC finding. This 'naming and shaming' earned the NWC plenty of political enemies across the national landscape; but also earned them the respect of many in the wider water sector, as well as international admiration for Australia's strong and independent water reform institutions.

The NWC was formally wound up in June 2015, with some of its responsibilities shifted into the portfolio of other Departments. The Australian Bureau of Agricultural and Resource Economics and Science (ABARES) took responsibility for monitoring and reporting on water markets—a role they have reluctantly accepted and struggled to fulfil at regular intervals in the time since.

The Productivity Commission (PC) was given the functions of triennial reporting against progress toward NWI reforms, auditing of water resource plans, and the biennial Nation Water Planning Report Card (NWC, 2015). Giving these roles to the PC made sense, as they are as close to independent as one can get in the current political climate, and they have called for submissions into water reform as part of their reporting process to date.

The need to close down the NWC was argued for on the basis that it would save \$20 million on forward estimates, and that we had broadly achieved the objectives of the NWI. Given the recent accusations and identified problems in NSW this claim seems premature at best, and political foolishness at worst. Further, if we consider the sum cost of the five independent inquiries now triggered by this incident (Matthews, 2017), the \$20 million saved by shutting the NWC down may pale in comparison—to say nothing about the fact that the NSW government also accepted nearly \$17 million to implement their Compliance and Enforcement Framework over five years to 2016 (Matthews 2017). Nevertheless, if we review the summarised NWI objectives above, we can see a number of issues that this recent accusation of water theft brings into sharp relief:

1. That the alleged theft of environmental water during low flows jeopardises the sustainability of ecosystems and our capacity to manage stressed systems sustainably,
2. That this occurred (apparently) under a belief (rightly or wrongly) that the extraction was allowed under the planning arrangements in place,
3. That it infringed upon recognised and legal water rights for the environment without any compensation or redress to date for the wronged party, which brings the value and security of those access rights into question, and
4. That while not all water is tradeable—nor should it be—these issues all signify a diminution of the basic building block on which water trade is built: i.e. strong and protected *de jure* formal legal water access property right instruments that, if challenged, should be upheld judicially and/or administratively (Wheeler et al., 2014).

The recent PC draft report into water reform states quite clearly that we still have many areas of reform that remain incomplete—but ironically included progress toward water metering, accounting and compliance systems by all jurisdictions in their summary of progress (Productivity Commission, 2017a). It is clear that the NWI did not provide adequate guidance for dealing with the presence of, and issues faced by, an environmental water manager in possession of a significant portfolio of MDB water entitlements. Further, the NWI remains very unhelpful with regard to the possible (and arguably) increasing effects of climate change on future water supply and how best to address failure by the MDB states to meet their obligations under the Plan.⁵

Independent oversight and compliance requirement

A significant gap remains in Australia's water reform arrangements in terms of a truly independent authority for water trade regulation: the MDBA remain in a difficult position to adequately regulate the MDB water market; the PC now has an oversight and reporting role but they remain largely untested/proven to date; while the ACCC has a rule-enforcing role that may be too-far removed from the action in each state.

⁵ The issue of risk-sharing by various parties (farmers, governments etc.) is addressed in the NWI, but in a very complex and not very easy to comprehend format.

Therefore, the requirement for a strong independent agency remains an important institutional gap around assessment, monitoring and reporting of progress by the states toward creating and upholding their responsibilities under the NWI agreement.

The basis for a truly independent water reform regulation and oversight body is not new, but the interim report findings (Matthews, 2017) provide an excellent example of why implementing a genuinely independent organisation makes sense. The investigations by DPI-Water in NSW have been inadequate, haphazard and largely ineffectual; highlighting the dangers of placing responsibility for resources such as water within the purview of departments also responsible for agricultural production.

Further, at the national level, we now have exactly the same set of circumstances where responsibility for water now sits within the Department of Agriculture portfolio—a recipe for future disaster in our view, of proportions similar to, if not larger than, the circumstance bought to light in the Barwon-Darling system this year. We need a truly independent body, and we need it quickly.

Theft of Commonwealth-owned water impacts on Basin Communities and the environment

We appear to have lost sight of what we set out to do in the water reform process, which (as outlined above) was to sustainably manage water for the future, plan water use with provision for the environment, and establish markets to enable other users to adapt to that change (and that of future adverse climate effects) over time.

This has been hugely successful to date: in no small part due to market arrangements i) enabling actual water to be recovered where rules-based or planned environmental water was proving to be ineffective at achieving sustainable objectives, and a shift toward longer-term environmental gains; ii) enabling agricultural water users to adapt to changing water use patterns, reduced supply (highlighted by the Millennium Drought and growth in trade during that period), and shifting water to higher values uses; and iii) recognising, pricing and increasing the value of scarce water resource assets for private users.

Very quickly – let's put one Four Corners' inference to bed

The Four Corners report touched on this last point, suggesting that a few growers in the region had benefited enormously from buying up their neighbour's water rights, to provide them with large parcels of tradeable water in the region: and there is absolutely nothing wrong with that outcome. However, the program went on to infer that this enabled those same growers to benefit from the trade of that water in any given year without limit: which is inaccurate.

As has been stated above, not all water within a system is tradable. Further, it is physically heavy and bulky, costly to store and transfer, subject to significant losses and, as we have seen, frequently non-excludable from illegal extraction as it makes its way through the system. To trade water along the Barwon-Darling river system would involve: i) the original irrigator pumping their water into a private storage (and subjecting it to leakage, evaporation losses etc.); ii) identifying a downstream party with which to trade, and establishing an agreement to do same; iii) releasing the water from their storage into the river system (where private storages are not usually setup to facilitate such releases) to deliver it to the recipient irrigator, again subject to losses along the way; and iv) the recipient irrigator pumping the water into their storage—all assuming that this was agreed to in the first place by state regulators!

The scenario outlined above speaks to the complexity and costs associated with private river-system trade, and highlights why the inference by Four Corners is misleading.

Threats to sustainable water system objectives

Returning then to our original discussion above, water markets have enabled shifts to higher-valued uses/users including the environment, and assisted greatly in recovering physical water for sustainable

management of the environment. The market has played a key role in reallocating water—willingly it must be stressed again—away from agricultural users to create an environmental holding in the MDB. This environmental asset is managed, including the trade of that resource, like any other consumptive user in the system.⁶

The rights of the environmental manager should be protected just like any other user—they are not second-class water users. If, in the scenario outlined above, a third irrigator had intercepted the water along its path and illegally extracted it for their own purposes we could reasonably expect that the aggrieved non-recipient irrigator would force their claims to the water, and seek redress administratively or legally. In this alleged instance of water theft, the environment has purportedly had its low-flow water illegally interfered with; resulting in negative environmental impact that is hard to quantify in terms of losses, due to the complexities associated with environmental watering and ecosystem responses. Nevertheless, it is arguable that they have suffered a loss, for which they should be remedied.

As pointed out by Matthews (2017), all users in the Barwon-Darling—and the MDB more widely—are concerned about this case and its implications for all water users. If we cannot rely on the system to properly monitor, enforce and compensate users subject to illegal extraction and/or losses of properly owned and applied water resource rights, then what is the point of it? There can be no sustainable management of the system, water values will plummet and with them rural community investments/regional growth, and billions of taxpayer's dollars will have been wasted. The impact on the MDB will be high; nationally, the cost will be horrendous.

Other related market integrity matters

Market power/collusion issues

Finally, the price of water in a market is determined by the quantity of water that has been allocated to the entitlement, and the overarching demand for water in the wider context. Any action by an individual to extract water that they are not legally entitled to (market power) will increase the prices paid in the market and cause inefficiencies of trade. If two or more parties engage in such activity it may be termed market collusion—arguable if it can be proved that NSW Government Departments in any way acted with irrigators to affect the outcomes claimed in this report.

Like all markets, profits can be made via water trade from illegal activity including:

- Deliberately acting in collusion to influence the supply or demand for water (ACCC, 2010)
- Being party to price or market information in advance of other users (e.g. ASIC)
- False accounting (or meter tampering in this case), and
- Bribery and/or corruption of public officials (Criminal Code Amendment [Theft, Fraud, Bribery and Related Offences] Act 2000).

All such activities are illegal in Australia, and in the absence of strict enforcement or consequences for such actions, we will continue to experience examples of criminal activities that harm Australian irrigators, agricultural industries, rural communities, the environment, and national investment outcomes.

⁶ The Productivity Commission (2017a) have argued that it is critical our society has confidence in the objectivity of the CEWO, and that the decisions made by that body are free from public and political influence. But it is also critical that the CEWO's entitlement access rights are observed and enforced, to enable it the best probability of successfully achieving ecological benefits, learning from doing, and improved future use of scarce resources in the national interest.

Environmental water impacts on agricultural water availability/market accessibility

As a final point, it may be useful to briefly discuss a persistent topic of debate in the MDB relevant to water markets and the Commonwealth Environmental Water Holder/Office (CEWH/CEWO). This is to do with comments about CEWH impacts on water trade, and the market more generally.

Claims that the CEWO will not trade water in times of scarcity overlook the protocols established around management of the environmental water assets (CEWO, 2014b). These include three actions in any given year, dependent on the priorities set by the MDBA and the prevailing conditions/future outlook: apply environmental water at priority sites; carry-over water into subsequent years; and/or the trade of entitlements/allocations as needed to strengthen the value of the total portfolio and annual environmental outcomes (CEWO, 2014a). Thus, there is nothing to stop the trade of environmental water in any given year; but it will depend on what priorities have been set, the nature and value of the portfolio over time, and the limits on negative third-party market outcome objectives as stated in the protocols.

Further, with regard to claims that the CEWO has reduced the total amount of water available in the market in any given year, this also speaks to the furphy that agricultural users are somehow worse-off because the environment has taken water away from supporting productive use in years of reduced supply. That water previously belonged to farmers, who in most seasons would have used it productively themselves, thereby reducing the total volumes of water available to other farmers in support their production objectives prior to the CEWH entering the market. Nothing has changed: except for who owns the resource. But if that water is not needed by the CEWO, there is nothing to stop the CEWH from trading water to farmers in support of their productive needs.

Conclusion

The objectives of this submission have been to highlight the considerable investment that has made in water markets, the important contribution that water markets have made to social, economic and environmental objectives for the MDB, and the tenuous conditions on which the markets exist. The issues brought to light by the Four Corners program have raised significant concerns that relate not only to the current integrity of water markets, but also their future viability. If we do not act swiftly and decisively to address these issues then we will be poorer as a nation—socially, economically and environmentally.

References

- ACCC, 2010. Water trading rules: Final advice. Australian Competition and Consumer Commission, Canberra.
- Adamson, D., Loch, A., 2017. Achieving environmental flows where buyback is constrained. Australian Journal of Agricultural and Resource Economics online, 32.
- Adamson, D., Loch, A., Schwabe, K., 2017. Adaptation responses to increasing drought frequency. Australian Journal of Agricultural and Resource Economics 61, 385-403.
- Aither, 2017. Water Markets Report: 2016-17 Review and 2017-18 Outlook. Aither Consulting, Canberra ACT.
- ALRC, 2015. Traditional Rights and Freedoms— Encroachments by Commonwealth Laws (Interim Report 127). Australian Law Reform Commission, Sydney, NSW.
- ARMCANZ, 1996. National principles for the provision of water for ecosystems, Occasional paper SWR No. 3, July. Dept. of the Environment, Sport and Territories, Canberra.

- CEWO, 2014a. Commonwealth environmental water trading framework. Commonwealth Environmental Water Office, Canberra.
- CEWO, 2014b. Protocols for managing trade of Commonwealth environmental water. Commonwealth Environmental Water Office, Canberra.
- COAG, 2004. Intergovernmental agreement on a National Water Initiative, Canberra.
- Cummins, T., Watson, A., 2012. A hundred year policy experiment: The Murray-Darling Basin in Australia, in: Quiggin, J., Mallawaarachchi, T., Chambers, S. (Eds.), *Water Policy Reform: Lessons in Sustainability from the Murray-Darling Basin*. Edward Elgar, Cheltenham, UK and Northampton, USA, pp. 9-36.
- Fisher, D.E., 2006. Water Resource Governance and the Law. *The Australasian Journal of Natural Resources Law and Policy* 11, 1.
- Fisher, D.E., 2010. Water Law, the High Court and Techniques of Judicial Reasoning. *Environmental and Planning Law Journal* 27, 85.
- Horne, A., O'Donnell, E., 2014. Decision Making Roles and Responsibility for Environmental Water in the Murray-Darling Basin. *Australian Journal of Water Resources* 18, 118-132.
- Horne, A.C., O'Donnell, E.L., Tharme, R.E., 2017. Chapter 17: Mechanisms for Allocating Environmental Water, in: Horne, A., Stewardson, M., Webb, A., Acreman, M., Richter, B. (Eds.), *Water for the Environment: From policy and science to implementation and management*. Academic Press, Cambridge, MA, pp. 361-398.
- Jones, G., Hillman, T., Kingsford, R., McMahon, T., Walker, K., Arthington, A., Whittington, J., Cartwright, S., 2002. Independent report of the expert reference panel on environmental flows and water quality requirements for the River Murray system. Cooperative Research Centre for Freshwater Ecology, Canberra, Australia.
- Khan, S., 2008. Managing climate risks in Australia: options for water policy and irrigation management. *Australian Journal of Experimental Agriculture* 48, 265-273.
- Kirby, M., Bark, R., Connor, J., Qureshi, M.E., Keyworth, S., 2014. Sustainable irrigation: How did irrigated agriculture in Australia's Murray-Darling Basin adapt in the Millennium Drought? *Agricultural Water Management* 145, 154-162.
- Loch, A., Wheeler, S., Settre, C., under review. Private transaction costs of water trade in the Murray-Darling Basin. *Ecological Economics*.
- Matthews, K., 2017. Independent investigation into NSW water management and compliance: Interim Report. NSW Government, Sydney NSW.
- MDBA, 2012. *Water Act 2007 - Basin Plan*. Murray-Darling Basin Authority, Canberra.
- NWC, 2010. Australian water markets report 2009-10. National Water Commission, Canberra.
- NWC, 2011. National water planning report card 2011. National Water Commission, Canberra.
- NWC, 2012. Impacts of water trading in the southern Murray-Darling Basin between 2006-07 and 2010-11. National Water Commission, Canberra.
- NWC, 2015. National Water Commission Annual Report 2014-15. National Water Commission, Canberra, ACT.
- O'Donnell, E., 2012. Institutional Reform in Environmental Water Management: the New Victorian Environmental Water Holder. *Journal of Water Law* 22, 73-84.
- O'Donnell, E., 2013. Australia's Environmental Water Holders: Who is Managing Our Environmental Water? *Australian Environment Review* 28, 508-513.
- Productivity Commission, 2017a. National water reform: Productivity Commission draft report. Productivity Commission, Canberra.

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Productivity Commission, 2017b. National water reform: Productivity Commission issues paper. Productivity Commission, Canberra.

Wheeler, S., Bjornlund, H., Loch, A., 2014. Water trading in Australia: Tracing its' development and impact over the past three decades, in: Easter, K.W., Huang, Q. (Eds.), Water Markets for the 21st Century: What have we learned. Springer, Dordrecht, pp. 179-202.