



FINAL REPORT      JUNE 2015

# The Impact of Infrastructure Charge Structures on Water Trade in the Murray Darling Basin

Report prepared for Australian Competition and  
Consumer Commission

**Marsden Jacob Associates**

Financial & Economic Consultants

ABN 66 663 324 657

ACN 072 233 204

Internet: <http://www.marsdenjacob.com.au>

E-mail: [economists@marsdenjacob.com.au](mailto:economists@marsdenjacob.com.au)

Melbourne office:

Postal address: Level 3, 683 Burke Road, Camberwell

Victoria 3124 AUSTRALIA

Telephone: 03 9882 1600

Facsimile: 03 9882 1300

Perth office:

Level 1, 220 St Georges Terrace, Perth

Western Australia, 6000 AUSTRALIA

Telephone: 08 9324 1785

Facsimile: 08 9322 7936

Sydney office:

Rod Carr 0418 765 393

Phillip Pickering 0434 884 220

Authors: Joel Byrnes

[jbyrnes@marsdenjacob.com.au](mailto:jbyrnes@marsdenjacob.com.au)

This report has been prepared in accordance with the scope of services described in the contract or agreement between Marsden Jacob Associates Pty Ltd ACN 072 233 204 (MJA) and the Client. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Marsden Jacob Associates accepts no responsibility for its use by other parties.

Copyright © Marsden Jacob Associates Pty Ltd 2015

## TABLE OF CONTENTS

|   | Page      |
|---|-----------|
| <b>1. Introduction .....</b>  | <b>1</b>  |
| 1.1 Terms of Reference .....  | 1         |
| 1.2 Water Charge (Infrastructure) Rules 2010.....   | 2         |
| 1.3 What is a trade distortion? .....   | 3         |
| 1.4 Our approach .....  | 3         |
| 1.5 Report structure .....  | 3         |
| <b>2. Why do charging structures differ across the MDB? .....</b>   | <b>5</b>  |
| 2.1 Charging structures differ significantly.....   | 5         |
| 2.2 Bulk water charges – how do they differ? .....  | 7         |
| 2.3 IIO charges – How do they differ? .....   | 12        |
| <b>3. Charging structure influences on trade decisions and/or water market outcomes.....</b>  | <b>15</b> |
| 3.1 Bulk water charges – Market impacts.....  | 15        |
| 3.2 IIO charges – Market impacts.....   | 18        |
| <b>4. Recommendations and conclusions .....</b>   | <b>21</b> |
| 4.1 Recommendation One: Emphasise compliance with section 3.11 of the ACCC Pricing Principles   | 21        |
| 4.2 Recommendation Two: Require accredited regulatory bodies to ensure determinations are 'trade neutral' .....                                   | 22        |
| 4.3 Recommendation Three: ACCC should continue to monitor whether differences in IIO charges are affecting water markets.....                     | 24        |
| 4.4 Conclusion - The benefits from reform will be seen in efficient market functioning and long term adjustments in land use across the MDB ..... | 25        |
| <b>5. Appendix A: Water infrastructure charge regulation in the MDB .....</b>   | <b>28</b> |
| <b>6. Appendix B: Overview of infrastructure charges in the MDB .....</b>   | <b>30</b> |
| <b>7. Appendix C: Overview of Murray-Darling Basin characteristics .....</b>  | <b>41</b> |
| <b>8. Appendix D: References.....</b>   | <b>52</b> |

## LIST OF TABLES

|  | Page      |
|--|-----------|
| <b>Table 1: Differences in bulk water and irrigation infrastructure operator charging structure regimes across Basin States.....</b> | <b>6</b>  |
| <b>Table 2: Bulk water Variable Usage Charges in NSW.....</b>  | <b>9</b>  |
| <b>Table 3: Fixed and variable bulk water charges<sup>1</sup> in NSW .....</b>   | <b>33</b> |
| <b>Table 4: Bulk water Variable Usage Charges in NSW .....</b>   | <b>34</b> |
| <b>Table 5: Key Irrigation Infrastructure Operators in MDB .....</b>   | <b>50</b> |

## LIST OF FIGURES

|   | Page       |
|---|------------|
| <b>Figure 1: Price correlations in the Southern MDB, Sept 11 to May 15 .....</b>  | <b>iii</b> |
| <b>Figure 2: Water-use decision tree for NSW irrigator under existing regime.....</b>   | <b>10</b>  |
| <b>Figure 3: Ratio of fixed to variable charges in Victorian and Qld gravity fed IIOs – 250ML entitlement, 100% or 50% delivered.....</b> | <b>13</b>  |
| <b>Figure 4: Ratio of fixed to variable charges in NSW gravity fed IIOs – 250ML entitlement, 100% or 50% delivered .....</b>              | <b>14</b>  |

|  |    |
|--|----|
| <b>Figure 5: Price correlations in the Southern MDB, Sept 11 to May 15</b> .....   | 16 |
| <b>Figure 6: Water use decision tree for NSW irrigator under trade neutral regime</b> .....  | 23 |
| Figure 7: Ratio of fixed and variable bulk water charges across Water NSW valleys – 250ML entitlement, 50% or 100% delivered.....        | 32 |
| <b>Figure 8: Ratio of fixed to variable IIO charges in NSW – 250ML entitlement, 100% or 50% delivered</b> .....                          | 36 |
| <b>Figure 9: Ratio of fixed to variable charges in Victorian gravity fed IIOs – 250ML entitlement, 100% or 50% delivered</b> .....       | 38 |
| <b>Figure 10: Pressurised IIO networks - Ratio of fixed to variable IIO charges for a 250ML entitlement, 100% or 50% delivered</b> ..... | 40 |
| Figure 11: Regulated entitlements on issue in the Southern MDB (ML).....   | 42 |
| Figure 12: Southern Murray-Darling trading zones.....  | 43 |
| Figure 13: Regulated entitlements on issue in the Northern MDB (ML).....   | 44 |
| Figure 14: Northern Murray-Darling trading zones.....  | 44 |
| Figure 15: Major bulk water storage facilities in the MDB .....  | 46 |
| Figure 16: Irrigation infrastructure operators in the MDB .....  | 48 |

# Executive summary

---

## Introduction

On 12 May 2014, Parliamentary Secretary to the Minister for the Environment, Senator Simon Birmingham, announced an independent review of the Water Act 2007 (Cth).

On 24 November 2014 the Review Report was received by the Parliamentary Secretary and it was tabled out of session on 19 December 2014.

Amongst its 23 recommendations, the panel recommended (Recommendation 11) a separate review of the:

- Water Charge (Infrastructure) Rules 2010;
- Water Charge (Termination Fees) Rules 2009; and
- Water Charge (Planning and Management Information) Rules 2010

The independent panel received around 70 submissions, addressing a wide range of issues. A number of those submissions expressed concern that the structure of water charging regimes across Basin States was, or at least had the potential to, distort water trade.

This recommendation was accepted and in response, the Parliamentary Secretary to the Minister for the Environment wrote to the Australian Competition and Consumer Commission (ACCC) requesting its advice on possible amendments to the abovementioned statutes. The ACCC is to provide its advice by the end of December 2015.

## Terms of Reference

Marsden Jacob Associates (MJA) was engaged by the ACCC to undertake research on the impact of infrastructure charge structures on water trade in the Murray-Darling Basin (MDB). In particular, we were tasked with analysing the relationship between charge structures and water trade in the MDB, including:

- Circumstances under which the structure of regulated charges may distort trade decisions or act as a barrier to trade; and
- Suggested regulatory approaches (including adjustments to existing pricing principles and guidelines supporting the WCIR) to ensure that charging practices do not have adverse impacts on trade.

The scope of the analysis was to consider:

- The extent to which there are inconsistencies between infrastructure operators within and between Basin States,
- The impact of these on people's decisions to trade, versus other options (including use, carryover or forfeiture of water).

This report details our approach to undertaking the project, our key findings and main recommendations.

## Overarching conclusions

The analysis resulted in 12 key findings that are discussed in Chapters 2 and 3 of this report. In summary, there are three overarching conclusions, as follows.

### Overarching Conclusion One: Water NSW imposed the Variable Usage Charge (VUC) at the point of sale for interstate allocation trades, which has led to two prices for water in the southern MDB

Water NSW (formerly State Water) requires the payment of the Variable Usage Charge (VUC) for all allocation assignments involving a buyer licence not linked to a NSW Works Approval<sup>1</sup>. In practice this charge is predominantly associated with inter-state allocation trades to Victoria (Vic) and South Australia (SA). According to Water NSW this charge on inter-state trades is necessary because revenue recovered by the VUC is necessary to underpin the financial sustainability of the corporation.

The imposition of the VUC on interstate trades means irrigators are no longer indifferent between trading within NSW and across state borders. Although the VUC is imposed on sellers, market convention results in the buyer paying government charges, including the Water NSW VUC, associated with water trades. This means that a Victorian or SA buyer of water sold from NSW will typically offer \$5 - \$7 less<sup>2</sup> for water purchased from a NSW seller. In contrast, buyers within NSW do not need to pay the VUC at the point of sale. Thus, the NSW seller is better off selling water within NSW, because a relatively higher price is likely to be on offer.

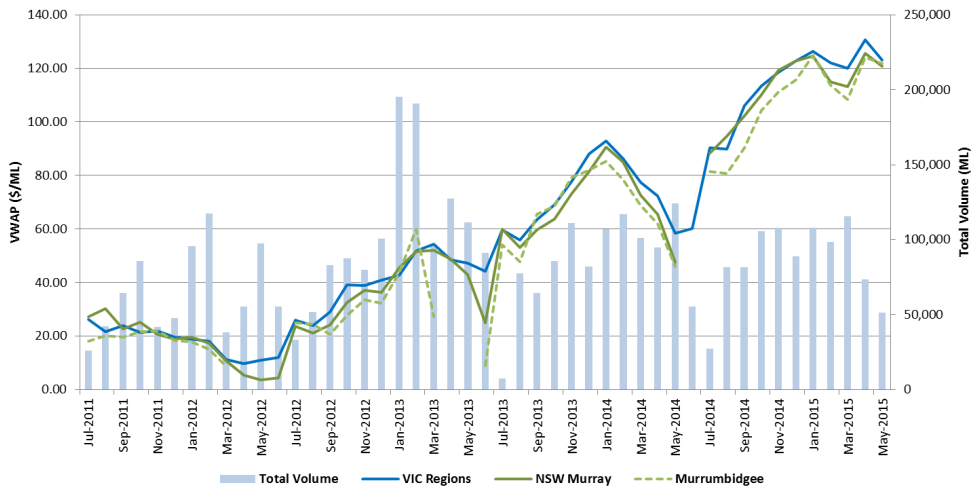
The outcome observed in water markets is that water posted for sale in Victorian and SA markets by a NSW seller is listed at a \$5 - \$7 per ML discount, because sellers know that buyers will take into account the additional charges that are due on water sold from NSW, see Figure 1.

---

<sup>1</sup> <https://www.statewater.com.au/Customer+service/water-ordering-trading-pricing/Water+Trading>, accessed 24 June 2015

<sup>2</sup> The current value of the VUC in the Murrumbidgee Valley is \$4.31 (\$/ML delivered) and \$6.88 (\$/ML delivered) in the Murray Valley.

**Figure 1: Price correlations in the Southern MDB, Sept 11 to May 15**



Source: Marsden Jacob analysis

**Chapter 3** of this report contains detailed research and analysis in support of this conclusion.

**Overarching Conclusion Two: We could find no evidence that Irrigation Infrastructure Operator (IIO) charges are distorting water markets**

Trade in entitlements appears to be unaffected by differences in charging regimes or the provisions of the WCIR. This appears to be true for both:

- water delivery charges (fixed and variable); and
- termination fees.

This outcome is somewhat surprising, because in theory we anticipated that higher charges would influence trade decisions, but it appears that there are far more significant drivers. Stakeholders interviewed for this project commented that trade in or out of IIO operated systems was more heavily influenced by:

- gifting of irrigation infrastructure assets through government funding programs,
- commodity markets, and
- geographic features and the ability to achieve scale economies.

Although existing IIO water charge structures are unlikely to be materially influencing trade decisions, there is no guarantee that this will remain the case in the medium to long term: There are material differences in the quantum of fixed and variable charges payable to IIOs to hold and have water delivered.

**Chapter 3** of this report contains the detailed research and analysis in support of this finding.



### Overarching Conclusion Three: Regulators should ensure that water infrastructure charge structures have a neutral influence on incentives to trade water

The decision by Water NSW to impose the VUC on interstate trades in 2009 has its genesis in a 2008 policy decision by the NSW Government that no more than 40% of Water NSW revenue should be recovered through fixed charges. Even though that policy decision was reversed in 2009, both the Independent Pricing and Regulatory Tribunal (IPART) (in 2010) and the ACCC (in 2014) determined that Water NSW would continue with a 40% fixed, 60% variable charging structure.

Throughout both determination processes, the impact of the VUC on interstate trade received little attention. This appears to have been in part as a result of the relevant regulations and guidance not requiring the independent regulator to do so. In our view, it would be useful for regulatory instruments to be amended to require accredited regulatory bodies to consider the extent to which proposed water infrastructure charging structures have a neutral influence on incentives to trade water, particularly across state borders.



# 1. Introduction

---

On 12 May 2014, Parliamentary Secretary to the Minister for the Environment, Senator Simon Birmingham, announced an independent review of the Water Act 2007 (Cth).

On 24 November 2014 the Review Report was received by the Parliamentary Secretary and it was tabled out of session on 19 December 2014.

Amongst its 23 recommendations, the panel recommended (Recommendation 11) a separate review of the:

- Water Charge (Infrastructure) Rules 2010;
- Water Charge (Termination Fees) Rules 2009; and
- Water Charge (Planning and Management Information) Rules 2010

The independent panel received around 70 submissions, addressing a wide range of issues. A number of those submissions expressed concern that the structure of water charging regimes across Basin States was, or at least had the potential to, distort water trade.

This recommendation was accepted and in response, the Parliamentary Secretary to the Minister for the Environment wrote to the ACCC requesting its advice on possible amendments to the abovementioned statutes. The ACCC is to provide its advice by the end of December 2015.

## 1.1 Terms of Reference

Marsden Jacob Associates (MJA) has been engaged by the ACCC to undertake research on the impact of infrastructure charge structures on water trade in the Murray-Darling Basin (MDB). In particular, we were tasked with analysing the relationship between charge structures and water trade in the MDB, including:

- circumstances under which the structure of regulated charges may distort trade decisions or act as a barrier to trade; and
- suggested regulatory approaches (including adjustments to existing pricing principles and guidelines supporting the WCIR) to ensure that charging practices do not have adverse impacts on trade.

The scope of the analysis was to consider:

- The extent to which there are inconsistencies between infrastructure operators within and between Basin States.
- The impact of these on people's decisions to trade, versus other options (including use, carryover or forfeiture of water).

This report details our approach to undertaking the project, our key findings and main recommendations.

## 1.2 Water Charge (Infrastructure) Rules 2010

The *Water Charge (Infrastructure) Rules (WCIR) 2010* provides the regulatory framework for the management of market power held by monopoly providers of bulk water and irrigation infrastructure services. The ACCC is required to monitor regulated water charges and enforce compliance with the water charge rules captured by the WCIR.

The WCIR establish a three-tiered regulatory framework based on the operator's size<sup>3</sup> and ownership.

**Tier 1<sup>4</sup>:** Under Tier 1, small member owned and non-member owned irrigation infrastructure operators are subject to light-handed regulation that increases their pricing transparency and attempts to address discrimination.

**Tier 2<sup>5</sup>:** Under Tier 2, each large member owned and medium sized non-member owned infrastructure operator is required to develop a Network Service Plan (NSP) for a five year period and consult with their customers on the NSP. This requirement improves transparency in the processes used by operators to determine their charges. Tier 2 rules apply to the following irrigation infrastructure operators:

- Central Irrigation Trust (CIT)
- Coleambally Irrigation Co-operative Limited (CICL)
- Murray Irrigation Limited (MIL)
- Murrumbidgee Irrigation Limited (MI)
- SunWater.

The NSP must provide details of the IIO's plans for service levels, estimates of capital and recurrent expenditure, details of any capital works grants and estimates of regulated charges for each financial year of the 2012–17 period. The NSPs for this period were required to be completed by 1 July 2012. The Tier 2 rules require that each NSP must be independently reviewed by a qualified engineer, with the reviewer to provide advice on the prudence and efficiency of the NSP.

**Tier 3<sup>6</sup>:** The Tier 3 rules provide for the approval or determination of regulated water charges levied by large non-member owned operators. Approvals or determinations will be undertaken in the future by either the ACCC or an accredited state regulator.

---

<sup>3</sup> The size of an infrastructure operator is established by reference to the volume of 'managed water resources' in respect of which the operator provides infrastructure services.

<sup>4</sup> Greater than 10GL.

<sup>5</sup> Greater than 125GL for member owned operators; between 125GL and 250GL for non-member owned operators.

<sup>6</sup> Greater than 250GL for non-member owned operators

Tier 3 rules address the potential misuse of market power and resulting inefficiencies of monopoly pricing, and apply to larger non-member owned infrastructure operators. These infrastructure operators will apply to the ACCC or an accredited state regulator for approval or determination of their maximum charges. Tier 3 entities include Goulburn-Murray Water, Lower Murray Water and Water NSW.

### 1.3 What is a trade distortion?

A precise definition of a ‘trade distortion’ is surprisingly difficult to find in the economic literature. Indeed, the Palgrave Economic Dictionary does not contain an entry for the term. However, in the discussion of distortions more broadly, it is noted that even in the voluminous literature on distortions to trade between countries, a neat definition has yet to emerge.

In the context of the WCIR the terms ‘trade distortion’, ‘trade distorting’, ‘market distorting’ and ‘distorting market outcomes’ appear to be used interchangeably and, again, without definition.

It seems that market participants and analysts readily accept that variations in the *level* of bulk water and IIO charges will impact on the incentives for farmers to use or trade water. For example, an irrigator facing a relatively higher variable IIO charge might be expected to trade a greater quantity of water, since the returns required from production to offset IIO charges would be relatively higher.

So long as the relatively higher IIO charge levels reflect prudent and efficient costs, then those charges are not seen as ‘distorting’ trade.

However, where a charge is imposed with no discernible benefit to the market and/or its participants, then that is seen as trade distorting. Similarly, if there is a sound reason to impose a charge, but the quantum and/or composition of that charge is arrived at from an unreasonable basis, this is also seen as distorting.

### 1.4 Our approach

The research and analysis presented in this report is based on:

- review of the literature;
- review of recent pricing determinations and stakeholder submissions;
- interviews with regulated organisations;
- interviews with economic regulators; and
- interviews with water market intermediaries (brokers and exchanges operators).

### 1.5 Report structure

The report is structured as follows:

**Chapter 1:** Provides an introduction to the report

**Chapter 2:** Outlines findings on why bulk water and IIO charges differ across the MDB

**Chapter 3:** Details analysis of the impact the differing bulk water and IIO charges have on water markets

**Chapter 4:** Outlines our conclusions and recommendations

**Appendix A:** Water Infrastructure Charge regulation in the MDB

**Appendix B:** Overview of Infrastructure Charges in the MDB

**Appendix C:** Overview of relevant Murray Darling Basin characteristics

**Appendix D:** References

## 2. Why do charging structures differ across the MDB?

---

This section considers:

- Whether there are differences in bulk and IIO charging structures.
- Why those differences exist.

In this section we first discuss charges collectively and then we separately discuss bulk and IIO charges.

### 2.1 Charging structures differ significantly

**Finding One:** Charging structures differ significantly across the bulk water and irrigation infrastructure operators (IIOs)

With the exception of South Australia (SA), all Basin States have explicit charges for both bulk water and irrigation infrastructure operator (IIO) services. However, the SA Government does charge fixed water planning and management charges, a Natural Resource Management (NRM) water levy and a Save the River Murray Levy, which is paid by SA irrigators, and recovers some of the bulk water service costs incurred by the Murray Darling Basin Authority.

For the remaining Basin states, all have rural water charging regimes that consist of combinations of bulk water, IIO charges, WPM charges and other government charges.

For those states that do have bulk water and IIO charges, the differentials emerge in:

- The approach taken in determining the level of the charges.
- The extent to which those charges can be avoided through reducing water use.
- The degree to which those charges apply to interstate trades.

Table 1 outlines the key differences.

These differences have emerged even though bulk water and IIO charges in Basin States are captured by the WCIR. This begs the question as to why and what is the impact?

**Table 1: Differences in bulk water and irrigation infrastructure operator charging structure regimes across Basin States**

|   | NSW  | SA   | Qld   | Vic  |
|---|--|--|---|--|
| <i>Bulk water charge</i>  | 40% fixed; 60% variable  | No   | Fixed & variable; ratio varies across location<br>St George – 95% fixed; 5% variable  | 100% fixed   |
| <i>Are bulk water charges applied to interstate trade?</i>          | Yes – Variable Usage Charge payable by seller on application   | No   | No  | No   |
| <i>IIO charges</i>  | Fixed & variable; ratio varies across IIO  | Fixed & variable; ratio varies across IIO  | 82% fixed; 18% variable   | Fixed & variable; ratio varies across IIO  |
| <i>Are IIO charges applied to inter &amp;/or intra state trade?</i> | Allocation trade - no<br>Entitlement trade – yes, via termination fee (fixed component of IIO charge only)   | Allocation trade - no<br>Entitlement trade – yes, via termination fee (fixed component of IIO charge only) | No  | Allocation trade - no<br>Yes – via termination fee (fixed component of IIO charge only)  |
| <i>Charge determined by independent regulator?</i>                  | bulk water (tier 3): yes, by ACCC<br>IIO (tier 2) : no<br>IIO (tier 1): no   | bulk water (tier 3): N/A<br>IIO (tier 2) : no<br>IIO (tier 1): no  | bulk water (tier 2) and IIO: yes, QCA recommendation to Minister  | bulk water (tier 3): yes, ESC<br>IIO (tier 3): yes, ESC  |
| <i>Charge determination approach</i>                                | Bulk water (tier 3): building block, Hybrid mechanism: price cap with an ‘overs/unders’ account<br>IIO (tier 2): ‘light touch’, via Network Service Plan<br>IIO (tier 1): none | Bulk water (tier 3): N/A<br>IIO (tier 2): ‘light touch’, via Network Service Plan<br>IIO (tier 1): none    | Bulk water (tier 3): N/A<br>IIO (tier 2): quasi building block for St George, via Qld and WCIR Network Service Plans<br>IIO (tier 1): N/A | Bulk water (tier 3): building block, Revenue cap with a ‘re-balancing’ mechanism<br>IIO (tier 3): building block, Revenue cap with a ‘re-balancing’ mechanism<br>IIO (tier 2): N/A<br>IIO (tier 1): none |

Source: Marsden Jacob analysis, 2015

## 2.2 Bulk water charges – how do they differ?

From Table 1 it is clear that bulk water charging regimes are very different across all four Basin States.

### Finding Two: Past policy decisions largely explain bulk water differentials

Water NSW has a much higher variable component to its charges relative to other Basin States. However, this has not always been the case. In fact, as recently as 2006, an 80%/20% fixed to variable charge structure was in place for the Murray and Murrumbidgee valleys.

In Victoria, Goulburn-Murray Water (GMW) imposed a 100% fixed Bulk Water charge in mid-2006. This change to fixed bulk water charges was made to coincide with the unbundling reforms required by the National Water Initiative. Prior to unbundling, GMW had a mix of fixed and variable bulk water charges that tended to vary by location.

IPART, the NSW economic regulator, had been on the public record arguing that it was economically efficient for institutions that incurred a high proportion of fixed costs to recover those through fixed charges. Variable costs should be recovered via variable charges, since this sends an efficient price signal about marginal water consumption. (IPART, 2008, pp. 3-5)

The costs of providing bulk water, particularly in systems that rely on gravity to move water, tend not to vary with the quantity of water supplied. Much of the infrastructure is 'lumpy' and indivisible in nature. Thus, it follows that in most cases bulk water providers would be expected to charge a relatively high fixed charge.

The first IPART determination of Water NSW bulk water charges, in 2005, largely maintained the existing water infrastructure charging structures that were in place prior to the formation of State Water in 2004. This was due to insufficient information to make wholesale changes. But it was also consistent with the views of IPART regarding efficient pricing of services provided by natural monopolies.

It was somewhat surprising then, that in its 2006 bulk water charges determination for Water NSW, IPART approved a 40%/60% fixed to variable charge structure. IPART was required to approve the high variable charge structure because the NSW Minister for Water Utilities had inserted a clause in the Operating Licence of Water NSW requiring it to "recover no more than 40% of expected revenue from fixed charges by 2009/2010" (IPART, 2009, p. 29). The clause was inserted in response to concern that some customers were paying large fixed fees, irrespective of the quantity of water actually allocated to them.

The clause has since been removed, however Water NSW has made multiple unsuccessful attempts to reverse this earlier policy decision.

The second IPART pricing determination for Water NSW maintained the 40%/60% fixed to variable charge structure, for two main reasons. First, customer feedback indicated that a change to an alternate structure floated by Water NSW in its submission (90%/10%) would result in significant hardship during a time of unprecedented drought. Second, Water NSW



expressed a preference to maintain the 40%/60% regime, however with a relatively higher rate of return to reflect the resulting variability in the cash flow of Water NSW.

In the 2014 Water NSW price determination, (the first of the Water NSW determinations to be handed down by the ACCC and the first to be determined under the WCIR provisions) the ACCC maintained the existing 40%/60% fixed to variable charging structure. Water NSW argued for a return to 80%/20%, accompanied by the removal of a handful of existing fees and charges that would no longer be required to enable Water NSW to recover costs.

The ACCC found that a shift to the proposed 80%/20% regime would result in irrigators bearing a disproportionate share of the revenue variability risk. It was determined that Water NSW was better placed to manage the revenue variability risk, given its relative size, status as a NSW Government owned corporation and relative ease in accessing credit markets.

**Finding Three:** In July 2009 Water NSW imposed the Variable Usage Charge at the point of sale for interstate allocation trades, which led to the emergence of two prices for NSW water sellers

As discussed above, Water NSW has a 40:60 fixed to variable charging structure.

Since the fixed share of Water NSW bulk water costs is obviously greater than 40%, the variable component of bulk water charges had to be set to a level that would recover variable charges and the remainder of fixed costs that were not recovered by the fixed charge.

The critical variable under this regime is forecast water usage by Water NSW customers. If dry conditions resulted in lower allocations<sup>7</sup> than forecast, this would result in relatively lower usage, and therefore relatively lower usage charge revenue.

Likewise, if greater than expected water allocation trades occurred out of NSW, there would be relatively lower water usage by Water NSW customers than forecast, again, resulting in lower than anticipated revenue collected from usage charges.

Through the 2007 and 2008 irrigation seasons, Water NSW faced a situation where the Murrumbidgee and Murray valleys became significant net exporters (through trade of water allocations) to Victoria and South Australia.

As a result, Water NSW was unable to raise the anticipated revenue from variable use charges because that water was traded interstate, not used by a customer of Water NSW. Water NSW<sup>8</sup> claimed that it was losing in excess of \$2m per year as a consequence.

To remedy the situation Water NSW made an administrative change to the way water trades are processed and approved. From July 2009, those selling water allocations to buyers that do

---

<sup>7</sup> A water allocation is defined as the specific volume of water allocated to water entitlements in a given season, given accounting period, defined according to rules established in the relevant water plan (Barma Water Resources Pty Ltd et al, 2011, p. xii)

<sup>8</sup> <https://www.statewater.com.au/About%20us/News%20and%20events/Media%20releases%202009/fairness-paramount-in-recouping-usage-fees> accessed 5 May, 2015

not hold a NSW Water Use Licence (WUL) were required to pay the Variable Usage Charge (VUC) that would have been charged had the water been used in NSW.

The VUCs for the valleys connected to the Southern MDB since July 2009 are summarised in Table 2.

**Table 2: Bulk water Variable Usage Charges in NSW**

| Variable Usage Charges (\$/ML) |                     |               |
|--------------------------------|---------------------|---------------|
|                                | <i>Murrumbidgee</i> | <i>Murray</i> |
| <b>2009/10</b>                 | 3.81                | 4.38          |
| <b>2010/11</b>                 | 3.88                | 5.16          |
| <b>2011/12</b>                 | 4.39                | 5.86          |
| <b>2012/13</b>                 | 4.47                | 5.83          |
| <b>2013/14</b>                 | 4.57                | 5.87          |
| <b>2014/15</b>                 | 4.19                | 6.68          |

*Source: Marsden Jacob analysis of ACCC data, 2015*

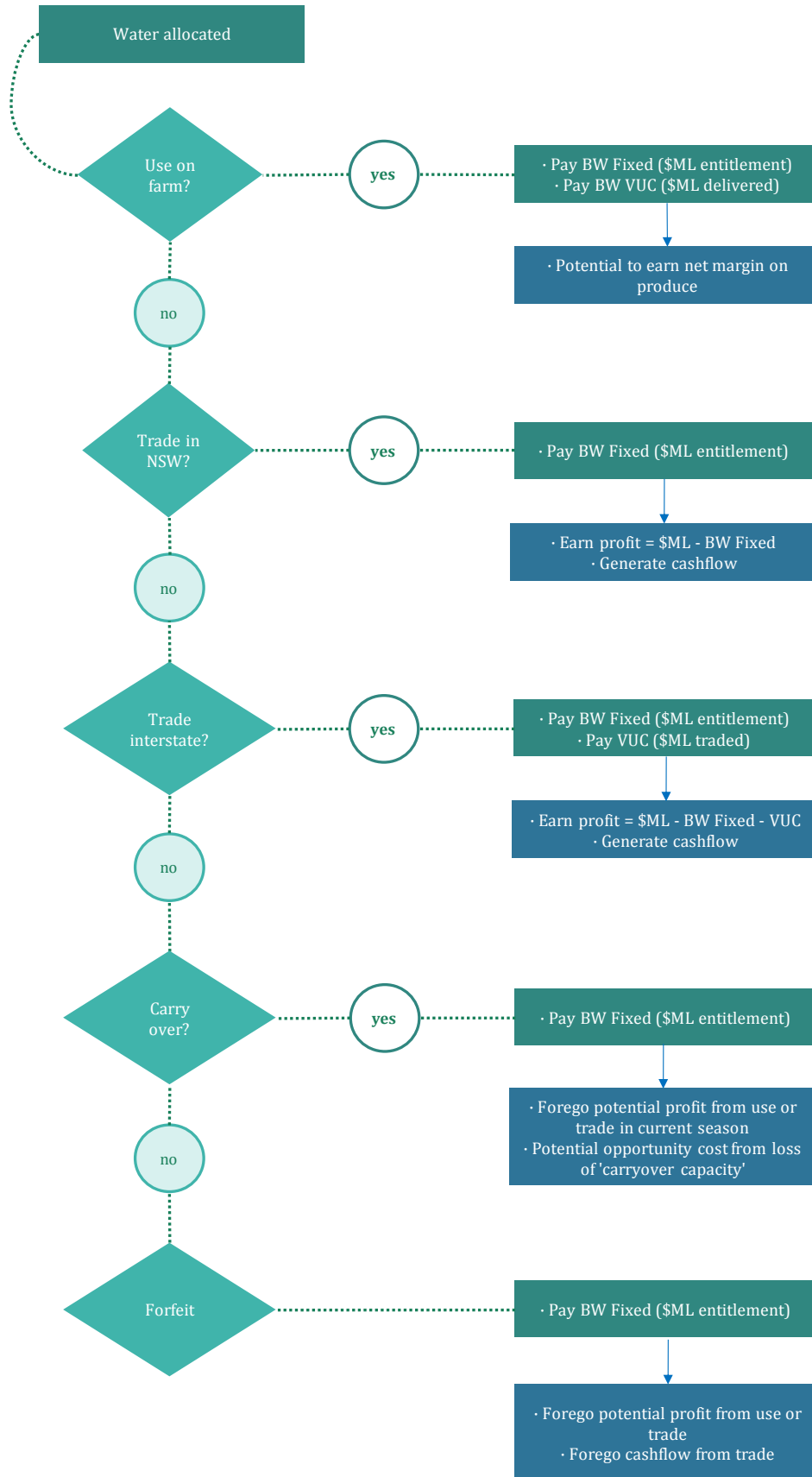
**Finding Four:** The NSW VUC on interstate trades is affecting the southern MDB water markets

When an irrigator in NSW is allocated water s/he has a number of choices regarding how to use that water. They are:

- Use on farm as an input to production
- Sell some or all of the allocation to a buyer in NSW
- Sell some or all of the allocation to a buyer in Victoria or SA
- Retain a portion of the allocation in a carry-over account
- Forfeit some or all of the allocation

Figure 2 illustrates the decision process and outlines the cost implications and potential benefits under each choice.

**Figure 2: Water-use decision tree for NSW irrigator under existing regime**



Source: Marsden Jacob analysis, 2015

GMW and the SA Government do not have the same incentive to impose variable usage charges on water that trades inter-state. This is because the fixed costs of providing bulk water services are largely recovered by fixed bulk water<sup>9</sup> charges. Those charges are payable irrespective of water allocations, water use, water trade or utilising carry-over provisions.

It follows that GMW and the SA Government do not rely on a certain minimum water usage to raise revenue from variable charges to cover fixed costs.

It is worth highlighting at this point that the 100% fixed bulk water charges in Vic (and SA to some extent) have not thus far been an issue in price determinations. In our consultations with ESC staff it was suggested that the greater certainty regarding allocations as a share of entitlements in Victoria may explain the lack of concern.

We also note that in our consultations with ACCC staff that undertook the 2014 Water NSW price determination, we were informed that the impact of the VUC on interstate trades was not raised by stakeholders at public forums or in formal submissions.

NSW allocations tend to be lower as a share of entitlements (in comparable markets i.e. NSW Murray and Murrumbidgee). Thus, it seems logical that irrigators would have concerns regarding paying fixed charges when it is relatively less likely that they will receive water to generate income to pay those fixed charges.

In Victoria, allocations are relatively more certain and over the irrigation season approach 100% of entitlements more regularly. Therefore, irrigators at least have an asset to either put into production or sell in the water market, thereby generating revenue to offset the fixed charges.

That said, while the switch to fully fixed bulk water charges was being implemented, the Victorian Government made subsidy payments to off-set fixed bulk water and IIO charges in the worst years of the drought (Goulburn Murray Water, 2006) when allocations were zero in some districts and very low by historic standards in others.

One might argue therefore, that during dry years irrigators in both NSW and Victoria did not face the full impact of fixed charges. In Victoria this was achieved by subsidising irrigator costs. In NSW, by altering the structure of water infrastructure charges to ensure that no more than 40% of infrastructure charges were fixed.

It could be argued that the NSW approach was the 'worse of two evils' because the altered price signal has been imbedded into the long term structure of charges, whereas the Victorian approach is a temporary measure that can (and was) removed when the drought broke.

It would appear that Water NSW did not intend for a price differential to emerge across the connected systems from the imposition of the VUC on interstate water trades outlined above. Rather, it was introduced as a mechanism to recover revenue that Water NSW anticipated would be raised via the use of allocations by NSW WUL holders. However, the empirical

---

<sup>9</sup> As noted on page 5 of this report, SA irrigators do not face an explicit bulk water charge. However, fixed WPM charges do apply in South Australia, that recover bulk water costs incurred by the Murray Darling Basin Authority.

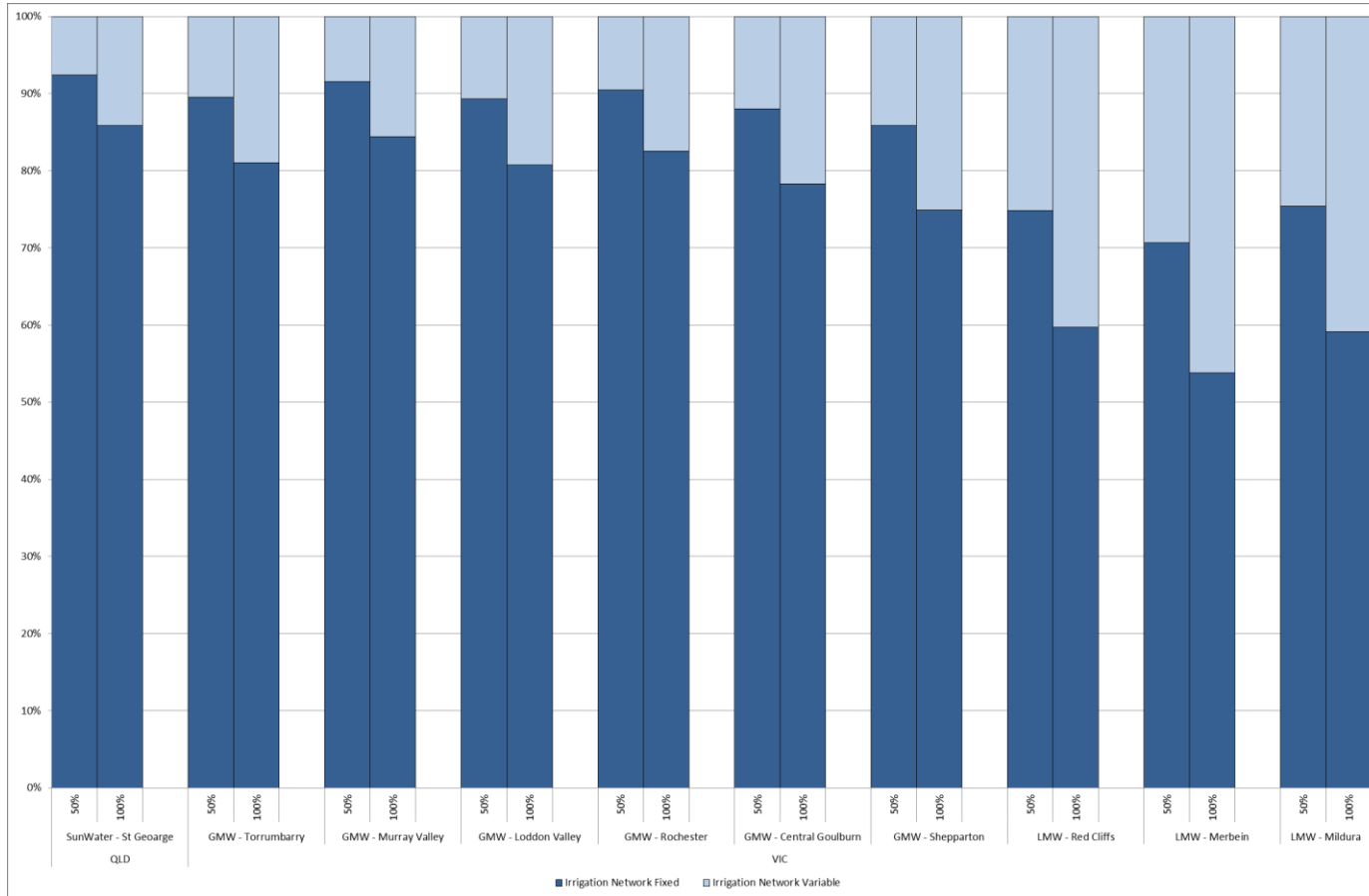
evidence is clear. The VUC has led to a situation where there are ‘two prices’ on offer for water sold by NSW sellers, entirely as a result of being located in NSW.

### 2.3 IIO charges – How do they differ?

**Finding Five: There are substantial variations in the structure and level of IIO charges across the MDB**

There are substantial variations in the structure and level of IIO charges evident across the MDB, and even within individual IIOs (see Figure 3 and Figure 4). However, those differences appear to not have a material influence on water trading decisions.

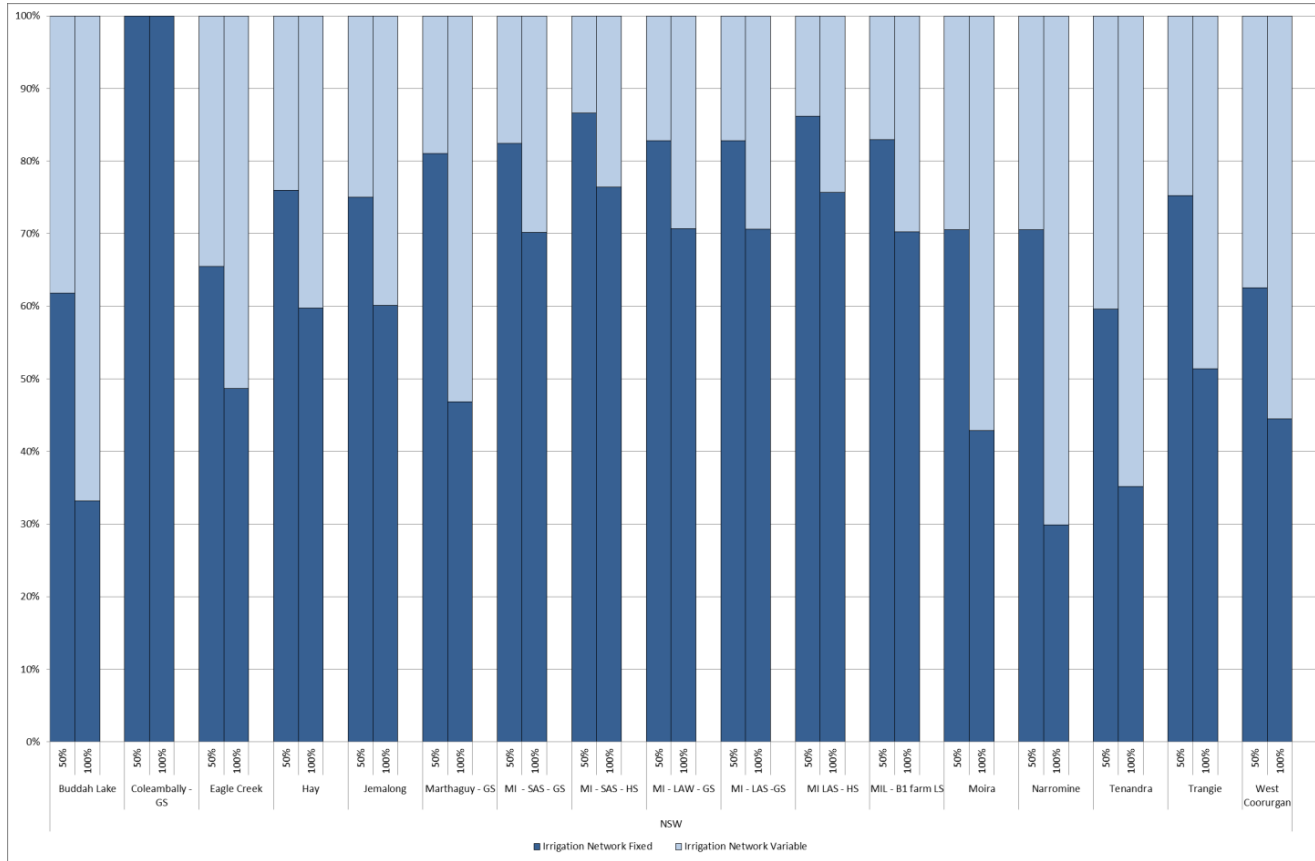
Figure 3: Ratio of fixed to variable charges in Victorian and Qld gravity fed IIOs – 250ML entitlement, 100% or 50% delivered



Source: Marsden Jacob analysis of ACCC data

GMW = Goulburn-Murray Water; LMW = Lower Murray Water

Figure 4: Ratio of fixed to variable charges in NSW gravity fed IIOs – 250ML entitlement, 100% or 50% delivered



Source: Marsden Jacob analysis of ACCC data

MI = Murrumbidgee Irrigation; MIL = Murray Irrigation Limited; HS = High Security entitlement; GS = General Security entitlement



## 3. Charging structure influences on trade decisions and/or water market outcomes

---

Given the evidence outlined in the previous chapter, that there are two prices for NSW water allocations, the key question becomes whether this situation is having a material influence on trade decisions and/or market outcomes.

### 3.1 Bulk water charges – Market impacts

**Finding six:** NSW allocation water consistently sells for \$5-\$7 less than VIC allocation water in VIC and SA water markets

Water NSW requires the payment of the (VUC) for all allocation assignments involving a buyer licence not linked to a NSW Works Approval<sup>10</sup>. In practice this charge is predominantly associated with inter-state allocation trades to Victoria (Vic) and South Australia (SA). According to Water NSW this charge on inter-state trades is necessary because revenue recovered by the VUC is necessary to underpin the financial sustainability of the corporation.

The imposition of the VUC on interstate trades means irrigators are no longer indifferent between trading within NSW and across state borders. Although the VUC is imposed on sellers, market convention results in the buyer paying government charges, including the Water NSW VUC, associated with water trades. This means that a Victorian or SA buyer of water sold from NSW will typically offer \$5 - \$7 less<sup>11</sup> for water purchased from a NSW seller. In contrast, buyers within NSW do not need to pay the VUC at the point of sale. Thus, the NSW seller is better off selling water within NSW, because a relatively higher price is likely to be on offer.

The outcome observed in water markets is that water posted for sale in Victorian and SA markets by a NSW seller is listed at a \$5 - \$7 per ML discount, because sellers know that buyers will take into account the additional charges that are due on water sold from NSW.

Figure 5 illustrates the price differential that has emerged across the Southern Murray Darling Basin (MDB).

Notwithstanding, prices have converged on a handful of occasions since the VUC was imposed by Water NSW. However, this has been during periods where water from NSW was the dominant source of supply in the market and/or there was strong demand from Victorian and SA buyers.

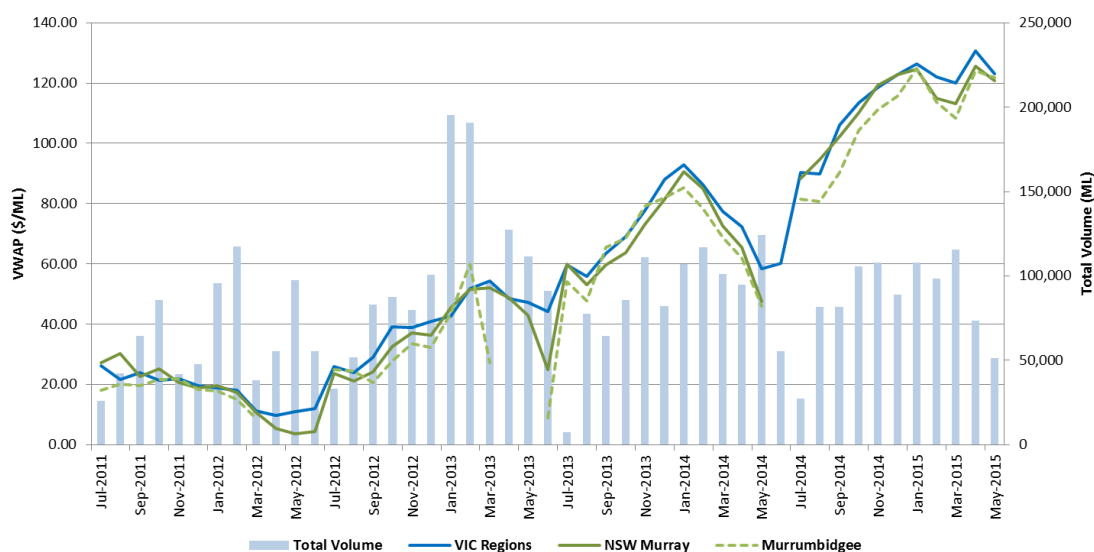
At least two water exchange operators are in the process of altering trading software to accommodate the two prices at which NSW water is listed for sale.

---

<sup>10</sup> <https://www.statewater.com.au/Customer+service/water-ordering-trading-pricing/Water+Trading>, accessed 24 June 2015

<sup>11</sup> The current value of the VUC in the Murrumbidgee Valley is \$4.31 (\$/ML delivered) and \$6.88 (\$/ML delivered) in the Murray Valley.

**Figure 5: Price correlations in the Southern MDB, Sept 11 to May 15**



Source: Marsden Jacob analysis, 2015

**Finding seven:** Stakeholders believe the market has accommodated the 'two price' market resulting from the NSW VUC

In our consultations with stakeholders, regulators and regulated entities we explicitly sought views on whether differentials in bulk water charging structures were:

- distorting trade, and if yes
- to what extent is the distortion material?

In general, only a limited set of market intermediaries held definitive views on the topic.

Some intermediaries with exposure to irrigators in the NSW Murrumbidgee and Murray valleys argued that the differential in water market prices across the Southern MDB (observed in **Figure 5**) was clear evidence that the imposition of the VUC by Water NSW was distorting trade, because water sold by SA or Vic sellers would be preferred by SA or Vic buyers, and NSW sellers would place relatively less water on the SA and Vic markets than would otherwise be the case.

Apparently this was particularly the case in the period following introduction of the VUC charge on trades, when exchanges and brokers were still getting used to this charge and as a result a number of buyers at the time were surprised to see an additional \$5-\$7 per ML charge when settling the trade.

By inference, this suggests that the relatively higher bulk water variable use charge in NSW was the root cause of market distortions.

In contrast, those with relatively more exposure to irrigators in Victoria and South Australia told us that water charges were not often cited as a barrier to trade. However, a number of brokers did mention that a lack of transparency on the imposition of the VUC had caused some buyers to withdraw from a trade at the last minute.

None of the stakeholders we spoke to expressed a strong opinion that the trade distortions were material. Some suggested that if the distortions were material, we would expect to see a noticeable decline in water trade volumes that was inconsistent with other drivers of trade.

Others pointed out that the VUC is, at the most, an additional \$7 per ML. When prices are around \$60 per ML and higher, it is unlikely that an irrigator would refuse to sell due to the VUC alone. Moreover, if irrigators are willing to pay higher prices for water obtained on the market, this is presumably because the marginal gain from use of the water will exceed the marginal cost of purchase. Since this would include the \$7 per ML, it follows that the imposition of the VUC is not having a material impact on trade decisions.

Likewise, some irrigators enter the market to re-balance water accounts at the tail end of an irrigation season to avoid paying punitive charges for consumption of water over and above that quantity allocated for the season. In some cases those fees can be as high as thousands of dollars per ML. Thus, the benefit from purchasing water from a NSW seller and paying the additional VUC costs as a result of the interstate trade would far outweigh the additional punitive costs for overuse.

Notwithstanding the above views on materiality of impact, as noted earlier, market exchange operators are altering trading platforms to accommodate the additional charge.

This points to an additional 'one-off' cost for market operators that result from the imposition of VUC at the point of sale on interstate trades.

**Finding Eight:** The evidence suggests that bulk water charging structures are a 'third order' consideration for those contemplating trade

Academic research (see for example (Lock, et al., 2011)) into water allocation and entitlement trade decisions by irrigators in the MDB suggests that there are a wide range of factors that influence trade decisions, including soil types, scale, access to markets and processors, land prices, employment and available services. Typically, the level and structure of water charging appears to be a 'third order' factor.

For intra-season trade, irrigator's trade decisions are different depending upon when in the season trade is being contemplated. For example, late in a season some irrigators may be purchasing water entirely to avoid punitive 'casual use' or 'excess use' charges, while early in the season the degree of risk an irrigator is willing to adopt plays a role in whether that irrigator is a buyer or seller of water. Of course, inflow to storages throughout the season can have a significant influence on the price of water in the market. Any distorting impact from a water usage charge can easily be dwarfed by a spike in the price of water due to lower than expected inflows.

**Finding Nine:** It is likely that NSW sellers are suffering a welfare loss as a result of the VUC

Although it seems clear that market participants do not view the 'two price' market as trade distorting, it does not necessarily follow that current arrangements:

- are not resulting in welfare losses for NSW sellers; and

- could not be improved to generate relatively more efficient outcomes.

In our view it is likely that NSW sellers of water allocations are suffering a welfare loss from the imposition of the VUC on interstate trades for two main reasons. First, the discount or 'haircut' placed on NSW sourced water by buyers in Vic and SA results in relatively less income being earned from trades than would otherwise be the case.

To illustrate, for a 100ML trade at a water price of \$50/ML from the Murrumbidgee Valley to Victoria, the VUC represents 8.4% of the total trade value, while at \$125/ML it represents 3.3%. For a trade from the NSW Murray to Victoria, the VUC represents 13.4% for a \$50/ML trade and 5.3% for a \$125/ML trade.

At current VUC charges, to recover the transaction costs of inter-state trade (that is, the VUC, Water NSW trade application fees and brokerage commission) water prices would need to be above \$47/ML in the Murrumbidgee Valley and \$49.50/ML in the Murray Valley.

Second, since there is likely to be relatively less demand from Vic and SA buyers, NSW sellers will be more likely to sell water in NSW markets. All other things held equal, this would result in a relatively lower equilibrium price being reached in NSW water markets in order to clear excess supply.

## 3.2 IIO charges – Market impacts

### Finding Ten: Variations in IIO termination fees do not appear to be distorting entitlement trade decisions

The provisions of the Water Charge (Termination Fees) Rules 2009 appear to be the key regulatory factor influencing entitlement trade decisions. Stakeholders told us that termination fees appear to be working reasonably well without causing distortions.

Other factors, such as continued gifting of irrigation infrastructure assets and subsidising fixed costs incurred by irrigators during drought, were more likely to be distorting decisions on whether to permanently trade water and/or exit the industry.

With respect to the WCIR, the main *potential* risk is that the differing extents to which IIOs achieve lower and upper bound cost recovery could result in long run investment distortions. This is because the ultimate cost of trading entitlements (that is, the cost of exiting the industry) is likely to be higher in those IIOs that are deemed 'Tier 3' under the WCIR.

The ESC also pointed to 'pressure' Lower Murray Water management felt to shift from upper to lower bound (or less) pricing because neighbouring South Australian IIOs do not operate under the same regime and their water charges are much lower. While there appears to not be a direct link to trade decisions, the sense of operating under a non-level playing field, due to the tiered structure of the WCIR, was strongly felt in Victoria.

### Finding eleven: IIO charges do not appear to be having an influence on allocation trade prices

Although there are substantial variations in the structure and level of IIO charges evident across the MDB, and even within individual IIOs, those differences appear to not have a material influence on water trading decisions.

In our consultations for this project we repeatedly pressed stakeholders in an effort to understand why IIO charges did not influence trade decisions. The most common response was one that indicated they simply were not ‘on the radar’ of irrigators.

In examining trade data, there are no clear patterns that suggest IIO charge differences are effecting market prices. Although, we are cautious in drawing definitive conclusions on the basis of water trade data since there are particular ‘silent’ zones where trade data is very patchy in coverage and reporting.

### Finding Twelve: Although existing IIO water charge structures are unlikely to be materially influencing trade decisions, there is no guarantee that this will remain the case in the medium to long term

There are material differences in the nominal value of fixed and variable charges payable to IIOs to hold and have water delivered.

A key reason that this differential in charges emerges is the capital cost recovery model that is being used by IIOs. There are two broad models in use:

**Regulatory asset base (RAB):** Under the RAB approach, when capital assets are built the asset value is included on the regulatory asset base and a return of capital (depreciation) and return on capital (opportunity cost of the investment) is charged. Under the RAB approach the current customer pays for the service that is currently provided/built. This approach is consistent with the NWI principle of upper bound pricing; or

**Renewals annuity approach:** The renewals annuity approach forecasts asset replacement and growth costs over a fixed period and converts them to an annualised charge. This approach does not directly seek to recover all of the forward capital expenditure associated with long-lived assets, or a return on that capital. Depending on the choice of parameters, the annuity approach tends to be more aligned with lower bound pricing.

Stakeholders commented that:

- while IIO charges are a disincentive to new entrants establishing operations in their schemes there are far bigger disincentives than the IIO charges. For instance, it is apparently easier and cheaper to buy and develop a large area of undeveloped or partially developed river-frontage than it is to develop a large property in an IIO scheme which for ‘legacy’ reasons may often comprise many small irrigation blocks; and
- a number of other market forces have contributed to significant changes in water consumption in IIOs across the MDB, including: state and Commonwealth government investment in water efficiency infrastructure in return for shared water savings, state and

Commonwealth government purchase of water entitlements, the emergence of new crop types that generate higher margin returns, and the decline of some crop types that previously generated high margin returns.

## 4. Recommendations and conclusions

---

There are three recommendations for change that emerge from our analysis. Each is outlined below.

### 4.1 Recommendation One: Emphasise compliance with section 3.11 of the ACCC Pricing Principles

Section 3.11 of the ACCC Pricing Principles for Price Approvals and Determinations under the Water Charge (Infrastructure) Rules 2010 outlines the principles that should be followed by accredited regulatory bodies in determining and/or approving tariff structures. In particular:

*“For example, charges must promote the economically efficient use of water infrastructure assets. In practice, this can be best achieved where the fixed and variable components of a charge recover the fixed and variable costs of providing services.” p.51*

This is economically efficient because it sends a signal to irrigators regarding the true opportunity costs of irrigating. Faced with the true costs of operating their enterprise, irrigators would be more likely to make informed decisions regarding production and long-term investment.

However, as was demonstrated by customer feedback in both the IPART (2010) and ACCC (2014) determinations, customers argued that implementing a charge structure that was consistent with Section 3.11 would result in a perverse outcome, because revenue risk would transfer from Water NSW to customers. Irrigators, it was successfully argued, are least able to manage risk due to relatively less capacity to carry losses and exposure to fluctuations in commodity markets.

Furthermore, in low allocation years, the quantity of water available to sell would be relatively lower, even though water prices would be higher. Thus, there is a risk that the revenue from selling allocated water would not cover the fixed water infrastructure costs.

As a result, after having taken into account the impact on customers from the structure of charging regimes, IPART and the ACCC each determined that a share of fixed costs incurred by Water NSW would be recovered through a variable charge.

As we have outlined in various sections of this report, the root cause of the trade distorting impact of the VUC is the reliance by Water NSW on the VUC to recover a share of fixed costs.

We are of the view that if greater emphasis is placed on Section 3.11 of the ACCC Pricing Principles, and water infrastructure charges were structured such that, to the extent practicable, fixed charges recover fixed costs and variable charges recover variable costs there would be less risk of water infrastructure charge regimes distorting trade decisions.



## 4.2 Recommendation Two: Require accredited regulatory bodies to ensure determinations are 'trade neutral'

As we have outlined in this report, the imposition of the VUC on interstate trades by Water NSW has had an impact on water markets. Whilst stakeholders have suggested that under current market conditions the impact is not material in nature, we argue that the current structure leaves the pathway open for a clearly material impact to emerge. For example, a scenario may emerge where the nominal value of the VUC increased relative to the average price of water allocations in relevant markets.

We therefore recommend that the ACCC consider a change to the Water Charge Infrastructure Rules (2010) that would require accredited regulatory bodies to assess the potential impact on incentives to trade water products from proposed bulk water and IIO charges.

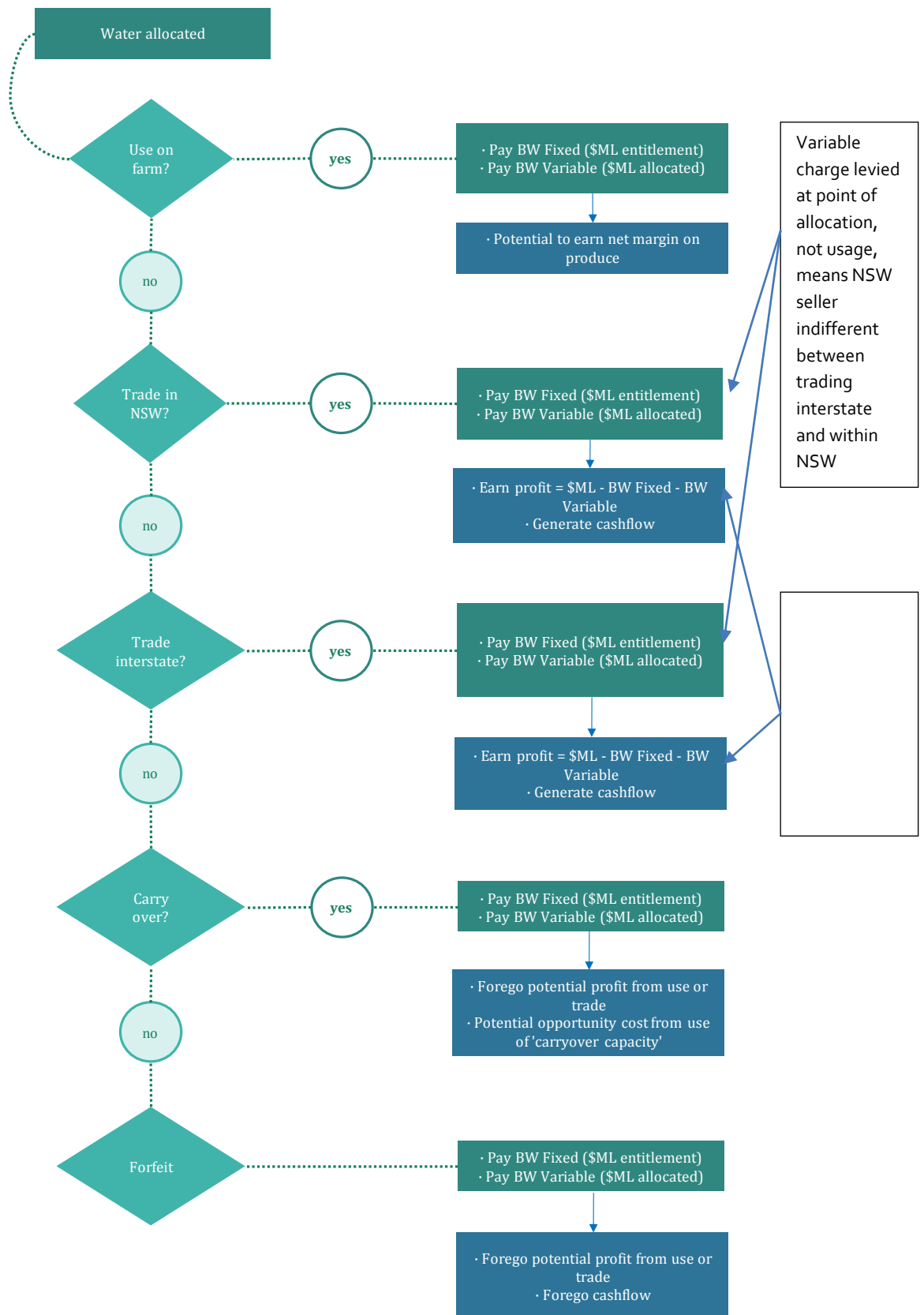
The objective of the above change would be to ensure Water Infrastructure charges have a neutral influence on incentives to trade water products.

To illustrate how such a provision might work in practice, we outline below how the existing Water NSW fixed and variable charging structure could be altered to neutralise the existing impact on water markets, while paying adequate regard to the views of Water NSW customers.

As was outlined in Section 2.2, the VUC is levied at the point of sale only for interstate trades. This results in sellers of NSW water allocations facing differing pay-offs from selling water within NSW or interstate. Rather than charging the variable component of bulk water charges on the basis of water use, Water NSW could levy the variable component according to the quantity of water allocated each season.

In our analysis illustrated below, a variable charge for variable bulk water allocation, rather than for usage, would mean that NSW water sellers would be indifferent between selling water to buyers in NSW or Victoria and SA.

**Figure 6: Water use decision tree for NSW irrigator under trade neutral regime**



Source: Marsden Jacob analysis

The scenario outlined in Figure 6 is likely to have a neutral influence on trade incentives because:

- The seller faces identical bulk water charges when selling to a buyer located in NSW or interstate. As a result, the seller does not face different welfare outcomes under either trade scenario.
- The buyer will not be required to pay an additional government charge at the point of purchase, and therefore will not face a disincentive to purchase water from a NSW seller as a result of bulk water charge structures.

In its 2010 Water NSW determination, IPART directly addressed the issue, as follows:

*In its submission, Water NSW notes that it has encountered some difficulty in recovering the usage charge where water has been traded to a buyer without an account with Water NSW. This commonly occurs where water is traded interstate on a temporary basis.*

*From 1 July 2009, Water NSW has billed the seller for usage charges where the buyer does not have an account with Water NSW. Water NSW believes that the current determination allows this to occur. For the purposes of clarity, Water NSW has requested that we amend the 2010 Determination to expressly allow Water NSW to bill the seller in these circumstances.*

*We decided to re-draft the 2010 Determination to address Water NSW's concerns. In particular, the 2010 Determination now makes it clear that usage of water includes extraction and trade of water, although noting that Water NSW is only entitled to recover the usage charge once.*

*Water NSW's method of billing and recovery of charges is not a matter which is regulated by us. Our view is that the 2010 Determination does not present a barrier to Water NSW billing in relation to this matter. However, we consider that it is a fair and reasonable proposition for Water NSW to recover the costs that it incurs from those who benefit from the sale of water which it delivers.*

*Furthermore, our view is that market distortions are created when the costs of the usage charge are not reflected in the sale price of interstate transactions. Any purchaser of water who does not pay a price which incorporates both the entitlement and usage components for water will pay a price that does not reflect the total cost to provide that water. Where this occurs a purchaser will overstate their demand, which will lead to a distortion of efficient market outcomes.*

### 4.3 Recommendation Three: ACCC should continue to monitor whether differences in IIO charges are affecting water markets

There are a number of reasons why IIO charges differ across the irrigation systems, and even within individual IIOs, across the MDB:

- **Capital recovery:** IIOs that are subject to pricing determinations (Tier 3) use the building block approach (Regulatory Asset Base) whereas Tier 1 and 2 IIOs tend to use the renewals

annuity approach. As a result the Tier 3 schemes are implementing upper bound charges and the Tier 1 and 2 IIOs have lower bound charges.

- **Fixed and variable arrangements:** All IIO have fixed and variable charging arrangements, but the proportionality varies widely across the schemes. For instance, CIT's fixed charges amount to between 40% and 50% of the total charge, whereas GMW's fixed charges exceed 80% for some systems.
- **Compliance costs:** Recent benchmarking analysis by Marsden Jacob for Lower Murray Water revealed that some government owned IIOs have a significantly greater compliance burden than private IIOs. This elevated compliance burden means that irrigators in these systems have to pay more per ML.
- **Water supply systems have different operating costs:** Water supply systems differ significantly both across and within the IIOs. Differences result from pressure (high and low pressure pipelines, gravity pipelines and gravity channels), technology (high and low technology), ordering time and service days, rostering and asset age (older assets can have higher maintenance costs).

Interestingly, despite the substantial variations in the charge levels and structures, none of the stakeholders interviewed for this project were able to identify that differences in IIO charges are affecting water markets.

Despite this, Marsden Jacob believe that the ACCC should continue to monitor whether IIO charges are affecting water markets and should also review whether the current three tier framework is delivering economically efficient outcomes for water users. For instance, long-term seasonally corrected water usage across the IIOs should be monitored to check that differences in capital recovery frameworks, compliance requirements and fixed to variable charge splits are not resulting in perverse incentives, whereby irrigators are being encouraged to trade out of higher cost IIOs (that don't offer a differentiating benefit for the higher cost) to the benefit of the benefit of the lower cost IIOs.

#### 4.4 Conclusion - The benefits from reform will be seen in efficient market functioning and long term adjustments in land use across the MDB

With water allocation prices currently above \$150 per ML across much of the Southern MDB, the Water NSW VUC is not having a material impact on trade decisions at present. And even when water allocation prices are low, it appears that trade patterns were mainly influenced by relatively high allocations rather than the imposition of the VUC. Furthermore, the foregone gains from trade suffered by NSW irrigators are likely to have been modest, due to the relatively low price of water on offer at the time.

However, the use of variable charges to recover fixed costs will be a constant 'thorn in the side' of Water NSW and those responsible for the regulation of Water NSW. This issue will gain elevated importance in high allocation and rainfall years when allocation prices can fall to

below \$30-40 per ML. When allocation prices fall to this level, brokers report that the VUC has a more significant influence on inter-state trading decisions.

It is highly likely that during any reasonably dry periods the NSW Murray and Murrumbidgee valleys will once again become net exporting regions in terms of water allocations. This is because the majority of crops in NSW are annual, while the crops in Victoria (below the Barmah Choke) and South Australia are perennial. At least some NSW irrigators will gain more from selling water interstate due to elevated prices.

Although the impact of VUCs being levied on interstate sellers is not material at present, Water NSW may find it necessary to amend charging or trading arrangements further at some point in the future to recover revenue to offset fixed costs. Allowing a framework to continue where VUCs are used to recover a share of fixed costs is in effect leaving the door open for trade distortions to eventuate.

It seems a better policy outcome to reset charging regimes such that fixed charges recover fixed costs and variable charges recover variable costs, and to implement the reform reasonably quickly before the current arrangement is accepted as 'the way it has always been'. Or, at the very least revisiting how the VUC is incurred to address the trade distortion (as discussed above).

In its 2010 regulatory submission, Water NSW recognised how difficult a task it would be to wind back to consequences of the Ministerial directive to recover no more than 40% of revenue from fixed charges.

It proposed two alternative tariff structure proposals in an effort to correct the situation:

- Retain the 40/60 structure, complemented by a relatively higher (7.9%) rate of return to compensate for the revenue volatility faced by Water NSW, and an 'unders/overs' account to correct for significant volatility over the life of the determination.
- Switch to a 90/10 structure with a relatively lower (6.5%) rate of return.

Water NSW noted that customer feedback in preparation of the regulatory submission was generally against a movement back to higher fixed charges. As a result, Water NSW's preference was the 'enhanced' 40/60 (fixed/variable) structure.

It is not surprising that customers have a preference for lower fixed charges, particularly when allocations are low relative to entitlements. Under such circumstances, irrigators are likely to be facing other operational difficulties relating to dry conditions, and it is understandable that decision makers see a reduction in the 'cost of water' as a legitimate policy response.

However, water charges largely recover the costs of enabling infrastructure, rather than water itself. And since those costs remain even during periods of low allocations, it is economically efficient for irrigators to face those costs even during dry periods. To do otherwise distorts long-run investment decisions because the true costs of undertaking irrigated agriculture under a range of climatic conditions are not communicated to irrigators through cost reflective water charges.

Not recovering fixed costs through fixed charges dilutes signals to irrigators regarding the true costs of operating agricultural enterprises in the NSW Murray and Murrumbidgee valleys.

## 5. Appendix A: Water infrastructure charge regulation in the MDB

---

This section of the report outlines the regulatory framework for Water Infrastructure Charges in the MDB.

### Why they are regulated

The ACCC argues that the primary reason to regulate water infrastructure charges is to prevent the misuse of market power by providers of water infrastructure. The characteristics of rural water infrastructure mean that it is almost always uneconomic and unfeasible for those services to be provided from duplicated infrastructure. In such a situation a 'natural' monopoly is created, resulting in the potential for inefficient charging structures to be imposed by the monopoly provider. The economic outcome would be charges set at a higher than efficient price (i.e. above marginal cost), resulting in a 'deadweight' loss.

Of particular relevance to water infrastructure is the risk that monopoly service providers will manipulate water delivery and use rules to prevent uses of water by customers that would harm the financial position of the service provider.

### How they are regulated

Under the *Water Act 2007*, the ACCC monitors and enforces compliance with the following Rules:

- Water Charge (Termination Fees) Rules 2009;
- Water Charge (Infrastructure) Rules 2010;
- Water Charge (Planning and Management Information) Rules 2010 and
- the Water Market Rules 2009.

The *Water Charge (Infrastructure) Rules (WCIR) 2010* provides the regulatory framework for the management of market power held by monopoly providers of bulk water and irrigation infrastructure services. The ACCC is required to monitor regulated water charges and enforce compliance with the water charge rules captured by the WCIR.

The WCIR establishes a three-tiered regulatory framework, which operates as follows:

**Tier 1:** Under Tier 1, small member owned and non-member owned irrigation infrastructure operators are subject to 'light handed' regulation that increases their pricing transparency and addresses discrimination.

**Tier 2:** Under Tier 2, each large member owned and medium sized non-member owned infrastructure operator is required to develop a NSP for a five year period and consult with

their customers on the NSP. This requirement improves transparency in the processes used by operators to determine their charges. Tier 2 rules apply to the following irrigation infrastructure operators:

- Central Irrigation Trust (CIT)
- Coleambally Irrigation Co-operative Limited (CICL)
- Murray Irrigation Limited (MIL)
- Murrumbidgee Irrigation Limited (MI)
- SunWater.

The NSP must provide details of the IIO's plans for service levels, estimates of capital and recurrent expenditure, details of any capital works grants and estimates of regulated charges for each financial year of the 2012–17 period. The NSPs for this period were required to be completed by 1 July 2012.

The Tier 2 rules require that each NSP must be independently reviewed by a qualified engineer, with the reviewer to provide advice on the prudence and efficiency of the NSP.

**Tier 3:** The Tier 3 rules provide for the approval or determination of regulated water charges levied by large non-member owned operators. Approvals or determinations will be undertaken in the future by either the ACCC or an accredited state regulator.

Tier 3 rules address the potential misuse of market power and resulting inefficiencies of monopoly pricing, and apply to larger non-member owned infrastructure operators. These infrastructure operators will apply to the ACCC or an accredited state regulator for approval or determination of their maximum charges. Tier 3 entities include Goulburn-Murray Water, Lower Murray Water and State Water.



## 6. Appendix B: Overview of infrastructure charges in the MDB

---

### Infrastructure charges that are analysed in this study

The WCIR relate to fees and charges payable to an infrastructure operator for:

- Bulk water services;
- Access and delivery via an IIO water supply network; and
- Matters specified in regulations made for the purposes of s.91 (1)(d) of the Water Act 2007.

Each is discussed in further detail below.

#### Bulk water charges

A bulk water charge is for the storage of water for, and the delivery of water to:

- Infrastructure operators
- Other operators of reticulated water systems
- Other persons (including private diverters and environmental water holders).

Bulk water charges are generally levied to recover the costs of three broad functions<sup>12</sup>:

- Water harvesting
- Water storage
- Water transportation/delivery.

As outlined below, bulk water charges across the MDB have either one or two components. In NSW they consist of two components: one attached to the entitlement held (known as a 'fixed' charge) and the other attached to the quantity of water delivered in a season (known as a 'variable usage' charge).

In Victoria bulk water charges do not have a variable component. In South Australia there are no bulk water charges, which is largely explained by the lack of large headworks in that State. However, there is a water planning and management charge, Natural Resource Management (NRM) Water Levy, which is applied against the quantity of Irrigation Rights held. As a result the NRM Water Levy is akin to a fixed charge.

---

<sup>12</sup> (ACCC, 2010, p. 8)

## IIO charges

Irrigation network charges are levied by an IIO in relation to their irrigation network.

IIO charges are generally levied to recover the costs of providing the following services to customers<sup>13</sup>:

- To make available capacity for the delivery of water for use in irrigation.
- To make available capacity for the drainage of water previously used in irrigation.

Almost all IIOs across the MDB levy 'two part' IIO charges, consisting of a fixed and variable component. The ratio of fixed to variable charges differs widely across the MDB.

## Bulk water charges

Bulk water charge structures vary across the MDB. In this section we provide an overview of the charge structures in each MDB state.

### NSW – Water NSW

The bulk water charge structure in NSW consists of a fixed and variable component. The fixed charge is calculated against the ML of water entitlement held. The variable charge is calculated against the ML of water delivered each year.

While the bulk water charge structure is consistent across the State, Water NSW applies different fixed and variable charges across the seven valleys that make up the Water NSW network.

In 2006 IPART approved a charge structure for the Water NSW network that meant 40% of expected revenue was raised through fixed charges and 60% of revenue was raised through variable charges.

IPART was required to approve the high variable charge structure because the NSW Minister for Water Utilities had inserted a clause in the Operating Licence of Water NSW requiring it to "recover no more than 40% of expected revenue from fixed charges by 2009/2010" (IPART, 2009, p. 29).

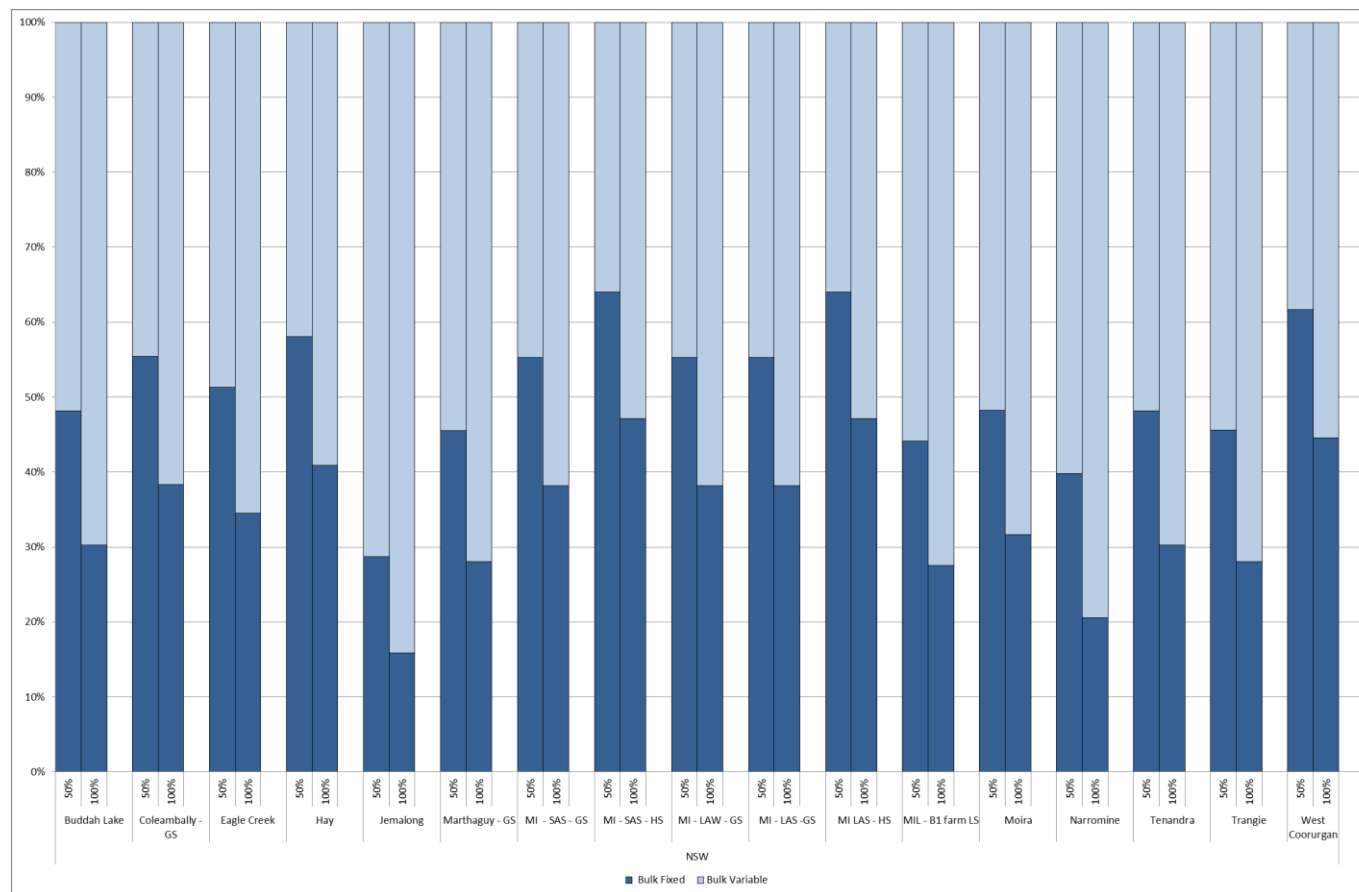
The clause was inserted in response to concern that some customers were paying large fixed fees, irrespective of the quantity of water allocated to them.

In practice, the ratio of fixed to variable charges is not consistently 40/60 for each Valley across NSW, as illustrated in Figure 7 below.

---

<sup>13</sup> *ibid*

**Figure 7: Ratio of fixed and variable bulk water charges across Water NSW valleys – 250ML entitlement, 50% or 100% delivered**



Source: Marsden Jacob analysis of ACCC data

MI = Murrumbidgee Irrigation; MIL = Murray Irrigation Limited; HS = High Security entitlement; GS = General Security entitlement

The ratio of fixed to variable bulk water charges in West Corrugan may differ slightly to that illustrated above. This is due to the unique mechanism used by West Corrugan to recover transportation water costs. See (ACCC, 2015, p. 27)

In addition to charges levied by Water NSW, the NSW Office of Water imposes a fixed and variable charge to recover water planning and management expenses. Although not governed by the WCIR, it is useful to note them here as these charges are largely unavoidable and can have an influence on incentives to trade.

Although the share of Water NSW revenue raised through fixed charges is fixed at 40%, the value of the charges faced by irrigators vary significantly across NSW. This is demonstrated in Table 3 below.

**Table 3: Fixed and variable bulk water charges<sup>1</sup> in NSW**

| Location            | High Security Entitlement (\$/ML) | General Security Entitlement (\$/ML) | Variable Usage Charge (\$/ML delivered) |
|---------------------|-----------------------------------|--------------------------------------|---|
| <b>Border</b>       | 9.55                              | 3.22                                 | 9.35                                    |
| <b>Gwydir</b>       | 13.18                             | 3.24                                 | 11.80                                   |
| <b>Namoi</b>        | 16.04                             | 7.46                                 | 19.37                                   |
| <b>Peel Valley</b>  | 27.58                             | 3.03                                 | 45.56                                   |
| <b>Lachlan</b>      | 12.47                             | 3.09                                 | 17.89                                   |
| <b>Macquarie</b>    | 12.19                             | 3.31                                 | 13.99                                   |
| <b>Murray</b>       | 4.52                              | 2.56                                 | 6.68                                    |
| <b>Murrumbidgee</b> | 3.46                              | 1.50                                 | 4.19                                    |
| <b>Lowbidgee</b>    | -                                 | 0.71                                 | 0.00                                    |

Source: ACCC data

1. Includes both Water NSW and NSW Office of Water WMP charges
2. \$ Real 2013-14

Through the 2007 and 2008 irrigation seasons, Water NSW faced a situation where the Murrumbidgee and Murray valleys became significant exporters (through trade of water allocations) to Victoria and South Australia.

As a result, Water NSW was unable to raise variable use charge revenue from water that was traded interstate. Water NSW claimed that it was losing in excess of \$2m per year as a consequence.

To remedy the situation Water NSW made an administrative change to the way water trades are processed and approved. From July 2009, those selling water allocations to buyers that do not hold a NSW Water Use Licence (WUL) were required to pay the Variable Usage Charge (VUC) that would have been charged had the water been used in NSW.

The VUCs for the valleys connected to the Southern MDB since July 2009 have been:

**Table 4: Bulk water Variable Usage Charges in NSW**

| Variable Usage Charges (\$/ML) |                     |               |
|--------------------------------|---------------------|---------------|
|                                | <i>Murrumbidgee</i> | <i>Murray</i> |
| <b>2009/10</b>                 | 3.81                | 4.38          |
| <b>2010/11</b>                 | 3.88                | 5.16          |
| <b>2011/12</b>                 | 4.39                | 5.86          |
| <b>2012/13</b>                 | 4.47                | 5.83          |
| <b>2013/14</b>                 | 4.57                | 5.87          |
| <b>2014/15</b>                 | 4.19                | 6.68          |

Source: Marsden Jacob analysis of ACCC data

1. \$ Real 2013-14

### 6.1.2 Victoria - GMW

In Victoria there are no variable components to bulk water charge structures. GMW impose a bulk water charge that is a multiple of the water share (the equivalent of an entitlement in Victoria) held by a customer.

GMW bulk water charge levels are very consistent across Victoria. The main differences are to be found in piped irrigation networks, where BW charges are marginally higher than those imposed in gravity fed networks.

GMW imposed a 100% fixed BW charge in mid-2006. This change to fixed BW charges was made to coincide with the unbundling reforms required by the National Water Initiative. Prior to unbundling, GMW had a mix of fixed and variable bulk water charges that tended to vary by location.

### 6.1.3 South Australia

There are no bulk charges levied in South Australia. However, irrigators are charged WPM fees that have as their basis (in part) to recover bulk water costs associated with the MDBA. Compared to NSW and Vic, the implied 'bulk water' charge is very low.

### 6.1.4 SunWater

In Queensland SunWater levies bulk water charges that have both a fixed and variable component. The ratio of fixed to variable charges varies across the SunWater network. However, in the main irrigation district of St George, the ratio is 95%/5% fixed to variable.

## Irrigation Infrastructure Operator (IIO) charges

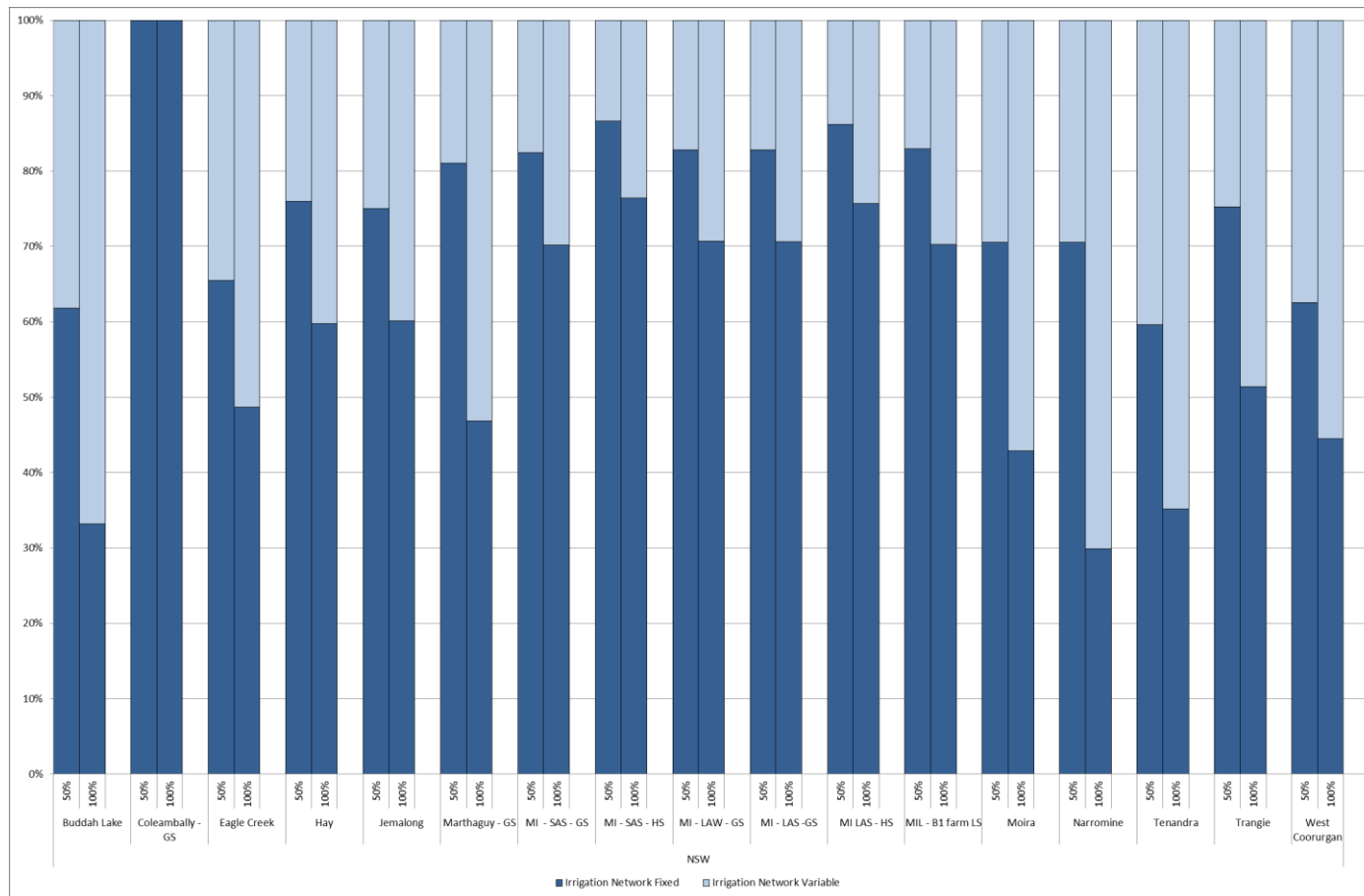
Relative to BW charges there is greater diversity in the structure and level of IIO charges across the MDB. This results from a) differences in the underlying cost structures of the numerous IIOs across the basin, and b) legacies of past charging practices, such as the use of maintenance annuity funds.

In general though, it is typically the case that IIO's have charge structures consisting of both fixed and variable components. The fixed component is levied against water entitlements and/or water deliver entitlements, while the variable component is levied against water delivered, which tends to vary from year to year.

### NSW – Gravity fed

In NSW there are numerous IIOs that deliver water via gravity fed systems. Water infrastructure charges tend to consist predominately of fixed charges, perhaps reflecting the fixed nature of the underlying costs incurred in gravity fed systems. Variations across a selection of NSW gravity fed IIOs are illustrated in Figure 8.

**Figure 8: Ratio of fixed to variable IIO charges in NSW – 250ML entitlement, 100% or 50% delivered**



Source: Marsden Jacob analysis of ACCC data

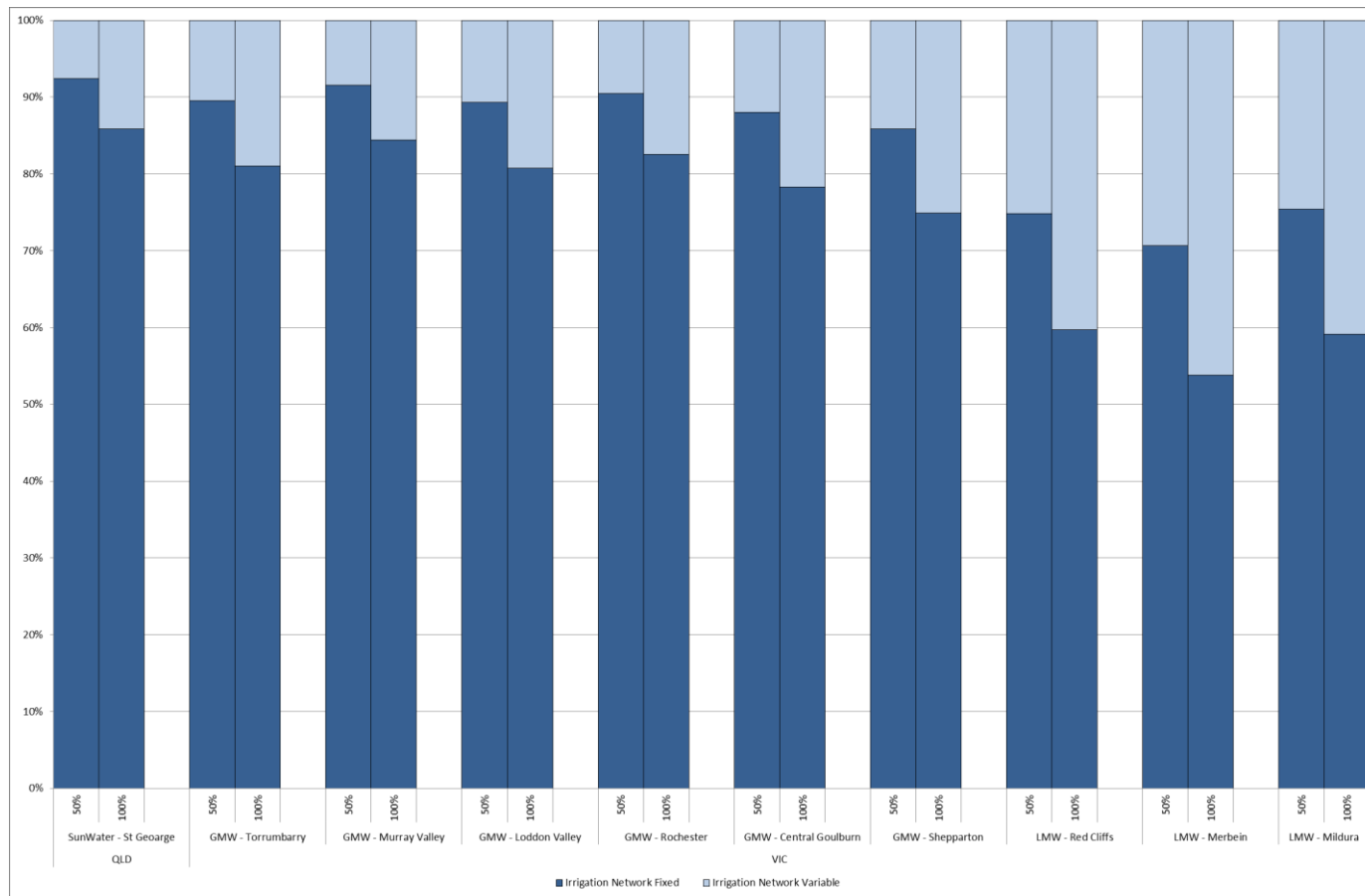
MI = Murrumbidgee Irrigation; MIL = Murray Irrigation Limited; HS = High Security entitlement; GS = General Security entitlement

### Victoria – Gravity Fed

In Victoria there are two IIOs – GMW and LMW. The ratio of fixed to variable charges imposed by each is illustrated in Figure 9 below.



**Figure 9: Ratio of fixed to variable charges in Victorian gravity fed IIOs – 250ML entitlement, 100% or 50% delivered**



Source: Marsden Jacob analysis of ACCC data

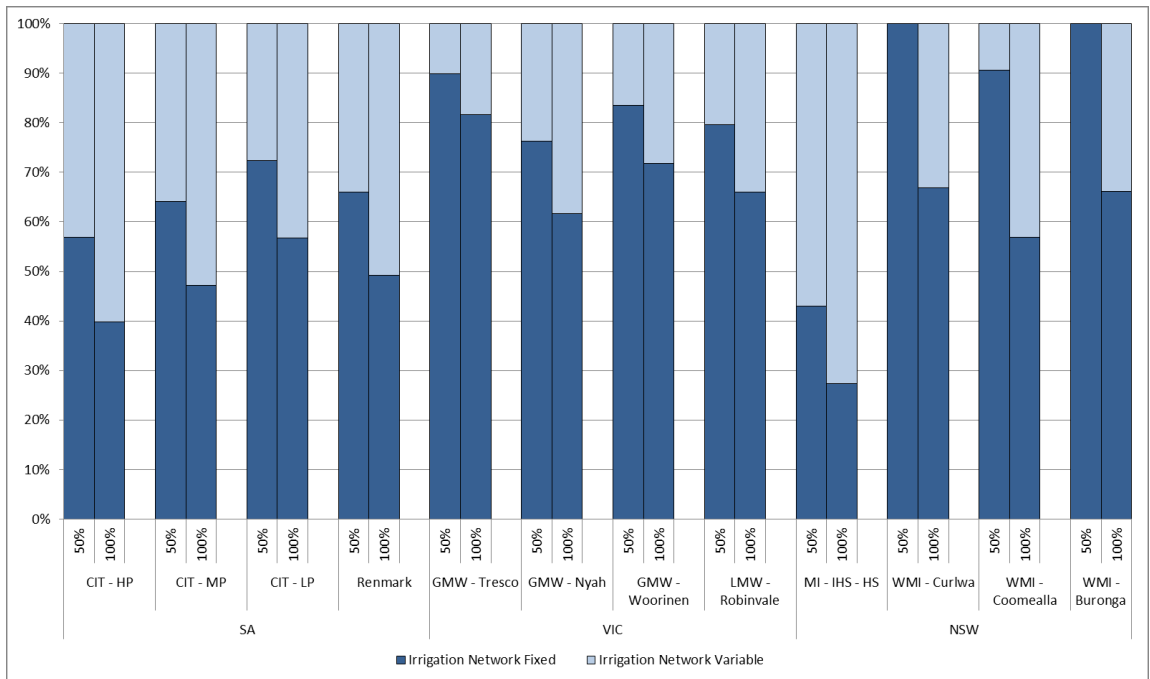
## SunWater

SunWater is the only IIO in Qld. The only irrigation network of relevance for this report is located in St George. In that network SunWater imposes an IIO charge structure that consists largely of a fixed charge. For example, an irrigator holding a 250ML entitlement that is fully allocated and delivered would pay 84% of water infrastructure charges in the form of fixed charges.

## Pressurised IIO networks

In NSW, Vic and SA there are a number of irrigation schemes in which water is pressurised via a series of pipes. These networks are relatively more expensive to operate due to pumping costs and maintenance of the infrastructure. As a result the level of charges tend to be higher. The pattern of charging structures varies widely across piped IIOs. This is illustrated in Figure 10.

**Figure 10: Pressurised IIO networks - Ratio of fixed to variable IIO charges for a 250ML entitlement, 100% or 50% delivered**



Source: Marsden Jacob Analysis of ACCC data

## 7. Appendix C: Overview of Murray-Darling Basin characteristics

---

This section of the report provides an overview of the Murray-Darling Basin, trading zones, irrigated agricultural enterprises and the infrastructure that enables irrigation.

### The regions of the MDB

The MDB is typically split into two distinct regions for analytical purposes: the southern MDB and the northern MDB. The majority of waterways of the southern are hydrologically connected, which permits water trading across the entire region. The northern MDB consists of distinct waterways and groundwater sources that are far less connected. As a result, trading tends to only occur within, rather than across, catchments.

Further details on each are provided below.

#### Southern MDB

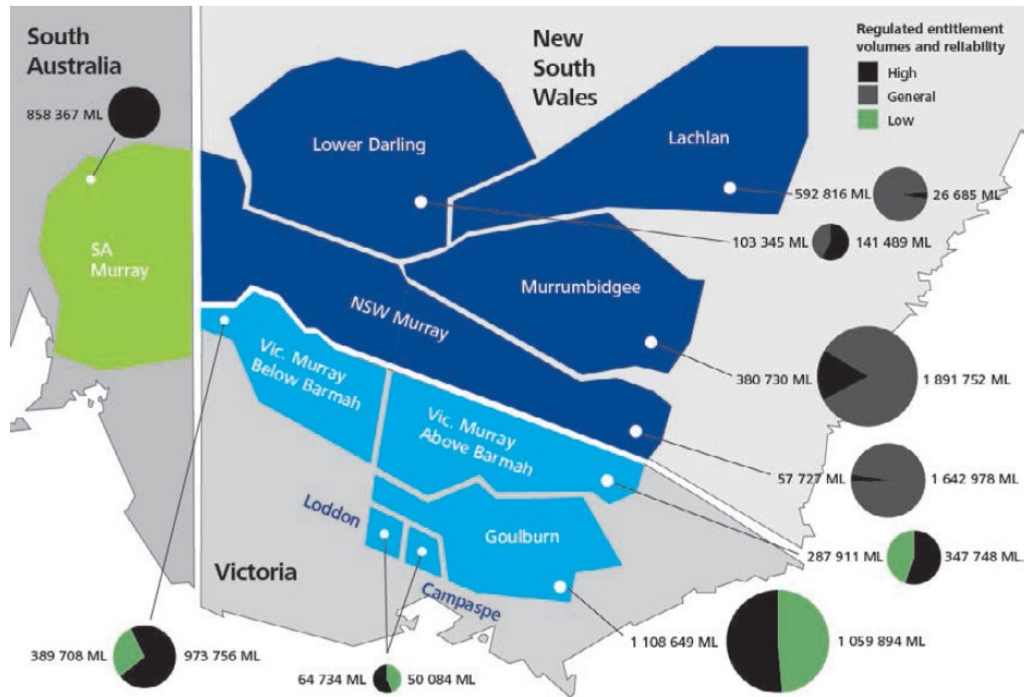
The southern MDB consists of the Lachlan, Lower Darling, Murrumbidgee, Murray, Goulburn, Campaspe and Loddon river catchments. All rivers are hydrologically connected to certain extents with the exception of the Lachlan.

It is often referred to as the ‘food bowl’ of Australia and is home to 50% of irrigated agriculture in Australia<sup>14</sup>.

---

<sup>14</sup> <http://www.mdba.gov.au/about-basin/irrigated-agriculture-in-the-basin>

Figure 11: Regulated entitlements on issue in the Southern MDB (ML)



Note: NSW entitlement volumes for regulated systems exclude supplementary reliability entitlements. In this report, all South Australian entitlements are referred to as 'high reliability', consistent with the approach of the South Australian Department of Environment, Water and Natural Resources. However, as that entitlement is further classified into nine classes, the reliability of some South Australian entitlements may be lower than that of high-reliability entitlements in other jurisdictions. While considered part of the southern MDB, the Lachlan catchment is not sufficiently hydrologically connected to enable trading with other trading zones in the southern MDB.

Source: (National Water Commission, 2013a, p. 9)

Due to the long history of irrigation in the southern MDB, the majority of waterways in the catchment are regulated. The southern MDB is also where trading in rural water products is most active. Markets are relatively mature here with informed participants and established trading mechanisms.

The catchment is divided into a number of trading zones. One of the purposes of the zones is to establish a framework for rules that govern where and water products can be traded across the Southern MDB.

In this report, most interest is focused on trades from the Murrumbidgee and NSW Murray trading zones (13, 10 and 11) into various zones in Victoria and SA.

Figure 12: Southern Murray-Darling trading zones



Data sources: Water trading zones generated by ABARES from documents provided by the Murray–Darling Basin Authority, NSW Office of Water, Murray Irrigation Limited, Vic. Department of Sustainability and Environment and SA Department of Environment, Water and Natural Resources. Topographic data: Geoscience Australia. Map produced by ABARES © Commonwealth of Australia.

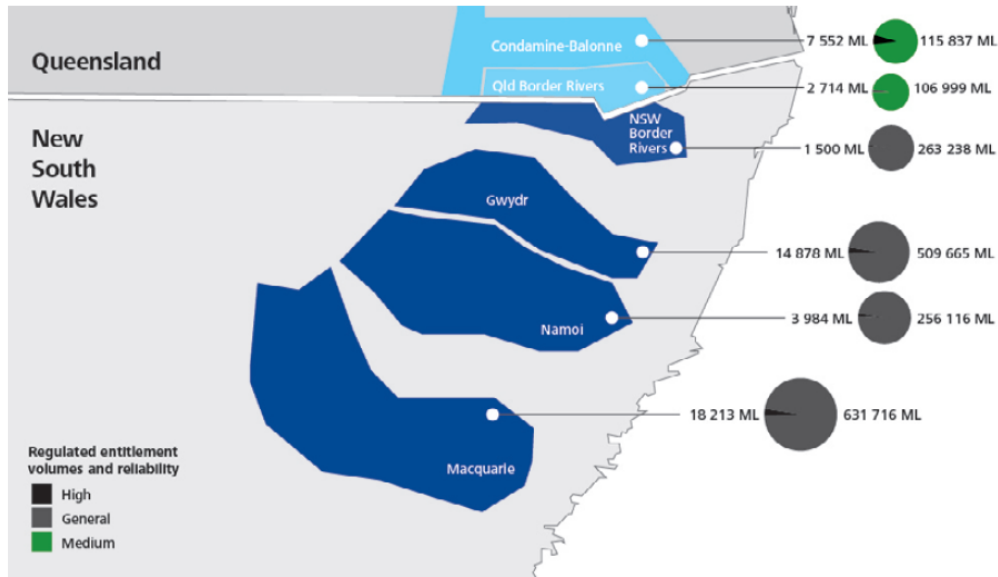
Source: (National Water Commission, 2013, p. 24)

### Northern MDB

The northern MDB takes in waterways that drain the Great Dividing Range through the northern half of NSW and the south east sections of Queensland. Relative to the southern MDB it is less hydrologically connected and features far less constructed irrigation infrastructure. The majority of irrigators are private diverters, who draw water directly from waterways.

The quantity of regulated entitlements on issue is also relatively lower in the northern MDB. The area also sits above a significant portion of the Great Artesian Basin, meaning that groundwater has traditionally formed an important component of consumptive water supply.

Figure 13: Regulated entitlements on issue in the Northern MDB (ML)

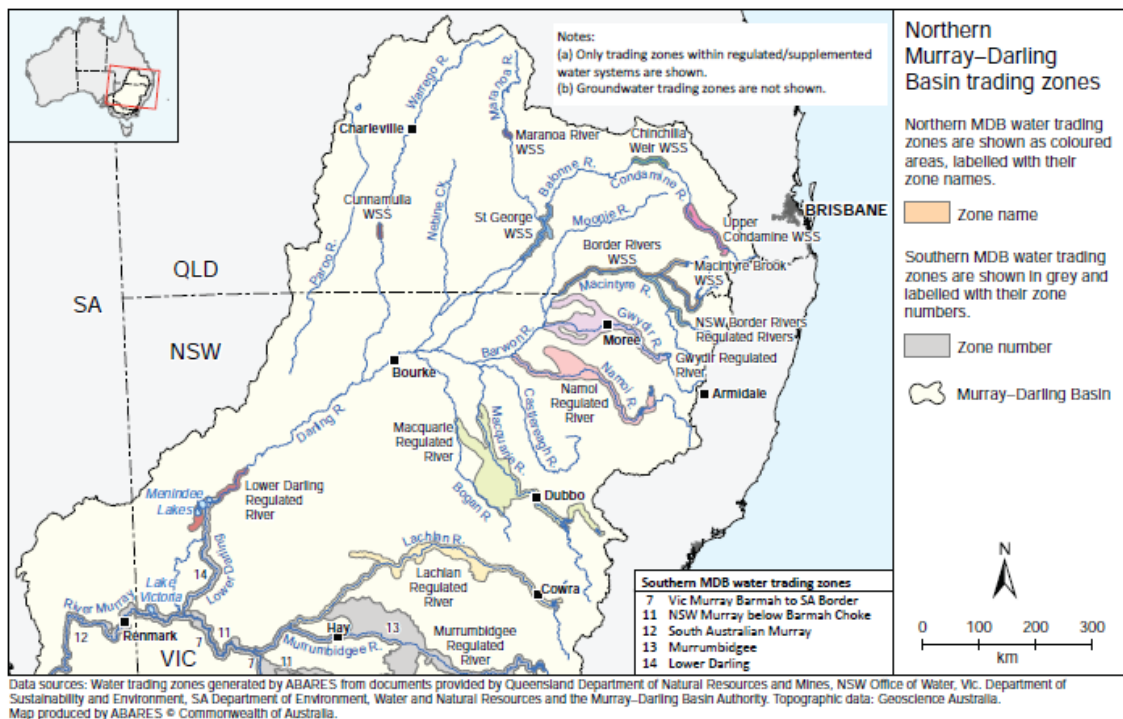


Note: NSW entitlement volumes for regulated systems exclude supplementary reliability entitlements. For the Condamine Balonne and Qld Border Rivers, medium entitlements volumes refer to medium priority entitlements and Risk-A and Risk-B entitlements. The reliability is different (higher) than general security entitlements in NSW. They have been separately identified in this figure.

Source: (National Water Commission, 2013a, p. 10)

Water trading does occur in the northern MDB, however it tends to be within distinct valleys, and on a far smaller scale than observed in the southern MDB. There is almost no interstate trade (apart from some trade along the QLD and NSW ‘border’ rivers) and, because there are few irrigation schemes, most water infrastructure charges relate to bulk water services.

Figure 14: Northern Murray-Darling trading zones



Source: (National Water Commission, 2013, p. 24)

## The key infrastructure that enables irrigation across the MDB

Rainfall patterns in the MDB can be infrequent and difficult to predict with certainty. As a result, an extensive network of infrastructure is required to enable irrigation at the scale seen across the MDB. Large storages such as dams and reservoirs capture runoff, effectively holding back water to be supplied in a regulated, consistent manner to meet water demands from irrigation, other consumptive uses and the environment.

Irrigators obtain water via a direct connection to a natural waterway (such as a river) or a connection to a constructed supply network consisting of channels. In the case of the later, there has been considerable investment over the past century to establish the numerous networks across the MDB.

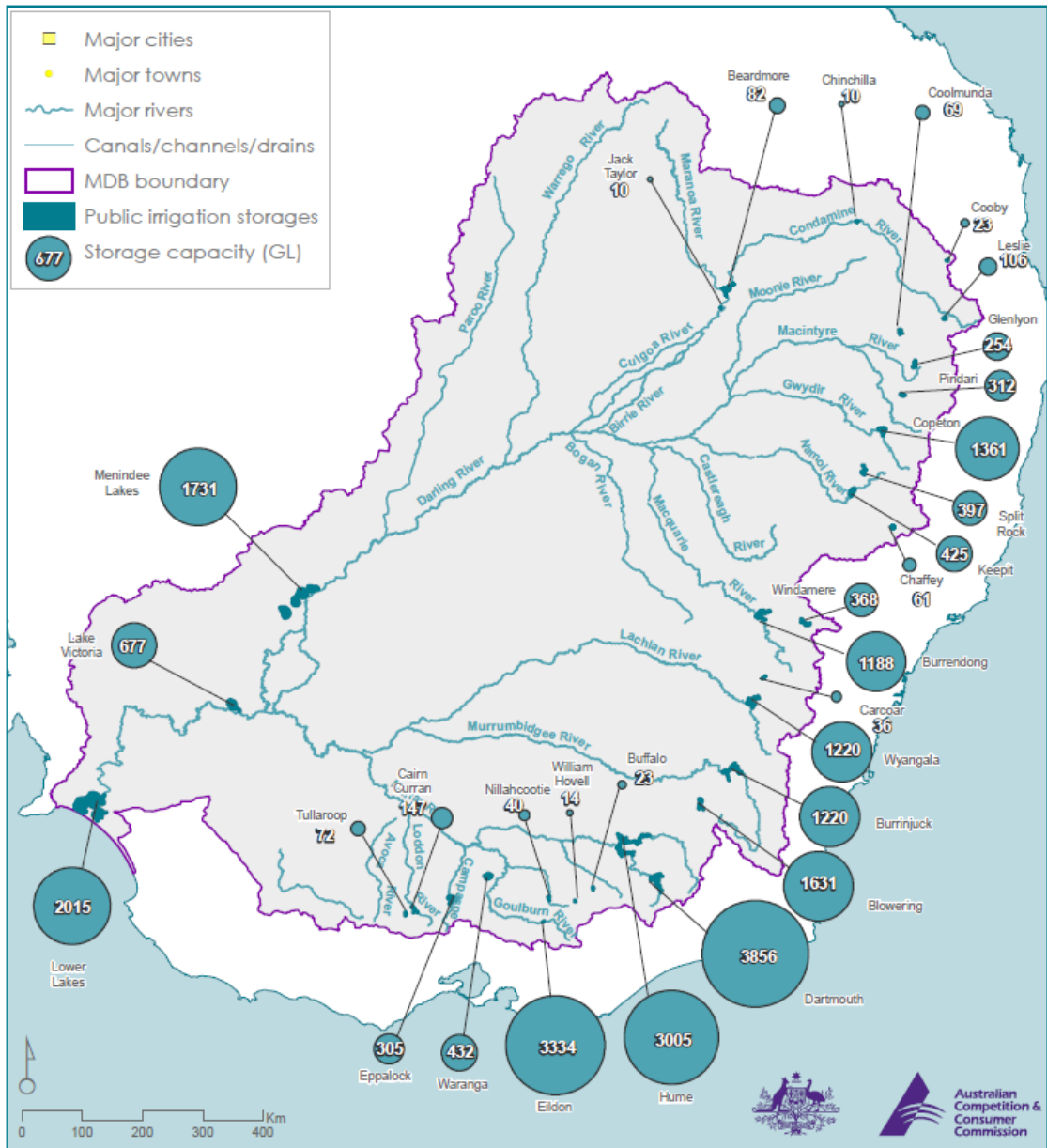
In the northern MDB, groundwater is also a prominent source of supply for irrigation. Groundwater is typically pumped to the surface within the boundary of individual farms.

### Bulk water

The key bulk water storage facilities across the MDB are illustrated in Figure 15. The three largest in terms of storage capacity are located in Northern Victoria (Dartmouth, Eildon and Hume), followed by the Lower Lakes region in South Australia. The largest dam in NSW is Menindee Lakes, however has a far less reliable inflow pattern relative to the large storages in Victoria.



Figure 15: Major bulk water storage facilities in the MDB



Sources: Topo 250K © Geoscience Australia (2006). public irrigation storages adapted from MDBA (2010) Water in Storages reporting. Produced by SKM, November 2010.

Source: (ACCC, 2014, p. 9)

The very large storages in Northern Victoria support a vast network of irrigation networks found either side of the Murray River system and the Goulburn River system. Water is transported to the irrigation networks via the river system. As a result, the waterways tend to run ‘bank high’ during the irrigation season (typically from Sept to May) to meet consistent demand.

Irrigation networks along the Murrumbidgee River are supplied from the Burrinjuck and Blowering dams.

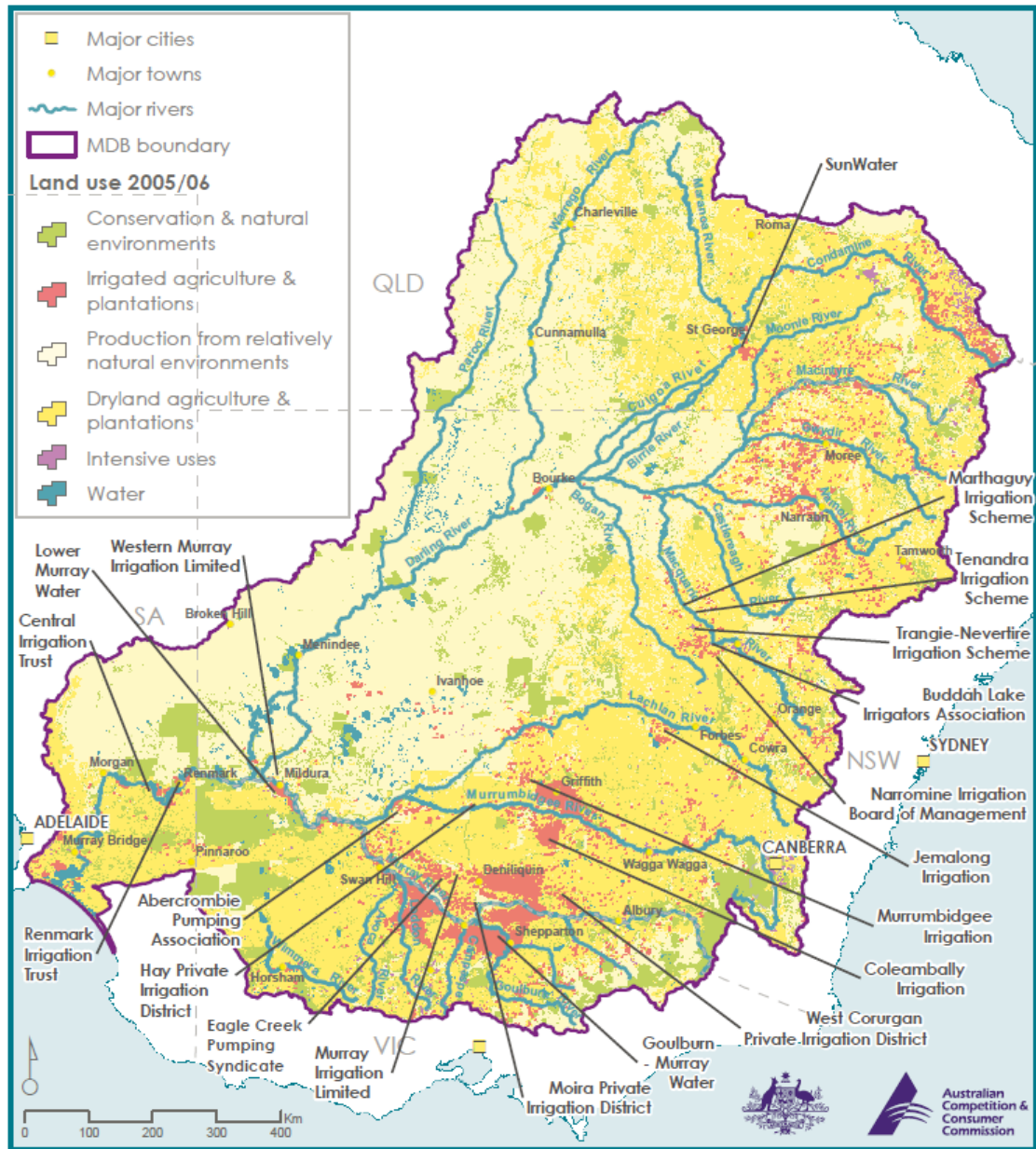
### Irrigation infrastructure

The main irrigation networks across the MDB are illustrated in Figure 16. There are three main areas that feature large scale irrigated agriculture:

- a stretch from Shepparton through to Swan Hill;
- an area centred around Leeton and Griffith; and
- an area centred around Mildura.

Although significant irrigation occurs in northern NSW, water is sourced from direct connections to river systems rather than constructed supply channels.

Figure 16: Irrigation infrastructure operators in the MDB



Sources: Topo 250K © Geoscience Australia (2006); land use 2005/06 © ABARE-BRS (2010); NSW irrigation corporation areas © ABARE-BRS (2008–09) from data provided by Murray Irrigation Limited and the Murray-Darling Basin Authority, VIC, SA & QLD irrigation corporation areas sourced from data collated for the National Performance Report - rural water service providers, NWC (2007-08). Produced by SKM, November 2010.

Source: (ACCC, 2014, p. 10)

## Institutions that operate enabling infrastructure

### 7.1.1 Bulk water

Bulk water infrastructure is managed by four main institutions across the MDB. Each are State Government owned corporations. In Victoria, Goulburn-Murray Water (GMW) provides bulk water services. In NSW, Water NSW (formerly known as State Water) is the bulk water service provider.

SunWater is the bulk water provider in Queensland. The majority of its infrastructure is located outside the MDB. In South Australia there are no bulk storages within the MDB. However, the Department of Environment, Water and Natural Resources governs the provision of various natural resource management functions, including those related to the condition of the Murray River.

Up until the microeconomic reforms implemented under the National Competition Policy (NCP), bulk water institutions were located within State Government departments that were also responsible for the planning of irrigation development. Following the NCP reforms, bulk water institutions in Victoria, NSW and Qld were transformed into Government Owned Corporate Enterprises.

### 7.1.2 Irrigation Infrastructure Operators (IIOs)

While bulk water providers are all State Government owned, the governance arrangements for IIOs across the MDB differs across states. In NSW, IIOs tend to be member owned institutions and/or corporations. In Victoria and Queensland, the IIOs are State Government owned corporations.

The main IIOs across the MDB are listed in Table 5, along with descriptive statistics that indicate relative size.

**Table 5: Key Irrigation Infrastructure Operators in MDB**

| IIO  | Water Supply System                       | Volume managed or owned (ML) <sup>1</sup> | Number of irrigation customers <sup>2</sup> |
|--|---|---|---|
| New South Wales                            |   |   |   |
| Murray Irrigation Ltd                      | NSW River Murray                          | 1,054,793                                 | 2,043                                       |
| Murrumbidgee Irrigation Ltd                | Murrumbidgee                              | 948,182                                   | 3,343                                       |
| Coleambally Irrigation Corporation Ltd     | Murrumbidgee                              | 402,973                                   | 494   |
| Jemalong Irrigation Corporation Ltd        | Lachlan                                   | 78,382                                    | 186   |
| Western Murray Irrigation Ltd <sup>3</sup> | NSW River Murray                          | 57,743                                    | 374   |
| Victoria                                   |   |   |   |
| Goulburn-Murray Water                      | Goulburn, Broken, Loddon, Campaspe        | 2,688,331                                 | 20,586                                      |
| Lower Murray Water                         | Vic. River Murray, Goulburn               | 358,826                                   | 5,984                                       |
| South Australia                            |   |   |   |
| Central Irrigation Trust                   | River Murray                              | 133,681                                   | 1,424                                       |
| Renmark Irrigation Trust                   | River Murray                              | 42,601                                    | 560   |
| Queensland                                 |   |   |   |
| SunWater <sup>4</sup>                      | 30 water supply schemes across Queensland | 2,624,484                                 | 5,052                                       |

Source: Adapted from (National Water Commission, 2013, p. 22)

Notes:

- 1 IIOs may either hold a bulk entitlement or manage water without owning entitlements (as is typically the case in Queensland and Victoria).
- 2 Customers using water from regulated river sources.
- 3 Due to a lack of data, figures are as at 30 June, 2010.
- 4 The majority of SunWater IIO assets and customers are outside of the MDB.

When measured by customers, the largest IIO operating solely in the MDB is Goulburn-Murray Water, followed by Lower Murray Water. In NSW, Murrumbidgee Irrigation is the largest IIO, followed by Murray Irrigation.

Commonwealth and State Governments have been investing in various 'modernisation' and upgrade works to IIO networks in both NSW and Victoria. As a result, the number of customers served in those states is likely to change over the coming decade.

## Institutions that regulate infrastructure providers

Under the Water Act 2007 (Cth), the ACCC is required to monitor regulated water charges and enforce compliance with the water charge rules. The Water Charge (Infrastructure) Rules 2010 ('WCIR') relate to those fees and charges levied by bulk water providers and IIOs. Charges

imposed by IIOs where an irrigator 'exits' a network are regulated under the Water Charge (Termination Fees) Rules 2009.

The ACCC is the regulatory body for bulk water providers and IIOs in NSW, while the Essential Services Commission (ESC) regulates Victorian bulk water providers and IIOs. The ESC has been accredited by the ACCC as a regulating body under the provisions of the WCIR.

The WCIR has a 'tiered' approach to regulation. In summary, the tiered approach results in only three institutions being subject to pricing determination under the WCIR. They are:

- Water NSW, regulated by the ACCC
- Goulburn-Murray Water, regulated by the ESC
- Lower Murray Water, regulated by the ESC.

A further Five IIO's are required to develop and publish detailed Network Service Plans that are subject to review by independent consulting firms for prudence and efficiency. However, charging regimes are not subject to formal determination. The five IIO's are:

- Central Irrigation Trust (CIT)
- Coleambally Irrigation Co-operative Limited (CICL)
- Murray Irrigation Limited (MIL)
- Murrumbidgee Irrigation Limited (MI)
- SunWater.

## 8. Appendix D: References

---

ACCC, 2010. *Regulation Impact Statement Water Charge (Infrastructure) Rules 2010 Made under the Water Act 2007*, Melbourne: ACCC.

ACCC, 2014. *ACCC Water Monitoring Report 2012-13*, Canberra: Australian Competition and Consumer Commission.

ACCC, 2015. *2013-14 Water Monitoring Report - monitoring approach and assumptions*, Melbourne: ACCC.

Barma Water Resources Pty Ltd et al, 2011. *Water allocation systems: exploring opportunities for reform: Waterlines Report*, Canberra: National Water Commission.

Goulburn Murray Water, 2006. *Annual Report*, s.l.: Goulburn Murray Water.

IPART, 2008. *Water scarcity: Does it exist and can price help solve the problem?*, Sydney: IPART.

IPART, 2009. *Public submission to the ACCC's Bulk Water Charge Rules Issues Paper, 2000*: IPART.

Lock, A., Bjornlund, H., Wheeler, S. & Connor, J., 2011. Allocation trade in Australia: a qualitative understanding of irrigator motives and behaviour. *The Australian Journal of Agricultural and Resource Economics*, Volume 56, pp. 42 - 60.

National Water Commission, 2013a. *Australian water markets: Trends and drivers 2007-08 to 2011-12*, Canberra: NWC.

National Water Commission, 2013. *Australian Water Markets Report 2012-13*, Canberra: NWC.