GREATER SHEPPARTON

17 September 2020

Director
Murray Darling Basin Inquiry
Australian Competition and Consumer Commission
GPO Box 3131
CANBERRA ACT 2601

By Email Only: waterinquiry@accc.gov.au

Dear Director

SUBMISSION – MURRAY DARLING BASIN INQUIRY

Thank you for the opportunity to make a submission to the above inquiry following the recent release of the Interim report. Greater Shepparton City Council (GSCC) is located in the heart of the Goulburn Murray Irrigation District (GMID) and the region is reliant on irrigation to ensure it remains a vibrant and economically important region for the production of agricultural produce. GSCC is also a member of the GMID Water Leadership group and is aware of the submission made by that group to the Victorian Water Market Transparency Options Paper in November 2019.

In that submission there were a number of recommendations that GSCC believe are relevant to the ACCC inquiry. The recommendations are:

1. Total transparency on entitlement ownership, with all owners identified by name, entitlement type, volume, trading zone and entitlement trading activity.

2. In principle, total transparency on all allocation accounts, with all owners identified by name, running allocation account balances, and allocation trading activity including names and trading zones of buyers and sellers.

3. Notwithstanding in-principle support for total transparency on allocation accounts, the Government to provide more information to enable informed stakeholder understanding of implications.

4. Total transparency on carryover ownership and account volumes.

GSCC has also considered the questions for stakeholders contained within the Interim report and although the Council holds a water entitlement to allow irrigation of key community assets such as parks, gardens and recreational grounds, it is not a regular participant in the water trading market. Therefore, GSCC does not hold knowledge in regard to the operation of the water market to the degree that an active participant may have.

Greater Shepparton City Council
Locked Bag 1000, Shepparton, Vic, 3632
Council Office: 90 Welsford Street, Shepparton
Ph: (03) 5832 9700 Fax: (03) 5831 1987 Email: council@shepparton.vic.gov.au
www.greatershepparton.com.au
ABN 59 835 329 843

However, there are a number of areas where GSCC does hold a view and these are presented below under the chapter headings as contained at pages 38 – 45 of the Interim report.

Chapter 4 – Buyers and sellers

GSCC believes that buyers of water entitlements/allocations should be restricted to investors who are utilising the entitlements/allocations to produce through application of water to land. Speculative buying and selling of water should not be allowed. GSCC believes that speculative buying and selling instigates a lack of trust in the current water market by irrigators.

Chapter 5 – Investor roles, strategies and conduct

See comments under Chapter 4.

Chapter 6 – Water broker roles, practices and conduct

GSCC would like to see a code of practice developed to manage the work of water broker practices and conduct. Failure to comply should preclude brokers from further practice in this area.

Chapter 7 – Regulatory setting and solutions

GSCC believes that an independent regulator should be established for the MDB water market without significantly impacting water trading fees.

Chapter 12 – Market architecture and the impacts of trade

GSCC believes that the ACCC has identified the main concerns with trade activity. One of GSCC's concerns is the detrimental environmental impacts that inter-valley trades are having on the natural river environments, in particular the lower reaches of the Goulburn River and the Barmah choke stretch of the Murray River.

Council has also commissioned a report to accompany this submission. The report has been prepared by RMCG and is attached to this correspondence.

Thank you again for the opportunity to prepare this submission and GSCC hopes that it is valuable in your deliberations. Should you require additional information, please do not hesitate to contact Council's Director Sustainable Development Geraldine Christou via email geraldine.christou@shepparton.vic.gov.au or (03) 5832 9872.

Yours sincerely

Peter Harriott
CHIEF EXECUTIVE OFFICER

C20/21452

GREATER SHEPPARTON

SEPTEMBER 2020

Murray-Darling Basin - Water market report

ACCC Interim Report – 30 June 2020

Submission prepared by RMCG on behalf of Greater Shepparton City Council

Greater Shepparton City Council
Locked Bag 1000, Shepparton, Vic, 3632
Council Office: 90 Welsford Street, Shepparton
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1 Overview

Greater Shepparton

The Greater Shepparton City Council (GSCC) welcomes the opportunity to provide this submission to the Issues Paper published by the Productivity Commission as part of its inquiry into National Water Reform.

Greater Shepparton is located in the heart of the Goulburn Murray Irrigation District (GMID) and the region is reliant on irrigation to ensure it remains a vibrant and economically important region for the production of agricultural produce. GSCC is a member of the GMID Water Leadership group.

Despite a strong focus on the shortcomings of the ACCC interim report in this submission, the GSCC acknowledge there have been significant benefits throughout the irrigation industry, including for stakeholder irrigators in our regions that are directly attributable to the National Water Initiative and the implementation of water markets. However the impacts have not all been positive and there have been considerable adverse impacts on the Shepparton region and the GMID.

ACCC inquiry

The ACCC is conducting this inquiry in response to a direction by the Treasurer, the Hon Josh Frydenberg MP, to examine markets for tradeable water rights in the Murray–Darling Basin (the Basin). The ACCC is requested to recommend options to enhance markets for tradeable water rights, including options to enhance their operations, transparency, regulation, competitiveness and efficiency.

The interim report draws upon analysis of comprehensive water market data from 2012 onwards, and the views of a broad range of people with interests in the use and trade of water in the Basin.

Feedback has been invited on the preliminary conclusions and options outlined in this report, to assist the ACCC's preparation of a final report to the Treasurer by 30 November 2020.

Inquiry ToR

The Terms of Reference for the inquiry, as set by the Treasurer, state that matters to be taken into consideration in the inquiry must include:

(a) market trends since 2012, including demand for water, changes in the location where water is used, the quantity of water traded, water availability, changes in water users and their communities, development of new trading products, and the number of participants and sectors participating in the water markets.

(b) the role of carryover arrangements, and the trading of water allocations which have been carried over, on water markets.

(c) the role and practices of market participants, including water brokers, water exchanges, investment funds and significant traders of water allocations and entitlements.

(d) the availability to the public of information on water market activities and tradeable water right holdings.

(e) the timeliness, accuracy, and completeness of public information released on water market activities and tradeable water right holdings, including true trade price reporting and the types of trade (for example, immediate purchases, forward contracts, leases).

(f) barriers to entry, expansion and exit, including transaction costs.

(g) the management of constraints on the storage or delivery of water, including adjustments made to give effect to trades and intervalley transfers.

This submission

This submission does not address all of the ToR of the NWI, but is primarily providing feedback on the parts of the interim report which directly affect the Greater Shepparton region and the wider GMID.

The paper comprises three parts:

i. Overview of the regional impact of water trading and water recovery
ii. Comments on diversity and resilience
iii. Comments on 14 issues relevant to GSCC and GMID that arise from the interim report.

2 Impacts of water markets is uneven

2.1 FIVE REGIONS

Any evaluation of water within the Southern Connected Murray Darling Basin (SMDB) should not only consider how the southern basin water marketplace operates as a whole; and how the Murrumbidgee system and connected Murray operate for significant periods of time as two separate systems; but also how each of the five regions function as a local system, given local nuances in system management, water allocation policy, carry over rules and water trading constraints that are sometimes applied locally.

Five regions: Within the southern connected basin there are five general irrigation regions or communities that interact:

i. **Riverland in SA** – comprises predominantly irrigated horticulture supplied by direct pumping from the Murray, with a large proportion supplied from pressurised pipelines operated by Central Irrigation Trust, Renmark Irrigation Trust or by individual farmers. The region typically uses up to 400GL annually, which has remained unchanged over the last 20 years. (This does not include the flood-irrigated areas in the SA Lower Swamps, where there have been large changes – with a subsequent loss of dairying etc.)

ii. **Sunraysia in Victoria and NSW** – comprises predominantly horticulture supplied by direct pumping from the Murray mostly from pressurised pipelines operated by Lower Murray Water (Vic), Western Murray Irrigation (NSW) or by individual farmers on both sides of the river. The region typically uses up to 700GL which is about double what it used 20 years ago. The growth has been driven by large scale horticultural users, usually on green fields sites developed on Mallee cereal farms, with new privately owned pumps and supply pipelines.

iii. **GMID (Goulburn Murray Irrigation District)** – comprises predominantly dairy pastures but with significant horticulture and some annual cropping. The water is supplied via an automated gravity channel system operated by GMW (Goulburn Murray Water). The region typically uses 900-1,300GL within the 640,000Ha district and another 100GL outside along the river network, which is about half of the water used within the GMID and associated users 20 years ago.

iv. **Murray Irrigation Area** – comprises primarily rice and annual cropping where the water is supplied via gravity channel systems operated by Murray Irrigation Ltd. The 700,000Ha region typically uses 300 – 800GL. There is another c100GL used on broadacre crops outside the irrigation area along the Murray, Edwards and Wakool Rivers, which is about

half what was used 20 years ago and is much more prone to a sharp reduction in water available between seasons than the GMID.

v. **Murrumbidgee Irrigation Area** – comprises a mix of rice, annual cropping, cotton, and horticulture. Water is supplied via a mix of gravity canal systems operated by Murrumbidgee Irrigation and Coleambally Irrigation, some pipeline supplies for horticulture and private river pumping. The region typically uses a total 700-1,500GL which is about 20 % less than it used 20 years ago. The large scale LowBidgee flood plain no longer has water diverted for annual cropping and pasture production, as the LowBidgee area is currently being transformed into an environmental reserve, and is no longer flood irrigated.

2.2 LESS WATER AVAILABLE

In 1997 the introduction of the Murray Darling Basin Cap (based on 1993/4 levels of development) placed a limit on the available water and was an important step in limiting the available water. However, over the past two decades there has been a step change in water availability and price which is combination of:

- Reduction of water in the consumptive pool through the implementation of the Murray Darling Basin Plan (MDBP) and associated water recovery from irrigators.
- Policy changes by both NSW and Vic governments including Carryover and changes to worst inflow assumptions that is impacting on allocations against NSW General Security (NSW GS) water entitlements and Victorian Low Reliability Water Shares (LRWS) in particular.
- Irrigator behaviour around carryover leading to more water being held in store has meant increased spills, increased volumes of ‘dead storage’ in the dams and less water being used.
- A shift in climatic conditions resulting in lower average inflows in the last 20 years compared with longer term averages.
- Change in industry demand profiles in particular the increased demand from permanent horticulture (almonds) in the lower Murray region and the introduction of cotton in the Murrumbidgee region.

2.3 IMPACTS OF LESS WATER AND WATER TRADE ARE UNEVEN

Unfortunately, the NWI initiative and reforms that have been implemented by Australian states since 2004, particularly around water trading and water recovery have also adversely and inequitably impacted on three groups

i. The dairy industry within the GMID and particularly within the GSCC region,
ii. The upstream river environment ie the Goulburn river downstream of Goulburn weir and the Barmah choke, and
iii. One particular class of water users. i.e. the holders of general security entitlement in southern NSW and Low Reliability Water Shares (LRWS) in Victoria. This impact has been made worse in a drying climate.

In general terms since 1999/00 when water use across the basin was at its peak, it is observed that:

i. **SA Riverland region** has maintained its overall level of water use through two mechanisms. It has increased its utilisation of SA water entitlements held and its irrigators are actively buying water entitlements and water allocations from interstate, particularly from Victoria. (This does not include the Lower Swamps, where there have been large changes to the previously flood irrigated pastures - loss of dairying etc.)
ii. **The Victorian/NSW Mallee region (Sunraysia)** has expanded its water use significantly – almost doubled, primarily due to increased almond plantings.
iii. **NSW Murrumbidgee** has maintained its High Security water use (less affected in droughts) but decreased its General Security (GS) and Low Bidgee floodplain water use. Horticulture is largely unaffected by the dry seasons and is still expanding. Although Murrumbidgee irrigators have lost 25% of GS but cotton with higher returns replaced rice and this was assisted through Commonwealth funded farm efficiency scheme. Rice production is now very variable both the Murrumbidgee and NSW Murray Valleys.
iv. **NSW Murray (MIL)** – lost 25% GS and affected by down-stream trade and dry conditions. Water use halved and now is extremely variable. The region traditionally depends on mixed farming with a cornerstone being rice production systems, and has been drastically affected.
v. **VIC GMID** – Lost HS to water recovery, down-stream trade and dry conditions. Halved its water use, horticulture mostly unaffected and moved from canning varieties to higher value fresh fruit, but dairy production has halved. Some offset and improvements in delivery efficiency with the $2 billion investment in irrigation modernisation.

In simple terms three regions have prospered and two regions have substantially reduced production, income and regional prosperity.

It is the ongoing potential decline of the GMID which GSCC is concerned about in relation to the way the water market has worked in the past and is continuing to work into the future. This submission looks at some of the issues associated with water trading and water markets.

3 Diversity and resilience

One of the great strengths of the southern Murray Darling Basin has been the diversity of the irrigated sectors present. This diversity is expressed through a large number of small and large irrigation businesses involved in a wide variety of sustainable irrigation dependent industries on a diverse range of soil types and districts in three states. Along the Murray River, this has been dominated by irrigation in traditional irrigation areas, such as the GMID and within the Murray Irrigation Limited NSW footprint.

It is helpful to see these sectors as falling into three broad classes characterised by the relative security of the water resource traditionally required and utilised by growers:

- **Very high security entitlements:** Used by permanent plantings where water is required each year. Able to command premium prices in the water market.
- **Medium to high security entitlements:** Accessed by the irrigated dairy sector and some higher value annual crops (e.g. cotton, corn, specialist seeds) where some reduction is possible in dry seasons through reducing the scale of production or through substitution with alternative products, such as bought-in fodder.
- **Medium to Low security entitlements:** Used by annual crops (e.g. rice, livestock pasture, cereal crops) where the area planted, cropped and irrigated was directly proportional to the level of allocation available and the relative price in water markets.

This variety and diversity have resulted in optimal outcomes, such as:

- Maximum use is made of the available resource under all climatic scenarios; whereas the total area of high security permanent plantings (usually horticulture) can only ever expand to the area that can be confidently irrigated in dry to very dry seasons. Surplus allocation is available from lower value sectors to support permanent plantings in very dry seasons. This provides a buffer and insurance policy, despite the high one off cost in securing water during severe shortages.
- The diverse range of sectors and their value adding processing creates diversity, value and resilience in regional economies and communities. For example, the milk factories in northern Victoria or the rice mills in Deniliquin and Leeton that employ thousands of local residents and is typically embedded within large irrigation scheme areas. There is evidence[1] of the almost unimpeded transfer of water entitlements from traditional irrigation areas during dry seasons since the drought in 2007, leaving a range of stranded public and private assets that were dependent on sustainable, regular irrigation water flows. The loss of confidence in some of the traditional districts that has been created by

[1] RMCG (2019) Recognising under-use in the Southern Basin – and taking action. Methodology and Analysis.

both droughts and the trade out of entitlements, has had a negative and snowballing effect on both on farm and processing industry investment.

- The reliance on a limited range of production sectors also creates a greater risk of disruption or collapse of production, as a result of a number of potential factors, including:
  - In the case of a repeat of a severe drought such as 2007-09, the impact of developing significantly more Ha of permanent plantings than can be supported from all available water sources. This is particularly relevant given the high levels of water recovery since 2007 and the allocations of water now held as environmental entitlements are no longer available in a drought sequence.
  - The changes in demand in a fickle international marketplace exposed to unpredictable political sentiment.
  - The impacts of an unforeseen event on supply, such as a biosecurity incursion. For example: the xylella fastidiosa disease[2] has killed millions of olive and almond trees in Italy since 2013, and is now threatening those in Spain and Greece.
  - The changes in the investment appetite of international pension funds and trusts who now control the large majority of the corporate funding for new, expanding horticultural production[3].

By protecting the interests of the unbridled expansion of permanent plantings, particularly irrigated almonds[4] at the expense of maintaining a wider, more diverse broadacre and livestock irrigated economy, risks undermining the viability of both the permanent plantings and the wider diverse production.

It is plausible that reducing diversity of agricultural production in the GMID will become irrevocable, and despite economics ultimately causing further massive adjustment as some new thirsty industries fail; Governments will be asked to foot the bill and whole irrigation dependent and once vibrant irrigation communities will have been lost.

Therefore GSCC make this submission in an attempt to reverse and/or to minimise some of the adverse impacts on its region due to the many issues surrounding the water markets and its unbridled implementation.

[2] Courthouse news (2019) "A lethal central American plant disease devastating olive trees in southern Italy is now killing almond trees in southern Spain, where tens of thousands of olive trees dying from an infection by the xylella fastidiosa bacterium. There is no cure for the disease".

[3] NSW Farmers Association (2019) 'Who owns Australia's Farms?' This article indicated more than 2,000GL of water is owned by interests from China, the UK, Canada and the US. This is equiv. to 9.4% (by total entitlement number), of the total Murray Darling Basin resources assigned to irrigators.

[4] Almond Board of Australia (2019) The Almond Orchard area planted to almonds increased from ~21,000 hectares in 2006 to 53,014 hectares in 2019". More than 90% of Australian almonds are grown in the connected Southern Murray Darling Basin.

4 Issues identified with ACCC Interim Report

4.1 ISSUE 1 DATA IS MISLEADING

The ACCC Interim report identified (page 7) that “there are information failures which limit the openness of markets”. The regions experience would support that finding.

A key requirement of the irrigation industry is to provide data relevant to their needs and operations. Unfortunately much of the information is scattered, incomplete and confusing. In particular so much of the data fails to focus on the irrigation industry and mixes information that includes the environment, critical needs/urbans and the conveyance entitlements and water use.

The ACCC does little to provide further clarity and focus on the real components of water trade.

In particular the report fails to distinguish between the environment, critical needs/urban water use, conveyance water and the irrigators. For example in fig 3.1 and in the commentary it indicates that “Since 1 July 2012, 40,528GL of water allocation has been traded in Southern Basin water systems” but does not distinguish what proportion of this is trading by the environment.

In another example (page 109) it suggests that “between 2016-17 and 2018-19 total volume of allocations …… while Victoria increased 278GL”. This information is completely at variance with Victorian data which suggests a very small 22GL decline over the same period rather than the suggested 20% increase. It is assumed this error is because ACCC included the environment allocations in its analysis the recent entitlements converted from loss allowance for GMID to environment entitlements. Unfortunately the ACCC report provides little further clarity on much of the market data and fails to provide a focus on the water use by irrigators which is the basis for the water market, not what the environment holds and uses.

Therefore the Interim report fails to understand many of the issues facing the GMID because it too has failed to collate the data in meaningful ways that differentiate out the main users. The report should clearly focus on the data associated with irrigators and water that is able to be traded.

4.2 ISSUE 2 2012 TO NOW TIME PERIOD GIVES A JAUNDICED VIEW OF THE WATER MARKET

Whilst it is recognised that the ToR specify examining the period from 2012 till now it is suggested that this time period gives a very limited understanding of the water market because it primarily comprises a wetting to a drying period which is only one cycle of longer term trends. Further the ACCC inquiry failed also to consider the impact of the basin plan water recovery program and in its influence on the market which is difficult to see without taking a longer term view. The following provides a suggested approach.

4.2.1 Southern connected Basin has SEEN THREE PHASES

The region has been through three phases:

1. **50 years post World War II** – unbridled growth – each region operated in a world of their own and was their own unique area

2. **A turbulent twenty years** from the year 2000 – each region had to adjust to joining as one within the whole southern catchment of the Murray Darling Basin

3. **Establishing a new equilibrium** – individual regions have to plan differently as they are NOW part of the connected Southern Basin.

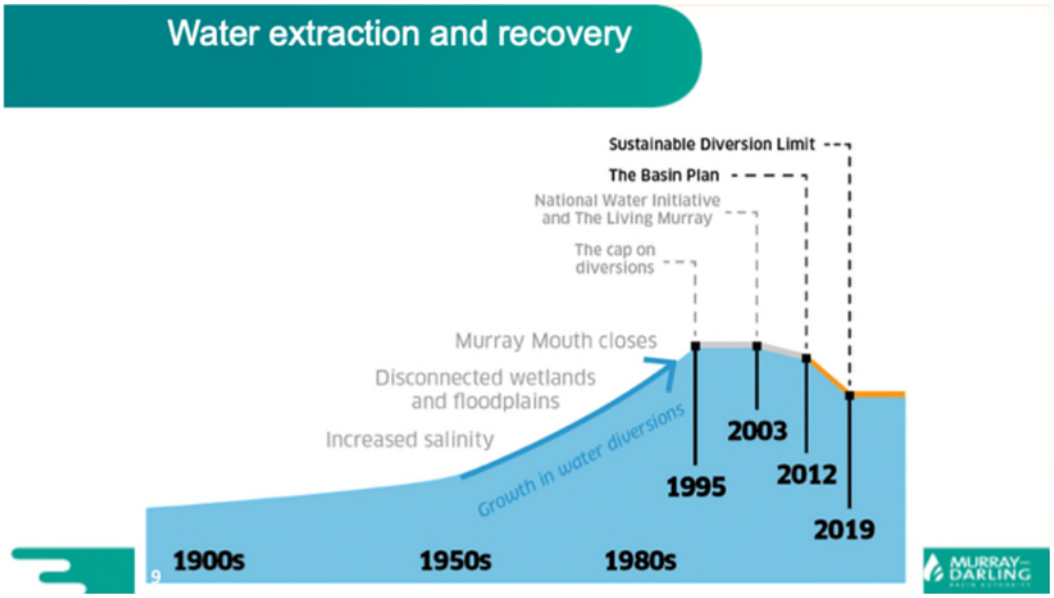


Figure 4-1: Map MDBA timeline showing the water extraction and recovery in the Southern Basin.

It is this last phase from 1995 till now that needs full consideration by the ACCC, not just the last 8 years.

4.2.2 FIVE recent periods

The last 25 years can be viewed as five lots of five years, where the average annual available water *and average available allocation prices ($ 2020)* in each period is shown i.e.:

vi. 1995 – 2000: "Historical wet 90's" – extreme wetting period – 6,662GL, *$35/ML*

vii. 2000 – 2005: "Normal period after a long wet period" but still had a mix of wet and dry years – 5,463GL, *$125/ML*

viii. 2005 – 2010: "Millennium drought" – the most extreme drought series – 3,099GL, *$398/ML*

ix. 2010 – 2015: "Wet period" with almost maximum allocations every year but some Basin recovery – 5,563GL, *$61/ML*

x. 2015 – 2020: "Dry period" but with a mix of wet and dry years after Basin recovery – 3,342GL, *$277/ML*.

The average available water, over the last five years, has therefore declined by a total of 3,320GL or **halved** since the historical wet period, pre 2000, **whilst at the same time, the price of water in real terms has increased by a factor of eight.**

Of this reduction in **available water**, 1,146GL is due to the Basin Plan recovery, up to 500GL from Policy changes and irrigator behaviour resulting in "underuse"[5] and therefore 1,674GL or more is due to drier conditions. In summary, of the reduction in water and increase in water prices over the last 20 years, 1/3rd is due to the Basin Plan, 1/6th to underuse, 1/2 to drier conditions.

Many commentators and analysis of water use associated with the Basin Plan have failed to grasp the underlying differences between these five periods.

The ACCC report concentrates on comparing data from 2012 to current and thus is observing primarily the change associated with going from a wet period to a dry period. This means that the report fails to understand the cyclical nature of water availability and how that has influenced water trade.

[5] MDBA "Trends in water use relative to the Sustainable Diversion Limit in the Southern Murray Darling Basin" draft 11 June 2020.

4.3 ISSUE 3: UNDERSTANDING THE NEW EQUILIBRIUM AND THE LIMITS TO HORTICULTURE

4.3.1 RELIABILITY OF WATER

There is a misconception that all water allocated is the same and ultimately will trade to the highest value user being horticulture. What is not understood is that the sMDB system generally has three levels of surface water security that affect the water available in any one year i.e.

Three levels of water security; The sMDB system generally has three levels of surface water security - this means that for surface water supplies there is:

i. **Super Secure water** – this is the minimum allocation likely and is around 50% High Reliability (HRWS) allocation, approximately 1,500 GL/year. This is available every year, including the Millennium Drought.. This minimum is estimated to occur up to one year in every 20 years or having a 5% probability

a) **Secure water** – 100% HRWS allocation, adds another approximately 1500 GL/year. This volume (or more) is estimated to be available in 95% of years, although in some years the maximum level of allocation will occur later in the irrigation season

b) **Variable water** – NSW Murray GS allocations in the Murray and Murrumbidgee ranging from 0 to 100%, which adds between 0 and 2,600 GL/year. On average 65% i.e. an extra 1,790GL/year is theoretically available and utilised.

In practical terms this means that for surface water supplies there is:

ii. **Super Secure water** (1500GL), which is used by Horticulture to irrigate permanent plantings without risk

c) **Secure Water** (1500GL) which is used by the next most high value industries i.e. cotton, dairy and maize, available in almost all years, but being able to ‘opt out’ if conditions are very dry

d) **Variable water** (2,200GL) which is used predominantly for rice, pasture for livestock grazing and finishing winter cereals. These industries must cope with an interruptible allocation and have low overheads.

Carryover; In order to change the “variable” water into more “secure” water, farmers use “carryover” which increases the available water in dry years but reduces the total average yield of water available in wet years by increasing the frequency and volume of spills from storages. Carryover levels by irrigators have now reached an annual balance of 1200GL which is about 1/3rd of average water use in the southern connected basin.

The ACCC report does not appear to comprehend the impact that different levels of security drive the size of the different industries, the associated trade market and how carryover is used. It seems to treat water as a homogenous product rather than recognising the importance of both volumes and reliability of allocations and entitlements.

4.3.2 INEVITABLE EQUILIBRIUM IS BEING REACHED

Prior to the introduction of the cap there was effectively unlimited water in all but the worst droughts (1967, 1972, 1982 & 1994) and industries expanded as markets permitted. However, since the introduction of the cap and water trade in the 1990's, some industries have expanded, and others have declined. The size of the industries has also been influenced by water availability and the capacity to increase yields per ML applied. This has significantly reduced due to climate change, water recovery and water policy changes, such as carry over. Supply and demand determine water price and competing industries buy or sell water in the southern connected Murray Darling Basin (sMDB) at different price points.

Because the water available varies from year to year, there will always be three broad groups of industries. These industries will eventually develop an equilibrium based upon perceptions of water reliability, influenced by relative commodity prices.

The equilibrium has taken a long time to evolve with:

- Rice and Dairy replacing mixed grazing in the 80's and 90's
- Wine grapes in Sunraysia through trade replaced mixed grazing in the Kerang/Pyramid region in the 90's
- Cotton (and some maize) replacing rice since the Millennium Drought
- Almonds have taken water from dairy pasture irrigation since the Millennium Drought, and have sourced water for expansion largely from within the GMID
- Table grapes have expanded in Sunraysia
- Other Horticulture has continued to slowly expand throughout the whole sMDB.

The 19/20 drought confirmed that horticulture development in the "connected Murray" system has reached its limit but that there is still some opportunity for horticulture growth, at the expense of irrigated cotton production within the Murrumbidgee Valley. Otherwise the mix of water use by the different industries with quite significant differences in value per ML applied, (horticulture, dairy, cotton, rice, cereals/maize and livestock grazing) and by the five regions has generally reached an equilibrium. Obviously significant shifts in irrigated commodity prices will act to rebalance water use from time to time.

The equilibrium of different enterprises relates to gross income per ML as shown in the table below. The volume of super secure water provides a limit to how much almonds and other perennial horticulture can expand to. Any expansion above this volume must be dried off in the next drought.

Table 4-1: Water used by different industries and their relative gross income

WATER SECURITY	SECTOR	GROSS INCOME $/ML
High value - limited to Super Secure water volume.	Fresh stone and pome fruit / table grapes	$5,000 - $10,000
	Canning fruit	$3,000
	Dried fruit / wine / almonds / citrus	$1,600 - $2,000
Medium value – uses the Secure Water above that used by high value	Dairy - Traditional grazing Feed pads/Barns	$1,200 - $1,400 $1,800 - $2,400
	Maize	$800 - $1,000
	Cotton	$500 - $900
Low value – uses the Variable Water above the Secure Water	Rice	$300 - $600
	Winter Cereals	$200 - $400
	Livestock Grazing	$150 - $400

The report recognises that Horticulture may be constrained by what water is available in droughts but it does not appear to recognise the equilibrium around industries and reliability of water.

4.3.3 HOW DOES EACH INDUSTRY BEHAVE

The amount of water used by each industry determines ultimately its production level. The water used by each industry is not simply based on the annual available water used but also on the reliability or frequency of the available water. There has been some simplistic analysis (reproduced in the ACCC interim report) of the gross value of irrigated production versus annual water use which suggests that overall production is not driven by annual water use. However this misinterprets the way each industry behaves quite differently in the water market as each industry all have very different production drivers. The behaviour and hence production of each industry is summarised as:

Horticulture – Has relatively constant but growing water use, which is about to stabilise, and hence production has been constantly increasing but is now nearing its ultimate potential.

Dairy – Reached a relatively constant water use limited by volume of secure water, which has halved in last 20 years level, and supplies horticulture water needs in droughts, thus production is now stable albeit at this lower level.

Cotton – Expanded recently as rice alternative, limited by volumes of secure water, has reached a relatively constant annual water use, but contracts in droughts, thus reached its level of production which is now expected to be relatively constant except in droughts.

Rice - they are part of a mixed farms and have extremely variable water use reflecting what horticulture, dairy and cotton can't use. Thus rice production is a year to year proposition based on available water with ability to expand and contract dramatically.

Other Annual crops – opportunistic water use when water is plentiful and prices low but often preferred to rice but cannot expand like rice.

Livestock grazing – some opportunistic water use when water is plentiful and can have a limited but very strategic use of water when water is short.

Odds and sods – there are a number of high value, hobby farms and niche operations that regularly use relatively small volumes of water regardless of the season.

Understanding this behaviour is critical to understanding the market.

4.4 DATA FOR THE LAST FIVE YEARS ARE INSTRUCTIVE

Table S1-1: Water availability and prices in the Southern Basin

		ALLOCATIONS %			AVAILABLE WATER IN SOUTHERN BASIN (GL)[6]	PRICE OF WATER ($/ML)[7]
		NSW GS (MURRAY)	VIC HS MURRAY	BIDGEE GS		
2015/16	Dry	23	100	34	3,232	$208
2016/17	Wet	100	100	100	5,204	$63
2017/18	Average	51	100	41	3,738	$129
2018/19	Very Dry	0	100	7	2,644	$438
2019/20	Drought	0 (+ late season 3 %)	66 (80 Goulb)	6 (+ 5 % late season)	2,187(+ late 108GL)	$515
Repeat of millennium drought – worst on record		0	50 %(50 Goulb)	10	1,724	$800 - 900

As illustrated in the preceding table, for an irrigator planning water use, the last five years (2015/16- 2019/20) provide examples of the possible different scenarios that could apply in the future. There are five roughly equal likely future scenarios in which the data and behaviours around water use/trade/prices and production provide a reasonable if not perfect

[6] Water available to irrigators in main surface systems and excludes environmental water and groundwater. Also some additional water from conveyance dividends (NSW& Vic totals 150GL), plus NSW Suppl. Water (237GL in 2016/17, 140GL in 15/16), plus upstream Vic rivers 65GL.

[7] Weighted average price – MIL.

basis for irrigators engaged in planning. At the more extreme ends of seasonal variation, RMCG has also considered the likely impacts of a repeat of the millennium drought, based on current demand and current water-ownership. At the other end of the spectrum, a possible variation on the wet-year scenario is a wet summer, with widespread flooding, where irrigation demand is very low, as occurred in the 2010/11 season.

Irrigation-dependent industries production over five seasons: The production of the key commodities produced in the southern basin are shown below. *Other* horticulture production is not included as it did not vary significantly between years.

Table S1-2: Production of key commodities over last five seasons

SEASON & CLIMATE SCENARIO		ALMONDS TONNES[8]	DAIRY GMID M LITRES	COTTON BALES[9]	RICE TONNES
2015/16	Dry	82,333	1,728	100,000	244,184
2016/17	Wet	79,462	1,449	409,000	600,000
2017/18	Average	76,000	1,667	63,500	625,000
2018/19	Very Dry	92,000	1,319	409,000	54,000
2019/20	Drought	97,000	1,279	100,000	40,000
Repeat Millennium drought		Est 100,000	Est 1,300	Est 50,000	20,000

The ACCC should evaluate the water market in terms of impacts associated with the range of scenarios that the last five years demonstrate. It should also recognise any data (particularly farm survey data) that starts with 2010/11 extreme wet summer season is abnormal.

4.5 ISSUE 5 SUPPLY DRIVES PRICE AND THE RELATIONSHIP HAS STAYED CONSTANT

The ACCC report, by taking only a perspective since 2012, has not recognised the underlying relationship between volume of water allocated and price and how the reduction in water has driven the price consistently.

[8] Total Australian production, noting that more than 90 % of Australia's almonds are grown within the Southern Murray Darling Basin.

[9] Based on Cotton Australia annual region reports, assuming 66 % of crop in "Southern Valleys "is Murrumbidgee and Murray (i.e. excludes Lachlan Valley).

4.5.1 Volume Allocated versus allocation price curve

The sale of water both permanently as entitlements, and temporarily as allocations, has enabled water to move both long term and short term to find the most economic use and thus maximise total southern basin economic output. This was most evident during the Millennium Drought but is also evident through the evolution of the "equilibrium" of industries that has evolved.

RMCG has plotted the average annual temporary price of water versus annual allocations and found a very good relationship (not unexpected) as is shown in Figure 1-5 below.

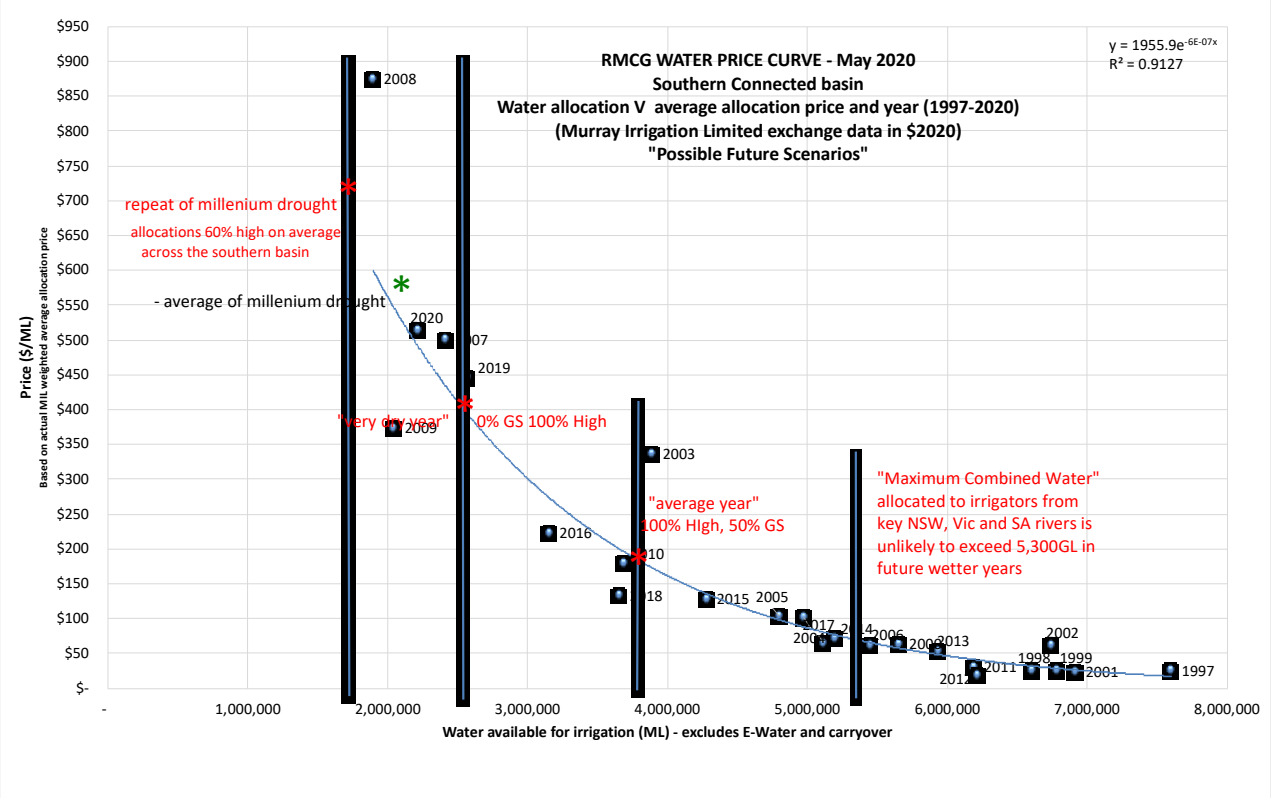


Figure 4-2: Water allocation vs average allocation price and year (1997-2020) (Murray Irrigation Limited exchange data in $2020) – Historical Scenarios

This demonstrates the enormous range of possible allocations between years and so the large range in likely water prices. It also demonstrates that the NSW General Security allocations are key to the available water in all but the drought years. This is the market at work. The temporary market reflects the marginal value of the water to the industry that is accessing the water. In simple terms the relative prices for different climatic seasons are as follows:

Wet	$ 75/ML – value to a rice farmer to set-aside for next year	– 16/17 (100% GS)

Average	$180/ML – max value to a rice farmer	– 17/18 (50% GS)
Very dry	$425/ML – max to a dairy/cotton/maize	– 18/19 (0% GS – 100% HRWS)
Drought	$900/ML – max to a horticulture enterprise	– (0% GS - 50% HRWS)

The price curve is therefore simply a connection of four points where the volume of water supplied for each type of water (ie very secure, secure, variable and wet season) coincides with the marginal price paid by each of the above industries. This suggests that the level of available supply drives the price of water. Therefore, any change in supply will directly affect the price of water.

The ACCC report fails to recognise this long term trend of water pricing.

4.6 ISSUE 6 NO RECOGNITION OF THE BASIN PLAN IMPACT

The volume of water available to irrigators drives the water price as shown in the previous issue, and when allied to 20 - 25% reduction in water entitlements in the sMDB, it is clear that basin water recovery has significantly impacted water prices.

4.6.1 TIMING OF WATER RECOVERY

The amount of buyback and water purchases through farm efficiency over time is shown below.

Table 2-10: Water transfers to the Environment (GL - LTDLE) - for financial years

YEAR	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Volume	3.4	62.7	327.3	188.9	257.6	123.9	44.0	50.8	33.4	53.0

The water transfers to the environment therefore total 1,145GL (LTDLE – Long Term Diversion Limit Entitlement) over the ten year period. It can be seen that only 86GL of this recovery occurred from 2015 onwards. In other words the last five years are effectively post basin plan water recovery. It is noted that the water recovery comprised a mix of entitlements that totalled approx. 1400GL., comprising an estimated 704GL of GS and 704GL of HS plus some LS (27GL) and supplementary.[10] Obtaining exact volumes recovered is difficult because some of the recovery has occurred under state programs which are recorded separately.

[10] RMCG 2018 – Update on GMID water availability scenarios and Irrigated Production across the Southern connected Basin – prepared for Goulburn Broken CMA.

The ACCC report should consider the impact of the basin plan water recovery purchases and seek exact figures on the number, the entitlement type and the purchase year of the water recovered.

4.6.2 CHANGE IN WATER PRICE DUE TO BASIN RECOVERY

The table below shows the relative available water and price over the last 25 years and also shows the available water IF the basin plan water recovery had not occurred.

Figure 4-3: Average available water versus water price for 5 time periods

TIME PERIOD	AVAILABLE WATER GL	WITHOUT BASIN AVAILABLE WATER GL	AVERAGE ACTUAL WATER PRICE (2020 $)
Historical wet - pre 2000	6,662	6,662	21 (35)
Normal - 2000-05	5,463	5,473	85 (125)
Millenium drought 2005-10	3,099	3,209	308 (398)
Recent wet – 2010-15	5,563	6,462	55 (61)
Recent dry – 2015-20	3,342	4,232	271 (277)

If one applies the price curve shown in fig 4.2, it can be seen that in the recent five year period the removal of available water due to the basin plan has increased the water price from approx. $148/Ml to $277/ML ($2020). This effectively means that the Basin Plan recovery has almost doubled prices on average. However this simple calculation masks the variance between years. Over the last five years the impact has ranged from $40/ML in wet years to $171 in last season's drought. An estimate of the impact on water prices in a repeat of the millennium drought is also estimated based on the price curve. Conversely, the % impact on water prices is greatest in the wet years at 164% increase, but only a 34% increase in a repeat of the millennium drought.

Figure 4-4: Estimated impact of basin recovery for 5 time periods

SEASON & CLIMATE SCENARIO	ACTUAL PRICE $/ML	ALLOCATED VOLUME RECOVERED GL	PRICE IMPACT W/O RECOVERY $/ML (%)	EST PRICE W/O RECOVERY $/ML

2015/16	Dry	223	980	98 (78%)	125
2016/17	Wet	66	1,400	41 (164%)	25
2017/18	Average	133	1,015	73 (121%)	60
2018/19	Very Dry	446	750	171 (62%)	275
2019/20	Drought	515	600	170 (50%)	282
Repeat Millennium drought		Est 780	400	Est 198 (34%)	Act real $ 582

Of course these estimates assume the "counterfactual" that the price curve would be unchanged with and without the basin plan. This counterfactual whilst appearing sensible, cannot be proved or disproved simply.

Therefore it is not surprising that this impact is quite different to previously reported impacts summarised by Wheeler (2019)[11] where she records that;

> "*Within the existing literature, Young and McColl (2008) first suggested that government buyback policy would influence the water market by increasing permanent prices. ABARE (2010) estimated that buyback would result in an increase of 17.5% in permanent water prices in the southern MDB. Aither (2016) suggested that about a quarter of the increase in temporary water prices was attributable to buyback, with climatic factors being the main driver of variability*."
>
> Wheeler et al (2019) own analysis of the Goulburn water market and the impact of buyback concluded that "*contrary to expectations, government water recovery had no significant impact on either permanent or temporary prices. But, water recovery did have a small positive impact on the volatility of monthly temporary prices and volumes*."

It is not surprising that these conclusions were reached as ABARE and Aither did not have the advantage of a longer time period and Wheeler confined her analysis to the Goulburn system only and did not consider the interconnection of the sMDB in terms of market impacts.

The ACCC report in section 13.2.2 states "*Shifts in allocations are primarily driven by climate trends, but policies often lack clarity and consistency. As noted by the report of the Interim Inspector General (IIG) the most recent significant driver of reduced allocations for Southern Basin entitlement holders has been reduced inflows*." Both the ACCC and the IIG report failed to also take account of the Basin Plan recovery on allocated volumes.

[11] Wheeler S.A. et al, (2020) *The rebound effect on water extraction from subsidising irrigation infrastructure in Australia,* Resources, Conservation & Recycling 159 (2020) 104755

4.6.3 ABARES MODEL – WITHOUT INCREASED ALMOND DEMAND AND BASIN RECOVERY WATER PRICES WOULD DROP BY 40%

In its very recent Insight report[12]ABARE have calculated that over the 14 year from 2005/06 till 2018/19 the impact of Basin water recovery has been an average of $71/ML increase in the allocation market. Further the increase in water demand from almonds has caused a further increase of $25/ML. This translates to a total of $97/ML on an average price of $236/ML ie without these impacts the price would be approx. 40% less.

On face value this accords with RMCG's estimate above of a 45% reduction from $277 to $148/ML over the last 5 years. However when adjusted for comparing similar seasons and only comparing water recovery impact, the ABARE report significantly underestimates the impact of the Basin Recovery particularly in dry year. In a repeat of the millennium drought ABARE estimates about a $70/ML impact compared to RMCG's $198/ML, typical year $80/ML impact to RMCG's $125/ML. It is only in the wet years that ABARE's estimates a higher impact than RMCG's price curve suggests.

There are a number of discrepancies with the ABARE report including:

i. Recovery volumes not included: The report acknowledges that it does not include some individual state water state volumes and thus underestimates the impact of water recovery.
ii. Horticulture impact; The report assumes that the increased almond demand since 2005/06 has impacted prices. This is not supported by an examination of the RMCG allocation price curve (fig4.2) where the price in the millennium drought was almost identical to the recent 2019/20 season where allocated volumes were very similar. ABARE did not address the recent season its report which has provided very important data for a drought years post water recovery. If it had considered the recent seasons' data it would have led to different conclusions.
iii. Rebound effect: The report suggests that those farmers who adopt on farm water efficiency programs have increased their water use by 23%. Thus assumed that the water recovered for farm efficiency has led to increased demand and increased water prices. This assumption ignores the ongoing restructuring that is happening in agriculture and the inherent variation between years. The survey of farmers[13] was based on comparison of water use between 2010/11 and 2015/16. The season 2010/11 was unusually wet in the summer when water use was at its minimum. Further the survey did not consider whether the farmers had been increasing their overall water use prior to the implementation of on farm efficiency grants. Therefore based on the data referenced there is absolutely no evidence of any rebound effect or it having any impact on water prices.

[12] ABARE Issue 7 2020 "Analysis of Economic Effects of water Recovery in the Murray-Darling Basin – Whittle et al

[13] Wheeler S.A. et al, (2020) *The rebound effect on water extraction from subsidising irrigation infrastructure in Australia,* Resources, Conservation & Recycling 159 (2020) 104755

The ACCC should question the ABARE water market modelling in the light of the above discrepancies and its failure to recognise the allocation price relationship identified in fig 4.2.

4.7 ISSUE 7 DIRECT RELATIONSHIP BETWEEN ENTITLEMENT PRICES AND ALLOCATION PRICES

Within the ACCC report there appears to be no discussion of the obvious connection between entitlement prices and allocation prices. Once this is understood it becomes clear how available water drives allocation prices, which in turn drive entitlement prices.

RMCG have compared the value of entitlements to annual yield (or allocation) and the average annual temporary market price by using weighted probabilities of average annual income dividends. Rolling average "annual dividend" is calculated by averaging the preceding five years average allocation prices times the allocation. It is found that the temporary value reflects about an annual 3-4 % of the entitlement price (regardless of which of the multiple mainstream Southern MDB entitlement or water-share products are purchased). This is illustrated in the following table.

Table 4-2: Income per ML of entitlement owned – NSW Murray

	GENERAL SECURITY	NSW HIGH SECURITY
The average "income dividend" over the last five years	$53/ML	$278/ML
Today's entitlement value Return on entitlement	$1500/ML 3.5%	$9,000/ML 3.0%
Entitlement value 5 years ago Return on entitlement	$800/ML 6.6%	$2,500/ML 10.9%
Capital gain last 5 years	10%/year	70% per annum
Fixed charges applied per ML	$18/ML (offset by efficiency dividend)	$5-20/ML

The relationship between entitlement prices and allocation prices (expressed as % dividend income) is shown over time in the following figure for Victorian High security products. It is noted that the dividend return from entitlements has declined in recent years and this is consistent with interest declines over the same period. It is noted that buyback occurred mainly during the period when entitlement prices were declining in the Victorian system and they appear to have possibly modified the fall in prices associated with wet period of low allocation prices, coupled with the period when the dairy industry was struggling post millennium drought.

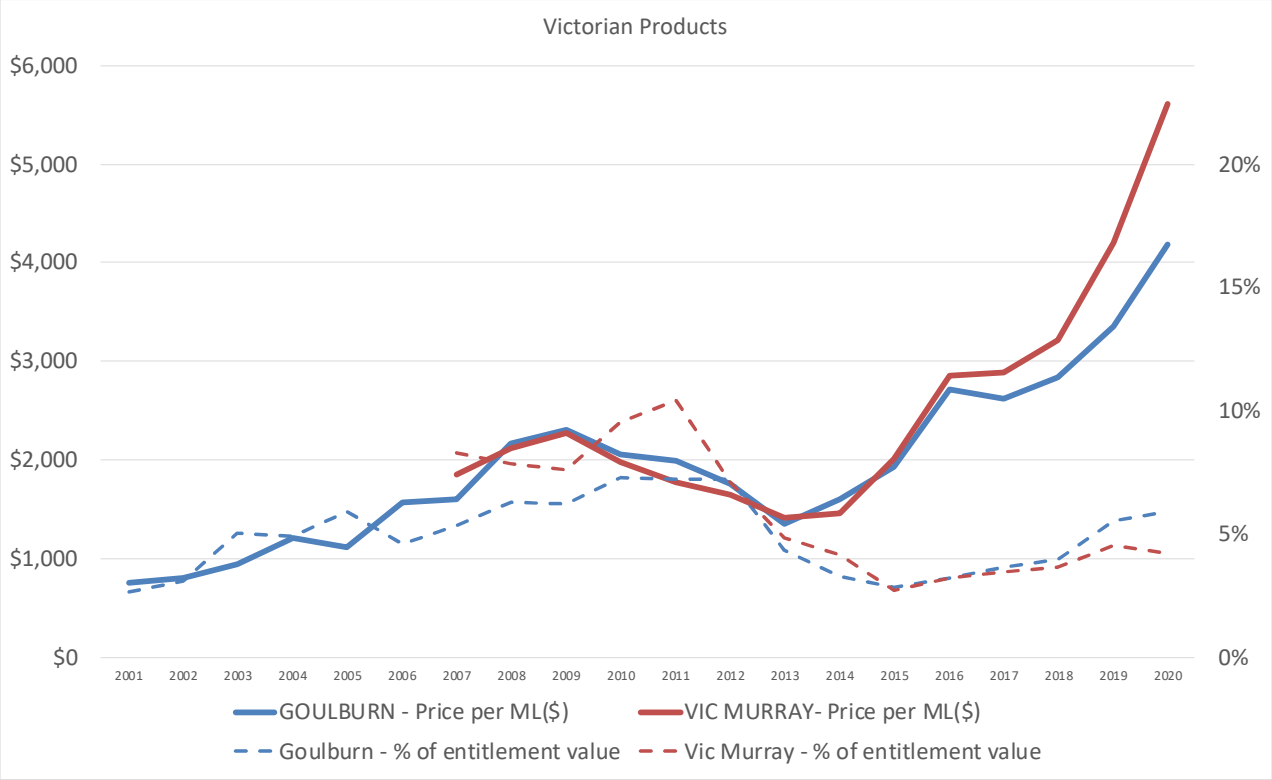


Figure 4-5: Income dividends versus entitlement prices for Victorian High security

The same relationship is shown below for NSW Murray GS entitlements, however the impact of buyback appears to be slightly different. There appears to be an anomaly in 2009 where entitlement prices appear to have escalated possibly due to start of buyback escalating prices initially.

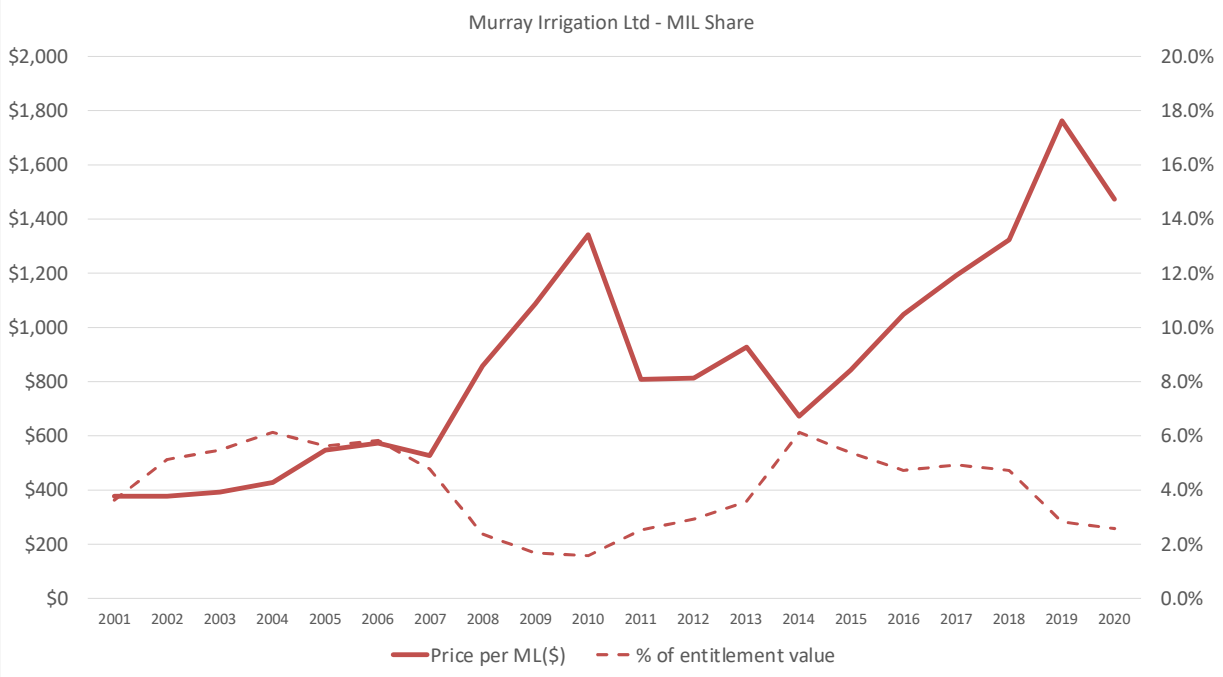


Figure 4-6: Income dividends versus entitlement prices for NSW Murray GS

RMCG suggest that the relationship between entitlement value and allocation prices is within commercial return on capital expectations. The sustained increase in entitlement value reflects the increased income dividends over the last five years, the steady fall in commercial interest rates for finance, and a perception that there is likely to be less water allocated to the lower security entitlement products in future.

It is noted that the market has priced the various entitlements according to the various income dividends arising from the difference in reliability of each entitlement.

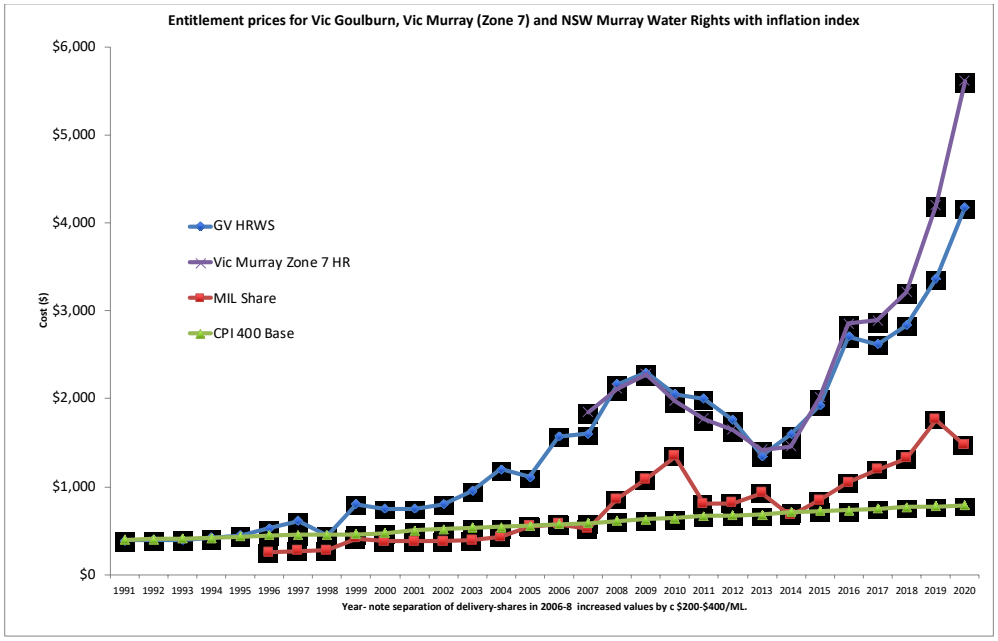
No one knows what the future will provide in terms of seasonal scenarios (i.e. wet, average, dry, drought). However it appears that when entering a wetter period (lower allocation prices) the income dividend from owning entitlements reduces and thus the value of the entitlements also appears to reduce. Conversely entering a drier period sees an increase in entitlement values.

ACCC report has failed to identify the allocation prices and entitlements relationship

4.8 ISSUE 8 CAPITAL GAIN IS SIGNIFICANT

The capital gain from entitlements within the sMDB has been significant and has ranged depending upon the entitlement type, from 7.5% to 12% compound (nominal $) since 1995. This income is on top of the approx. 3-5% dividend income from the allocation prices. This effectively means water has provided some of the highest returns possible for investors. This return has fundamentally been achieved by the reduction in available water over that same period ie a halving of the available water. It is also what has driven much of the water market.

This capital gain is shown in the long term graph of some of the entitlements.



The ACCC in its report said;

> *Water rights are a significant asset for many farmers. Tradeable water rights are now a significant asset for many farmers. The value of water entitlements on issue across Australia in 2018–19, held by active and retired farmers and others, has been estimated to be $22.7 billion.*

However the ACCC failed to include an evaluation of the capital gains, how that drives the market, how it impacts on the irrigator and the region and who benefits from that capital gain.

4.9 ISSUE 9 WATER REPRESENTS 50% OF FARM CAPITAL RESOURCES USED

The ACCC in its report said

> *Water rights are a significant asset for many farmers. Tradeable water rights are now a significant asset for many farmers. The value of water entitlements on issue across Australia in 2018–19, held by active and retired farmers and others, has been estimated to be $22.7 billion.*

The report provided ABARE estimates for 2017/18 of the average proportion of water entitlements as a proportion of total farm capital assets for horticulture (40%), dairy (25%) and Rice (37%) farms. The report further suggests that since 2006/07 these proportions have remained the same for horticulture and rice farms but has declined from 35% for dairy farms. However this time series is from an extreme drought when entitlement prices were relatively high compared to a period before they have risen dramatically in response to the recent drought.

This analysis ignores the value of the water entitlements utilised by farmers when accessing the temporary market. When the total capital employed is considered, the value of water entitlements is estimated (from RMCG farm clients and industry knowledge) to be of the order of 50% for most almond, dairy and rice farms. This similarity between the major industries supports the concept of equilibrium. Almond growers need water every year so they effectively utilise the higher value entitlements (below the choke HS), the dairy farmer wants water most years (has some other feed alternatives) so utilise the lower value HS entitlements (eg Goulburn) and rice utilise lower value (GS). It is only for the very high return and lower water use crops (table grapes and fresh fruit) where water is a lower proportion (approx 33%) of the capital value utilised.

ACCC Interim report: *In understanding water trade the proportion of capital utilised within the different farming systems is a critical factor and is becoming a larger proportion (now approx. 50% of the total capital resources on most farms) as prices have increased.*

4.10 ISSUE 10 CARRYOVER, SPILLS AND FORFEITS

4.10.1 ACCC GETS THE CALCULATIONS INCORRECT

The ACCC in section 3.3.1 undertakes its own analysis of NSW usage accounts and comes to the staggering conclusion that usage only accounts for 60% of account debits. This is shown in figures 3.32 and 3.33 in the ACCC report.

The ACCC report suggests for example that in 2018/19 season, the forfeited volume in the Murrumbidgee was about equal to the volume used in the Murrumbidgee system or about 1000GL. An analysis of the NSW allocation statements indicate that these ACCC estimates of the volumes of water use include 67GL of environmental water use and 945GL (775GL is environment) of supplementary water forfeited. In that season (2018/19) whilst there was a determination that it was possible to allocate supplementary water at the start of the season, there wasn't a time period when it was permitted to be used. Therefore the analysis of water forfeited by ACCC is completely erroneous and misleading as the forfeiture in Murrumbidgee was 2GL not 945GL as indicated. This error stems from a misreading of the Table 11 Allocation account balance summary in the General Purpose Water Accounting Statement 2018/19 Murrumbidgee Catchment produced by NSW State Water.

Further the ACCC analysis involves "double counting" the impact of a single year of carryover in subsequent years, as if the volume is extra water made available each year and can be used every year. Rather carryover can only be used once.

> Consider a Victorian Goulburn or Murray irrigator that carries over 30% in the first year of a 10 year period, and maintains this volume of carry over as annual carry over for 10 years, and thereafter receives and uses 100% allocation of HRWS each year, In this example (and in reality) this irrigator uses all other available water. I.e. uses 97% of available water allocations made during the 10-year period, not the 70% so often quoted. The initial carry over action by the irrigator in this example provides the irrigation-business surety; in a world where opening allocations are often well below 100%, even in the relatively secure Victorian HRWS systems.

This analysis by the ACCC continues the myth that irrigators only use 70% of the available water (MDBA 2018-19 Transition report). It leads to comments like;

> *Wheeler et al. (2014b)[14] found that historically irrigators in the MDB have only used around 70% of their water allocations they receive. Therefore, even if water diversions are reduced, irrigators may not increase their demand for temporary water in the market (because they increase their utilization of water entitlements or adapt to less water correspondingly)*

[14] Wheeler, S., Loch, A., Zuo, A., Bjornlund, H., 2014a. Reviewing the adoption and impact of water markets in the Murray-Darling Basin, Australia. J. Hydrol. 518, 28–41.

4.10.2 ESTIMATES OF CARRYOVER, SPILLS AND FORFEITS

RMCG have compiled from the NSW account statements and the Victorian Registry data a table of carryover and spills that provides a very different conclusion to that in the ACCC report.

When the storages are full and water spills, the spills cannot be collected and used for allocations. If the spills are caused by storages holding “carryover” water then both Vic and NSW have accounting mechanism that deducts the spills against carryover water and credits the allocation water.

In Victoria this results in so called “spills” and in NSW in water “forfeited”. The accounting methods vary between states but the outcome is very similar. The spills and forfeits for the irrigators entitlement holders only (excludes environment, critical needs and urbans) are shown in the table below.

From the table it can be seen that spills and forfeits vary considerably from year to year. In the last seven years there was a total of 591GL, or about an average of 84GL per year, spilt or forfeited across the whole southern connected basin. Therefore over the last seven year about 7% on average of the typical 1200GL stored annually as carryover is spilt or forfeited each year. These spills represent about 2% of the average total water used annually

The wet period of 2010/11 till 2013/14 had more spills and forfeits but it is difficult to generalise about this wet period because of the anomalous Victorian Murray spill rule during this period. Although it is known that approx. 200GL of inflows spilt from Hume dam in spring 2016 that were not debited against Victorian LRWS.(Low Reliability Water Shares)

Table 4-3: Spills and forfeits (GL) trends[15]

	GOULBURN		VIC MURRAY		NSW MURRAY		MURRUMBIDGEE		TOTAL	
	Carryover	spills	Carryover	spills	Carryover	Forfeit	Carryover	Forfeit	Carryover	Spills/ Forfeit
2020/21	306		305		319		268		1188	
2019/20	173	0	190	0	262	0	111	0	734	0
2018/19	285	0	172	0	449	6	359	2	1265	8
2017/18	538	29	318	58	654	12	484	7	1994	106
2016/17	220	0	286	163	301	54	281	181	1088	398
2015/16	204	0	196	0	342	9	355	7	1097	16
2014/15	357	0	267	22	352	18	470	23	1446	63
2013/14	298	0	663	472	170	33	309	30	1440	na
2012/13	867	288	1,240	33	668	37	544	77	3319	na
2011/12	930	113	1,228	0		151	564	335	na	na
2010/11	325	0	446	0			493	678	na	na

The spills from the NSW Murray system are shown pictorially on the following diagram, along with the carryover held privately by NSW Murray irrigators. This illustrates the order and frequency of spills given the various levels of carryover.

[15] The Vic Murray spill rule changed in June 2013 from Dartmouth spill to Hume spill which increased the spills accounted and increased as a one off the spills in 2013/14.

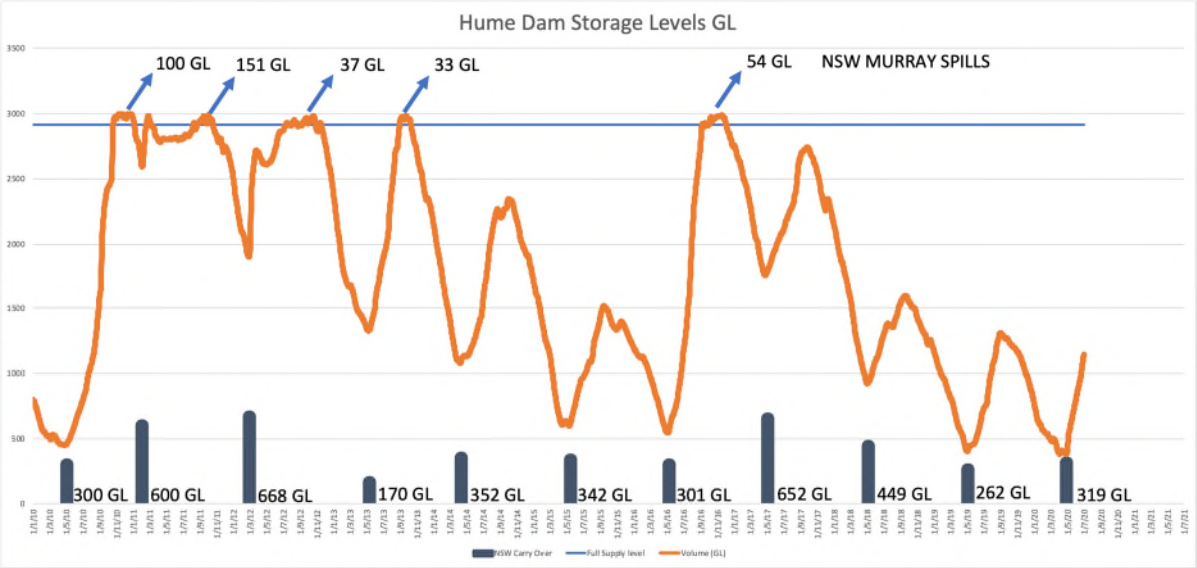


Figure 4-7: NSW Murray Spills from Hume Dam

The ACCC should reconsider its analysis of carryover, spills/forfeits and recognise that irrigators have used over the last 7 years 98% of the available water whilst maintaining carryover around 1200GL. It should dispel the myth that irrigators only use 70% of the available water.

4.11 ISSUE 11 LONG TERM DIVERSION LIMIT ENTITLEMENT (LTDLE) FACTORS ARE INCONSISTENT

Each entitlement under the Basin Plan has a LTDLE calculated that defines the reliability of the entitlement under the current water sharing plans and assuming the historical climate conditions. Therefore these factors should provide a sound basis for evaluating and assessing each entitlement type. This is considered a fundamental building block for a market based system.

However there are a number of issues with the LTDLE factors which include;

- The variance in the Murray High Security products between states appears to be inconsistent. Vic is supposedly the most secure at 97.4% compared with NSW Murray and SA at 88%. In practice this last season (2019/20), Victoria's allocation was only 66% compared with a full allocation (or 97%) for NSW and 100% for SA.
- There has been almost nil allocations over the last 15 years to the Victorian LRWS which is in stark contrast to the theoretical yield (LTDLE) of 54% - 58%.
- The yield of the NSW Murray supplementary is also nowhere near 70.3% as there has only been one year in the last seven where there has been a very modest allocation.

The reduction in Victorian LRWS allocations (compared to LTDLE) is exacerbated by the Victorian spill rule. It prevents allocations to LRWS until the reserves are sufficient to ensure next seasons HRWS, means that there is a catch 22 situation when the dam spills because of carryover but is not debited against that carryover.

The LTDLE factors when combined with the various entitlements in each valley, by definition, multiply out to equal the SDL's and BDL's. Similarly the "cap factors' should also multiply out to give the 1995 Basin cap on diversion limits. Over time these factors have varied as we have moved from cap limits on diversions to BDL's and now SDL's.

It is very difficult to get an overview of all of the entitlements across the sMDB with environment holdings, conveyance, urban water authorities and critical needs all separated out to provide a reconciled list. Only with such a list would it be possible to see how the number of entitlements and factors have evolved over time,

LTDLE should be critical information for water trade and the changes over time and the inconsistencies should be evaluated in the ACCC review

4.12 ISSUE 12 UNDERUSE AND IRRIGATORS NOT GETTING THEIR SHARE

Under the Murray Darling Basin strategy there is an annual auditing process to compare actual irrigators' water use with their permitted water use. This has been reported annually by the MDBA in the 2018-19 Transition report. This report identified that irrigators had been underusing their share of the allocations by around 1200GL compared to the Basin Cap accounting process. Since this latest report there has been further investigations into the volumes of water underused.

Current estimates by the MDBA has suggested that 375GL of water annually over the last 7 years has been underused by irrigators compared to their share under the Basin Plan auditing. This underuse is a combination of changed irrigator behaviour (ie the use of carryover increasing spills) and policy changes by state agencies that decreased allocations (eg. The Victorian carryover spill rule and the NSW reduction in max GS allocations).

So far it has not been possible to attribute the relative volumes of underuse to the use of carryover increasing spills or to policy changes that have decreased allocations but it suggested that it may be roughly 50:50 of the 375GL.

The figure of 375GL is considered by GSCC and RMCG to be an underestimate because the under estimate calculation did not consider;

a) that the updated water sharing plans may not have been modelled correctly. However there are concerns about the plans in relation to some LTDLE entitlement factors, which indicate potential problems with the water sharing plans.

b) The way the environment utilises its allocations is different to how irrigators do. This is due to the use of “run of the river” flows. These are inflows into the system below the storages. In the Goulburn in particular much of the irrigator volumes have been delivered via run of the river water. In contrast the environment always gets its water from storage releases and gets to keep by default the run of the river flows. This means that the environment entitlements yield about 120-130% compared to an irrigator entitlement.

c) The river losses have increased in recent times and this has decreased the available water for irrigators.

The ACCC report does not consider the concept that irrigators are NOT getting access to all of the water that they are entitled to under the Basin Plan as indicated by the underuse report.

4.13 ISSUE 13 THIRD PARTY IMPACTS

The ACC acknowledges that third party impacts should be avoided. There a number of potential third impacts that affects the GMID and need to be addressed. These include:

- **Trade downstream requires more losses** The use of water trading has facilitated the expansion of high value permanent plantings downstream of the traditional irrigation areas and provided a much-needed source of water for high value plantings in severe droughts. It has also enabled the development of high value orchards, without the development-expense of purchasing entitlements. That has generated benefits in terms of the value of production. However, the greater distance travelled from the water storage dam has also increased the volume of water required to be set aside to deliver that water. The growth in the quantum of this transfer water which needs to be ‘set aside’ has reduced the volume available for allocation to general security users.

- **Limit trade downstream where delivery limits have been met or exceeded.** Rather than waiting for devastating failure as drought returns or rivers are unable to deliver, serious consideration should be given to limiting the total developed area of permanent plantings in lower reaches of the river systems. The added losses from the transfer of water further downstream should be seasonally limited, or at very least accounted for within the water transferred. This volume should not be subtracted from the pool available for allocation to General Security licence holders.

- **Downstream trade has consequences** The bias towards downstream horticulture that has been created through reform application, combined with a low level of meaningful review and lack of genuine consultation since the early 2000’s, has resulted in suboptimal outcomes that have placed the long term viability of regional economies at risk. In GMID case, this has seen the halving of the dairy industry over the last 20 years. Whilst at the

same time there has been increased environmental damage to the Goulburn river and the Barmah choke and the ability to transfer water downstream for the environment has been compromised. This is because downstream irrigator trade from the Goulburn and Murray (above the choke) system has enabled the water use by irrigation to be maintained in the "below the choke" section of the Murray river. This "all trade is good trade" mantra fails to consider the wider triple bottom line impacts.

- **Improve river operations efficiency.** Equally, clear incentives should be established to encourage adoption of greater delivery efficiency in river operations, which now appear to be requiring even more water[16] to 'run the river' to deliver water to irrigators. This may follow the example of the Computer Aided River Management system for the Murrumbidgee River (CARM) supply measure project.

- **Review rules-based approaches that prescribe a fixed volume for any purpose.** The wider management of the water resource is properly subject to clear and transparent rules between states, and between classes of water user. However, several of those rules were predicated on flow data from more than 100 years up to 2004 i.e. much more generous water resource scenarios, are now disadvantageous particularly to holders of general security entitlements. Examples include the level of flow into South Australia being triggered by the combined volume of water in storage at prescribed dates[17] and the Barmah-Millewa Forest Environmental Water Account[18]. A drying climate has led to growers holding more water in reserve through carryover, than was the case when underuse was socialised between all users. That means the storages are now fuller at any time of the year, which perversely then triggers higher prescribed flow rates to South Australia, to the disadvantage of NSW and Victorian allocations, and particularly NSW general security licence holders. Many of the current rules based approaches to river management decisions need to be reviewed and revised to reflect the new water resource scenarios, including setting aside of prescribed volumes[16], the development of 'debts' for irrigators to repay in better seasons, and the regular 'flooding out' of rules based flows by large environmental releases.

- **Unnecessarily Low risk approach;** This approach is evident in the adoption of increasingly risk averse reserves and allocation policies in all states, and by Snowy Hydro in regard to Snowy Hydro Limited releases - which result in lower and later allocations particularly to NSW general security licences. This has also become evident in far lower allocations and lower water use in seasons with relatively high

[16] NSW Water Allocation Statement, released 17 August 2020. 'The end of July accounts indicates that 4,610 gigalitres (GL) of total shared Murray resource is available in the extreme dry (99thpercentile) case, of which about 2,000 GL is needed to run the system (incorporating South Australia's dilution entitlement and any shared resource which cannot be regulated).

[17] MDBA, 2020. Water Sharing in the River Murray: 'The calculation of state shares includes the shares (volumes) that each state holds in MDBA storage at the end of the month. The calculation includes volume stored and the remaining 'airspace' or volume left in storage for each state.'

[18] NSW, 2017. The Barmah-Millewa Forest was the first site along the Murray to be allocated an environmental water allocation, in 1997. A Sustainable Diversion Limit Adjustment was undertaken in 2017 to enable the allocation to be used more effectively.

inflows, where previously there was an opportunity for NSW annual summer croppers to recoup lower returns in drier seasons.

The ACCC inquiry needs to consider the above listed third party impacts.

4.14 ISSUE 14 VOLUMES OF ALLOCATION TRADE SEEMS EXCESSIVE

The ACCC report has identified numerous issues with the details of the volumes of water traded. It has identified that there are a large number of $zero water trades which are suggested to be mostly within business transactions or environmental trades. However, the sheer total volume of water traded which seemingly totals up to twice the volume of water allocated in any one year raises questions about the integrity and usefulness of the trading. Even a recent report Water Market Report by Aither indicated that the commercial transactions totalled 800GL in Victoria alone representing over 70% of the water allocated to irrigators in the 2019/20 season. This number suggests that there is a lot of water trade that could be considered “churning”.

The ACCC should consider the relative volumes of trade and the necessity of that trade to ensure that there is not inefficient costly and potentially unscrupulous water trading.