

30-4-2018
Murray-Darling Basin Royal Commission
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Murray-Darling Basin Royal Commission

Dear Commissioner,

Cotton Australia, as the peak industry body for cotton growers in Australia welcome the opportunity to contribute to the South Australian Royal Commission into the operation and effectiveness of the Murray-Darling Basin Plan ('the Plan'), and whether the Plan is being complied with.

Cotton Australia

Cotton Australia has always been active participant in all Murray-Darling Basin ('MDB') discussions. As a major stakeholder, the cotton industry understands the importance of achieving the Murray-Darling Basin Plan's ('MDBP') objectives of;

Introducing a sustainable and long-term adaptive management framework for the Basin water resources, while also optimizing social, economic and environmental outcomes arising from the use of the Basin water resources.¹

The cotton industry understands the importance of continually improving water efficiencies and security for all uses of the Basin water resources. We have actively advocated for a balanced approach throughout the MDB discussions. Access to water for our growers is critical to ensuring longevity of the cotton industry and communities in which they operate. To ensure that access we recognised that it is also crucial that we have a healthy, working river system.

The Australian cotton industry supports more than 1200 cotton farming families and businesses. The industry is a key pillar for around 152 regional communities throughout Queensland, New

¹ S5.02 Water Act 2007 (Cth)

South Wales and Victoria earning our economy an estimated \$2.5 billion (farmgate) this year. There are around 1473 cotton farms with each farm providing on average 6.6 job opportunities within those communities².

The availability of irrigated agriculture directly correlates with local level impacts on employment and population with reduction in water availability. A reduction of 50% water availability would result in a 18.9% loss of jobs in some communities³.

Cotton Production

Cotton is predominately produced throughout Queensland and New South Wales. In Qld, cotton is grown mostly in the southern regions, including the Darling Downs, St George, Dirranbandi and Macintyre Valley regions, while, some cotton is produced throughout Central Qld around Emerald, Theodore and Biloela.

In NSW it is grown from the Macintyre River on the Queensland border and covers the Gwydir, Namoi and Macquarie Valleys and stretches along the Baron and Darling Rivers in the west and the Lachlan, Murrumbidgee and Murray Rivers in the south.

Australian cotton growers are the most sophisticated in the world. The cotton industry has a long-standing commitment to adopting best management practices, investing heavily in innovation, research, development and extension to improve sustainability measures, water efficiency and crop yields.

The cotton industries commitment to improving social, economic and environmental outcomes in the MDB is illustrated through the above figures around jobs, farmgate earnings and our continual improvements in sustainable practices.

The Australian Bureau of Statistics in 2014 stated that the Australian cotton industry achieved a 40% increase in water productivity since 2003. Meaning 40% less water is now needed to grow

² http://cottonaustralia.com.au/uploads/publications/Sustainability_report_201114.PDF (page 4)

³ <http://www.insidecotton.com/xmlui/handle/1/312?show=full> (page 4)

one tonne of cotton lint.⁴ The Australian cotton industry is considered the most water-efficient in the world producing “more crop per drop”⁵.

General Comments

Basin Plan

Cotton Australia is fully supportive of the Basin Plan and its objectives. The Basin Plan is working and will take time for results to fruit. The Basin Plan has been in effect now for five years and has a timeline until 2026. The Basin Plan has a complex function; it has to consider a large and diverse range of stakeholder interests relating to jurisdictional, cultural, social, economic and environmental impacts. For the Basin Plan to be successful it is important that the true interests, concerns and facts are not lost through fear-mongering and politicking of complex issues. Cotton Australia believes it is in the interest of our industry for this plan to succeed in its environmental, social and economic objectives. The successful implementation of the Basin Plan relies on the successful implementation of the Northern Basin Review, the 450GL Up water and the SDLAM 605GL Down water.

Barwon-Darling

The stimulus behind this State based Royal Commission and other similar inquiries and reviews is a result of allegations aired in mid-2017 on ABC’s Four Corners and Lateline programmes. The geographical area in which the allegations arose is within the Barwon-Darling. It is important to provide a synopsis of where and how that river system is managed and regulated so these allegations are put in perspective

Where is the Barwon-Darling?

The Barwon-Darling starts upstream of Mungindi at the confluence of the Macintyre and Weir Rivers on the Queensland border and extends down through the north-west of NSW flowing through the townships of Walgett, Brewarrina, Bourke, and Loath, before entering the Menindee Lakes system, and then flows down the Lower Darling to its confluence with the Murray River at the town of Wentworth.

⁴ Australian Cotton Water Story 2012 ABS 2014

⁵ http://cottonaustralia.com.au/uploads/resources/CEK_Chap_2_A_Sustainable_Cotton_Industry.pdf

How is access to the waters of the Barwon-Darling River system managed?

All water access across NSW is managed through a suit of state legislation and regulation in connection with the Commonwealth Water Act and the Murray Darling Basin Plan.

The primary management regulation for this river system is the *Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012*. The NSW Department of Primary Industries provides a summary sheet of Water Sharing Plan rules that provides guidance on the following areas;⁶

- Limits to the availability of water;
- Rules for granting access licenses;
- Rules for managing access licenses;
- Access Rules for specific areas;
- Trading Rules.

The Water Sharing Plan, like all NSW Water Sharing Plans is made under the auspices of the New South Wales Water Management Act 2000.

The introduction of the Commonwealth Water Act in 2007 and the Murray-Darling Basin Plan (2012), the management of the Barwon-Darling must be consistent with the Commonwealth legislation.

What does the term “Unregulated” mean?

It refers to the fact that water flow is not “regulated” into and by large, upstream government owned dams

The term “Unregulated” does not take on its ordinary dictionary meaning. Stringent rules apply to the access of water throughout the Barwon-Darling, as is the case across the entire Murray-Darling Basin. “Unregulated” simply means that there are no, large, government owned dams on the system, allowing the controlled capture and “regulated” release of water.

How much water is reserved for the environment?

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http://www.water.nsw.gov.au/_data/assets/pdf_file/0007/548683/wsp_barwon_darling_rules_summary_barwon_darling_unregulated_river_water_source.pdf

In Excess of 94% of all flows in the Barwon-Darling River are reserved for the Environment

There are minor variations in how the NSW Government and the Murray-Darling Basin Authority measure flow reserved for the environment. However, both agree that well in excess of 90% of flows are reserved for the environment. Flows reserved for the environment are not available for extraction by irrigators or other water users such as town water supplies.

The NSW Water Sharing Plan states that the Barwon-Darling's long-term annual commitment of water as planned environmental water, equates to a long-term average of 94%⁷.

The Murray-Darling Basin Authority states the average annual flow through Bourke is 3500GI⁸, and the Base Line Diversion limit (water being extracted for all use) at the start of the Basin Plan was 198GI, therefore reserving 94.3% for the environment. The Commonwealth has acquired or is currently acquiring 32.6GI of irrigation entitlement. This acquisition of water for the environment will result in over a 95% reservation for the environment.

How much water flows through the Barwon-Darling system?

The Barwon-Darling is a very episodic river system. In its natural state, the level of flows depends entirely on the rainfall conditions in catchments and the catchments of its tributary systems.

Wet periods result in high flows, while droughts will cause the river to stop flowing. Documented stories of the old 1800's Darling River paddle-steamer captains clearly show that in some periods they were able to navigate well upstream of Bourke, while at other times they were stranded for up-to three years, waiting for rain to make the rivers flow.⁹

During extreme floods flows in excess of 500GI per day have been recorded flowing through Bourke, while Bourke gauge records also show no flow at all for 153 days between July 2, 1943 and December 2, 1943.

What contribution of flows does the Barwon-Darling make to the MDB?

Extractions from the Barwon-Darling account for just .05% of all flows across the Murray-Darling system.

⁷ Water Sharing Plan For the Barwon-Darling Unregulated and Alluvial Water Sources 2012 – Reg 17 (1)(b)(i)

⁸ <https://www.mdba.gov.au/discover-basin/catchments/barwon-darling>

⁹ <http://discoveringthedarling.com.au/early-settlement/paddle-steamers/>

The Murray Darling Basin Authority estimates that total water run-off across the Basin is approximately 32,500Gl, with average extractive diversions at the start of the Plan being 13,700Gl. When finalised the Basin Plan will decrease diversions by 3200Gl, with total allowed diversions for 10,500Gl. Meaning close to 68% of all flows across the Basin will be preserved for the environment.

With allowed diversions in the Barwon-Darling being reduced from 198Gl to 165.4Gl, they will account for just 0.5% of all flows across the entire Basin.

Out of the allowed 10,500Gl of diversions, the Barwon-Darling diversions, of 165.4Gl, account for 1.6%.

To put the extraction level in further perspective the Menindee Lakes system which starts at the bottom of the Barwon-Darling evaporates (on average) approximately 393Gl/yr, over twice the extraction on the Barwon-Darling system.

How access is managed for licenced irrigation entitlement holders along the Barwon-Darling system?

All irrigators wishing to extract water out of the Barwon-Darling system require a Water Access Licence (WAL), and other associate approvals.

The WAL is the key document, which sets out the number of shares the entitlement holder has in the available water resource. Each year the NSW Government determines the amount of actual water entitlement that can apply to that share.

Water can only be extracted when certain flow conditions exist on the river. The river has to be at a required height before extraction commences. Typically, flow conditions are expressed as a certain flow in megalitres per day through a nominated river gauge.

On the Barwon-Darling there is a mix of WALs that can be held;

- “A” Class
- “B” Class
- “C” Class.

Water attached to a “A” Class licence can be extracted when river flows are at a lower level compared to “B” and “C”.

Example: An irrigator holding an “A” Class licence just upstream of the Bourke Gauge can pump that component of the licences provided the flow at the Warraweena Gauge was at 400MI/d or higher and flows at the Bourke Gauge were maintained at 350ml/d or higher. Likewise, “B” class licence to access flows would have to be 1,330MI/d and 1,250MI/d respectively. While “C” Class access flows would need to be 1,330MI/d and 11,000MI/d.

Current irrigation licences on issue on the Barwon-Darling are:

“A” Class

115 WALs 9,856 megalitres

“B” Class

82 WALs 133,069.2 megalitres

“C” Class

15 WALs 45,745.6 megalitres

Total 188,670 megalitres or 189GI

However, even if the flow conditions are met, an irrigator cannot pump if he or she has reached their volumetric limits as reflected in their water accounts. Given, the episodic nature of the flows in the river system, irrigators are able to carry-forward water that they haven’t been able to access in one water year to future water years¹⁰.

Extraction management is controlled by the fact that no more than 189GI collectively, can be accredited to irrigator accounts in any one year. Ensuring the long-term average extraction cannot exceed the 189GI allowed under the Water Sharing Plan. It is important to note that the above access licence details include the 32.6GI of licence entitlement held by (or contracted to) the Commonwealth Government.

¹⁰ Water Sharing Plan For the Barwon-Darling Unregulated and Alluvial Water Sources 2012 – Division 2

Is all water use recorded?

All irrigation licence entitlement holders are obliged by their licence condition to be able to demonstrate in volumetric terms their water take. The exact requirements vary from licence to licence and works approval to works approval. Accepted methods include log books for pump use, time and event meters (government read water meter), installed water meters.

All large volume pumps have meters installed and have had for more than 30 years.

How much water doe the Commonwealth Environmental Water Holder (CEWH) own on the Barwon Darling?

As of January, 2018, the CEWH held the following entitlements on the Barwon-Darling system¹¹.

Class	Volume (ML)
A Class	73
B Class	15,225
C Class	12,498
Total	27,796

However, there is approximately another 6GLs that has been contracted by the Commonwealth, but not formally transferred.

Water Flows and Use on the Barwon-Darling 2012 to 2017

Cotton Australia has been very concerned by what it has seen as very one-sided and inaccurate reporting and commentary on the management of the Barwon-Darling, and its flow patterns.

In essence, the Cotton industry has been singled out as the reason for low flows in the Barwon-Darling, the dramatic decline in the Menindee Lakes water levels, and the low flows in the Lower Darling.

Cotton Australia, accepts as the obvious truth, that if water is extracted upstream, it is not available down-stream. However, it absolutely defends the rights water entitlement holders to take their allocated legal share of water, in strict accordance with the appropriate water sharing plan.

¹¹ <http://www.environment.gov.au/water/cewo/about/water-holdings>

What Cotton Australia does not accept, is that irrigation extractions, primarily by cotton producers, are the cause of the low flows that have captured the attention of the media and other commentators.

Cotton Australia engaged independent hydrologic and river system modeller consultant Daren Barma (Barma Water Resources Pty Ltd) to undertake a review of Barwon-Darling River flows and extractions for the period 2012-2017. Mr Barma's report is attached (**Attachment A**) but the executive summary is reproduced below:

Executive Summary

Cotton Australia engaged Barma Water Resources (BWR) Pty Ltd to undertake an independent assessment of the historic flow and usage characteristics of the Barwon Darling River, along with comparisons to the flow characteristics of the major upstream contributory valleys.

An assessment of flows and water availability has been made for the period 2012/13 to 2016/17. Mid system flows were chosen to represent water availability in the Northern Basin tributaries, and tributary end of system flows were selected to represent water availability in the Barwon Darling. The following observations have been made:

Climate

- A comparison of recent years annual rainfalls from 2012 to 2017 with that experienced during the millennial drought from 2001 to 2009 indicate that rainfalls are below average, but not to the extent that they were during the drought. However, in areas in the Northern and western parts of the Northern Basin such as Toowoomba and Bourke, there have been very few years with above average rainfalls since the millennial drought began.

Water Availability

- Over the past five years (2012/13 to 2016/17), a number of Northern Basin tributaries have experienced total mid system flows and inflows to the Barwon Darling which are similar to those experienced during the millennial drought.
- The sum of **all** mid system tributary flows over the five years from 2012/13 to 2016/17 have been approximately just one and a half times those experienced during the worst period in the millennial drought. Whilst total inflows to the Barwon Darling have been approximately twice the amount experienced during this period.

- The three individual years from 2013/14 to 2015/16 have experienced total mid system tributary flows and inflows to the Barwon Darling with a similar order of magnitude to those experienced during the worst years of the millennial drought.
- The sum of all mid system and tributary inflows to the Barwon Darling over the five years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.
- The sum of all mid system flows from 2012/13 to 2016/17 have only been lower for approximately thirteen other *five-year periods* out of a total of 83 periods from 1922 to 2008, whilst inflows to the Barwon Darling have only been lower for approximately twenty one *five year periods* indicating very dry condition and limited water availability.
- Over the period 2012/13 to 2016/17 three of five years have had more water lost through evaporation from Menindee Lakes than gained through inflows to the Lakes.
- Over the period from 2012/13 to 2016/17, 58% of Menindee inflows have been lost through evaporation.

Usage

- At the time of report preparation tributary usage has been within the diversion limits that have been set for all tributary valleys. Furthermore, as stated in “*MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting*”, all Cap valleys in which a cumulative balance is the basis of compliance have remained compliant over the reporting period.
- Over the 2012/13 to 2016/17 period, Barwon Darling annual extraction has ranged from 11% to 30% of the annual system inflow.
- Average usage in the Barwon Darling over the past five years of 134 GL per annum has been within the systems Annual Share Entitlement total of 251.4GL.
- The Barwon Darling average usage over the past five years of 134GL/Yr is well within the Barwon Darling the long-term average annual extraction limit for the system of 189GL/Yr.

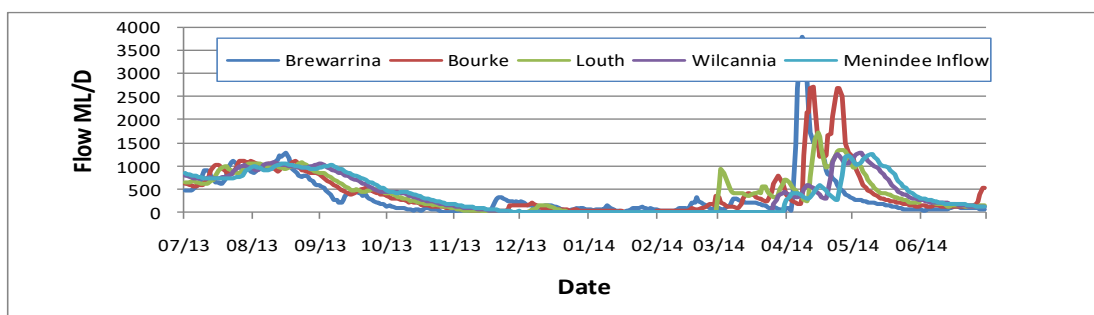
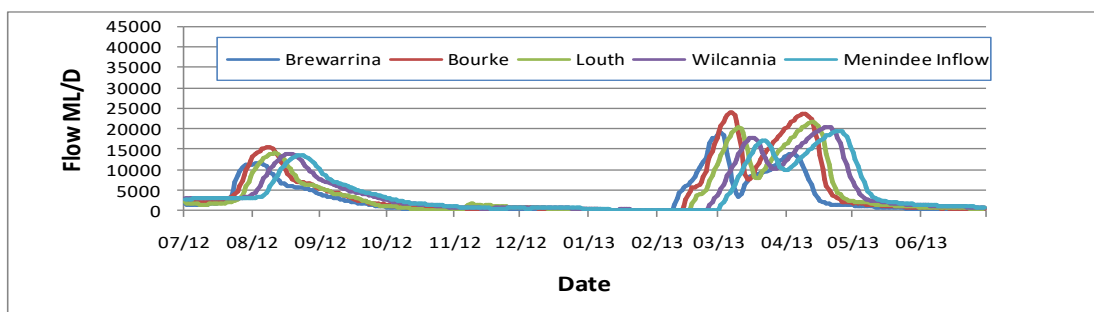
Conclusions

In conclusion, the Northern Basin has experienced well below average conditions in terms of climate and water availability over the 2012/13 to 2016/17 period. These conditions have been felt across the entire Northern Basin and are not limited to specific river systems. Furthermore, despite the highly variable nature of water availability in the Northern Basin, below average water availability conditions have persisted since the onset of the millennial drought.

Usage across the Basin has been constrained by limited water availability over the 2012/13 to 2016/17 period, with diversions remaining within all valleys long-term average annual extraction limits.

Critically the report also demonstrates that over the five years, total entitlement extractions were 672.2Gls, while inflows into the Menindee Lakes system were 3,975Gl (almost six times the upstream extractions on the Barwon-Darling). Further, the total losses at Menindee due to seepage and evaporation were 2555Gl or 3.8 times the level of extractions upstream on the Barwon-Darling.

In addition, the report clearly shows that when it is dry, it is dry the full length of the Barwon-Darling system, and when the river is flowing, the flows are enjoyed along the full length. The following hydrographs sourced from the NSW Government and reproduced in the Barma Water Resources Pty Ltd report clearly demonstrates this.



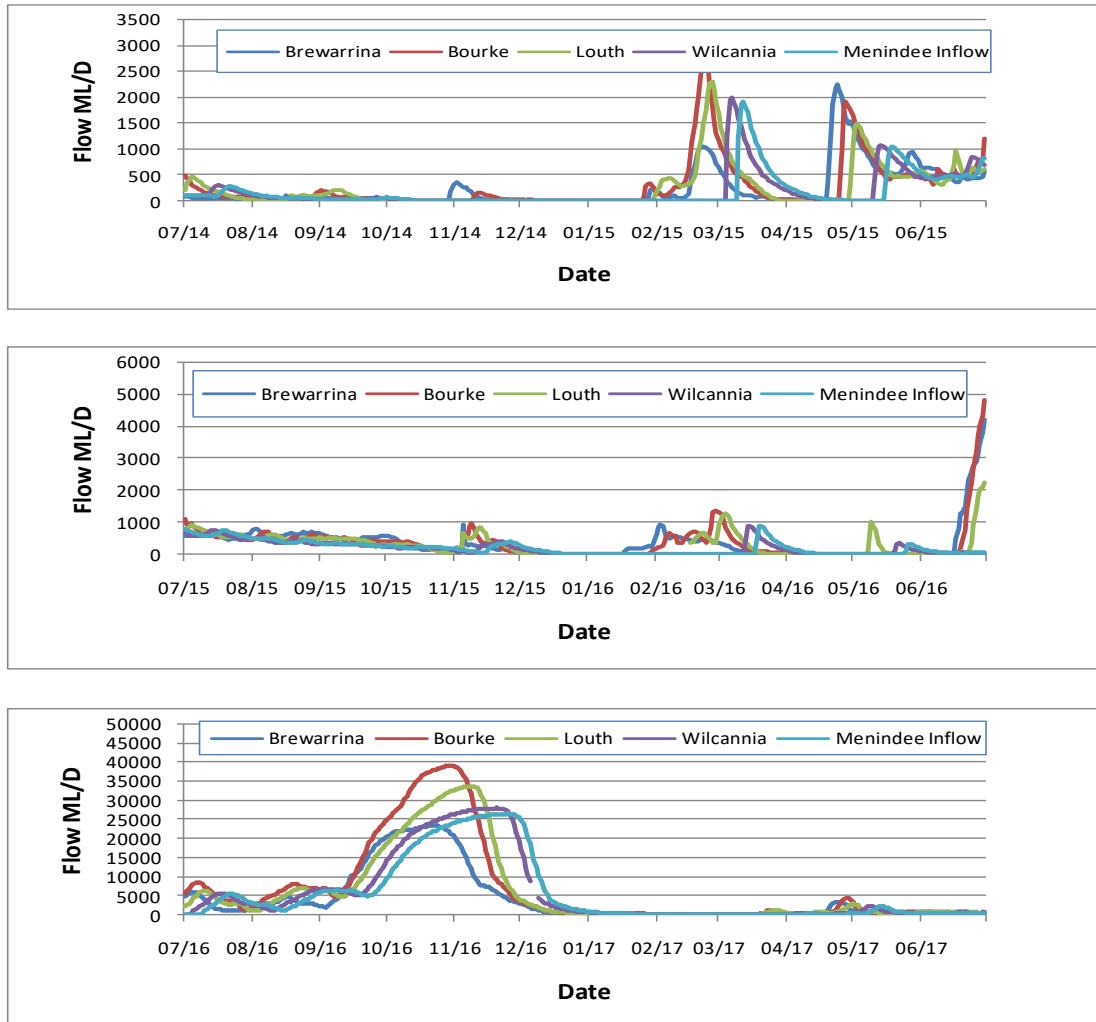


Figure 1 - Historical Flow Hydrographs at Brewarrina and Bourke (2012 to 2017)

Management of Menindee Lakes and the Broken Hill Pipeline

There has been a lot of media and other commentary around Cotton Australia's support for the Broken Hill pipeline, with the claim that the cotton industry believes the building of the pipeline will increase its access to water.

Cotton Australia does support the building of the Murray-River to Broken Hill pipeline, as a means of under-pinning a secure water supply for Broken Hill that is independent of Menindee Lakes.

Cotton Australia does not have a view on the pipeline route and as never advocated one way or another to government on its route.

Why does Cotton Australia support the pipeline?

For many years now there have been proposals to increase the efficiency of the Menindee Lakes, including the current SDLAM project. In summary, these proposals all aim to reduce the volume in the lake system quicker and concentrate the water in the deeper but still quite shallow lakes, with the “savings” being reduced evaporation losses.

However, if you reduce the water levels quicker, naturally there will be less water in the lakes and this has negative impacts on those stakeholders associated with the Lakes.

For example, Broken Hill uses between 6,000 and 8000 megalitres per year for its town water supply, and under current arrangement critical water shortage rules commence when there is a lack of water in storage to guarantee 18 months of forward supply.

However, because of the extreme evaporation losses, to guarantee approximately 12,000 megalitres of actual supply over 18 months to Broken Hill, the Lakes must hold 240,000 megalitres, or 20 times the required amount.

The response by the NSW Government utilising Section 324 of the Water Management Act 2000, when levels fall below 240,000 megalitres has been to embargo upstream NSW entitlement holders access to shares of river flows that would have otherwise been available to them.

When used in 2015, that cost communities upstream of Bourke in excess of \$35 million of on-farm productivity, but in reality, did nothing to increase flows into the Lakes.

Cotton Australia’s support for the pipeline is based on if actions are taken to reduce the water levels in the Lakes, critical water shortages will occur more often, and unless a reliable alternative water supply for Broken Hill is developed, then the use of Section 324 will increase.

It is important to recognise that the use of Section 324 reduces licence holders access to legal take, therefore it is completely incorrect to argue that Cotton Australia's support for the pipeline is based on increasing entitlement holders access to water, it is about protecting existing levels of access.

Metering & Compliance

Cotton Australia fully supports a transparent, robust, reliable metering and compliance regime that protects the rights of all water users. As an industry we have a vested interest in the sustainable management of the MDB. We have zero tolerance for water theft and mismanagement. Cotton Australia, is proud of its grower's and their continual adoption of sustainable, environmental efficient water practices. This has resulted in a strong record of stewardship around water. Recent hysteria and criticism generalizing irrigators and cotton growers of "*mismanaging and plundering one of Australia's most valuable resources*"¹² is unfounded and socially irresponsible journalism. The allegations made were pertaining to, two irrigators throughout the entire MDB. These matters are yet to be prosecuted against and should be put in context and allowed due process.

Compliance with the Basin Plan principles is the obligation of the Commonwealth, all Basin States and anyone that holds a licence to divert water. A positive response to the media coverage over the past 9 months has been the reaction by NSW and Qld governments around their current metering and compliance framework.

Currently, the Queensland Government has received a comprehensive report from its Independent Audit of Metering and Compliance. This report is yet to be made public, but it is Cotton Australia's expectation that it will recommend significant reform of the Queensland Water Measurement and Compliance Framework – a position that Cotton Australia supports in principle.

New South Wales has acted quickly and decisively. Following the Matthews Report, the New South Wales Ombudsmen report into water compliance enforcement and the MDBA report into MDB water compliance. It established the Natural Resource Access Regulator to handle compliance and enforcement in addition to initiating the Water Reform Action Plan which

¹² <http://www.abc.net.au/4corners/pumped/8727826>

specifically targets water metering, transparency measures, protection of environmental flows and floodplain harvesting.

Cotton Australia has publicly supported the overwhelming majority of the reform measures and will continue to be an active participant throughout each consultation process.

Terms of Reference

- 1. Whether the Water Resource Plans defined by the Act and Basin Plan (which are to include the long-term average sustainable diversion limits for each Basin water resource) will be delivered in full and in a form compliant and consistent with the Basin Plan by 30 June 2019.**

Cotton Australia provides no comment for this Term of Reference.

- 2. If any Water Resource Plans are unlikely to be delivered in full and in a form compliant and consistent with the Basin Plan, the reasons for this.**

There is circulating commentary that the 36 Water Resource Plans ('WRP') will not be delivered by the 30 June 2019 deadline. While, Cotton Australia does not have the information to submit one way or another, we recognise the concentrated effort to date. The WRP are complex and detailed mechanisms which cannot adopt a one size fits all approach. They require a degree of flexibility so that the WRP can adapt over-time to allow for variability in the Basin Plans triple bottom line objectives; environmental, economic and social needs.

Cotton Australia submits that a key reason that WRP's wouldn't be delivered in that time, is the lack of expert knowledge and the number of reviews, inquiries and frequency of changes around the Basin Plan. Additionally, the recent South Australian election and the 'successful' motion of disallowance which was moved by Senator Hanson-Young is an example of the obstacles faced when implementing these mechanisms.

Currently, there has been one Water Resource Plan approved, on the 15 June 2017; the Warrego-Paroo-Nebine. Cotton Australia is also aware that there is two other WRPs in the draft consultation phase in Queensland, while New South Wales is continuing the development of its Plans.

Cotton Australia submits that for these WRP's to be completed in the timeframe, a more constructive approach should be adopted by all Basin States and stakeholders. It needs to be recognised that all Basin States are impacted through the triple bottom line. The WRP, like other mechanisms are focused on achieving balanced results for the entire Basin, not just individual States.

3. Whether the Basin Plan in its current form, its implementation, and any proposed amendments to the Plan, are likely to achieve the objects and purposes of the Act and Plan as variously outlined in ss.3, 20, 23 and 28 of the Act, and the 'enhanced environmental outcomes' and additional 450 GL provided for in s. 86AA(2) and (3) of the Act, respectively.

The question of whether the Basin Plan is achieving its objectives and purposes stipulated in the Act, while also achieving 'enhanced environmental outcomes' and the consideration of the 450GL mechanism is a question that has been addressed consistently and repeatedly. There have been a number reports that have analysed these concerns in depth.

The 2017 Basin Plan Evaluation by the Authority¹³ concluded that the implementation of the Plan was by-in-large on track, and there were early, but positive evidence of environmental improvement.

The success of the plan to-date will be analysed in detail through the Current Productivity Commission's Five Year Basin Plan Review, and Cotton Australia's submission to that review has been attached (**Attachment B**).

It is important to maintain perspective of how much of the Basin Plan has been implemented and where it sits on its timeline.

¹³ <https://www.mdba.gov.au/basin-plan-roll-out/2017-basin-plan-evaluation>

At the time of this submission just over 2100GL of water has been recovered and is being applied for the purpose of enhanced environmental outcomes.

With 750 planned watering events in the past four years. Phillip Glyde, CEO of the Murray-Darling Basin Authority said that¹⁴;

“There is clear evidence of positive local-scale environmental outcomes, with positive ecological responses...”

“...If we do not stay the course, we not only risk the hard-won progress we have made to date, but also the future of our nation’s most iconic river system, consigning it once again to uncertainty and instability.”

Further evidence of the success of the deployment of environmental water can be found on the webpages of the CEWH - <https://www.environment.gov.au/water/cewo>

It does need be recognised by this Commission that there are three objectives in the Basin Plan; environmental, social and economic. The Basin Plan is a sustainable tool for the Basin, which needs to achieve a compromise across that triple bottom-line. That compromise needs to be accepted by all Basin States and stakeholders.

Cotton Australia is and has been fully supportive of implementing the Basin Plan in full. We have always maintained and accepted that the Basin Plan requires compromise from all stakeholders. There are many aspects of the Basin Plan which we believe go beyond what is required to achieve its environmental objectives to the detriment of our industry. An example of this is the 450GL measures, which we have opposed in the past, on the basis that we have always argued that the Commonwealth should demonstrate their management of the first 2750GL, prior to determining whether the additional 450GL is required.

However, as stated above, we do now recognise that the implementation of the Basin Plan in full, requires the acquisition of the 450GL in the manner specified in the Plan.

¹⁴ <https://www.mdba.gov.au/media/mr/basin-plan-amendments-critical-delivery-environmental-outcomes>

4. Whether the underlying assumptions in the original modelling used to develop the objects and purposes of the Act and the Basin Plan have been sufficiently adjusted for the impact of improved technologies.

Cotton Australia is confused about the nature of this Term of Reference. Cotton Australia is aware of significant, but ill-informed commentary, around the effectiveness of on and off-farm irrigation efficiency programs, and whether there has been an impact on reducing the amount of water available to the environment.

If this is the desired discussion point in this Terms of Reference, Cotton Australia makes the following comments:

On-Farm and Off-Farm Irrigation Efficiency projects have been an effective way of acquiring water for the environment, while minimising, but not eliminating, negative social and economic impacts.

While some commentators have alleged that these programs have been overly generous to irrigators, Cotton Australia submits, that the two programs it is most familiar with (Queensland Healthy Headwaters and NSW Sustaining the Basin) have not been over-subscribed, primarily due to the fact that many irrigators do not consider them to represent value for money.

However, there have been a number of participants, who have agreed to carry-out certain works on-farm (that have been designed and assessed to generate savings) and have agreed to return half of the assessed savings to the Commonwealth, in return for a government payment.

It is critical to note, that regardless of whether the assessed efficiencies are achieved or not, the half share in the **assessed** savings are transferred to the Commonwealth. Therefore, all the risk associated with whether the “savings” are achieved or not rests with the entitlement holder – the Commonwealth holds its share as entitlement.

There have been arguments made, that these efficiencies, mean there are less return flows to rivers. This argument is laughable when applied to the modern Australian irrigation industry. It may have had some currency 20 or 30 years ago, but with so much emphasis on not wasting water, the days of the basin river’s being used as a drain for wasted irrigation water has long

passed. The water that these programs is saving, is being saved by reducing losses via evaporation or deep drainage into the soil (greatly reducing the risk of salinity build-up), not water that would have passed back to the river.

5. If the Basin Plan is unlikely to achieve any of the objects and purposes of the Act and Basin Plan and/or the ‘enhanced environmental outcomes’ and the additional 450 GL referred to above, what amendments should be made to the Basin Plan or Act to achieve those objects and purposes, the ‘enhanced environmental outcomes’ and the additional 450 GL?

As stated previously the progress of the Basin Plan needs to be placed in perspective. It is only part way through its implementation. Failing to stick the course of the Basin Plan is counterintuitive to achieving the objectives.

However, the early indications, as discussed previously, indicate that the Plan is on track, in both its implementation and its outcomes.

Cotton Australia does believe that there is action over and above the Plan that would very much enhance environmental outcomes, and fully leverage the benefits from environmental water.

Cotton Australia has long advocated for the introduction/implementation of a whole range of “complementary measures”, which would dramatically improve environmental outcomes.

It should be noted that when the then Murray-Darling Basin Commission/Authority did its Sustainable River Audits, in almost all catchments the best performing indicator was hydrology, and areas of poorer performance included turbidity, fish, vegetation, macroinvertebrate, and physical form.

These results alone strongly suggest that real environmental improvement will only occur when a multi-faceted approach is adopted.

A key factor in the recently rejected Northern Basin Review amendments was the adoption of a range of “toolkit” and/or “complementary” measures. If accepted these would have gone a long way towards improving environmental outcomes.

Cotton Australia would recommend the Royal Commission seeks the advice of MDBA Board Member Professor Barry Hart, who closely oversaw the development of the Northern Basin Review recommendations and could provide expert advice on the proposed “toolkit” measures.

While not being an expert in this area, Cotton Australia would recommend priority complementary measures should include:

- Removal of European Carp
- Mitigation of cold water pollution
- Improved fish passage
- Improved fish habitat

6. Any legislative or other impediments to achieving any of the objects and purposes of the Act and Basin Plan and/or the ‘enhanced environmental outcomes’ and additional 450 GL referred to above, and any recommendations for legislative or other change if needed.

The Northern Basin Review and the Sustainable Diversion Limit Adjustment Mechanism are the key legislative instruments that will achieve enhanced environmental outcomes while balancing the social and economic needs of the Basin.

These both need to be endorsed by the Federal Parliament.

The recent, successful Northern Basin Review disallowance motion moved by Senator Hanson-Young was a clear example of a legislative impediment to achieving the Basin Plans objects and purposes. That important instrument was used as a political weapon. It provided a clear illustration of a legislative instrument that could underpin the entire Basin Plan. When that motion was ‘successful’ the New South Wales and Victorian Governments both expressed their disappointment by threatening to leave the Basin Plan.

It was made clear in the Northern Basin Review that by better targeting water acquisition, which is part of the amended plan, greater environmental outcomes could be achieved through the

320GL adjustment rather than the original 390GL. The 320GL would also stem job losses from 710 to 530 in that part of the Basin.

Cotton Australia strongly submits that the Northern Basin Review amendments must be re-introduced into Federal Parliament for the Basin Plan to be successfully implemented and achieve 'enhanced environmental outcomes', while balancing the social and economic objectives.

Likewise, Cotton Australia strongly submits that the Disallowance Motion opposing the 605GL "Down Water" amendments must be defeated. A successful Disallowance Motion would spell the end of a Basin Plan with the co-operation of the New South Wales and Victorian Government.

Apart from the above, no further legislative changes should be made and confidence should be afforded to the Basin Plan and to the significant research and ancillary work made to date.

7. The likely impact of alleged illegal take or other forms of non-compliance on achieving any of the objects and purposes of the Act and Basin Plan, and the 'enhanced environmental outcomes' and the additional 450 GL, referred to above.

This is discussed in more detail in Cotton Australia's responses to the Issues Paper.

However, in summary there is approximately 40,000 water licences in the Murray-Darling Basin and given those numbers there is no evidence of widespread, or systemic abuse.

Compliance Activity	Year	NSW (state wide)	Queensland	Victoria	South Australia	ACT
# of Licences	2017	37,038 water licences (excludes work approvals) state wide, 21,362 in MDB.	24,354 state-wide, 5300 in MDB	46,743 total entitlements in the Basin area, including 8181 take and use licences.	14,196 state-wide, 5103 in SAMDB.	192

Cotton Australia has zero tolerance for water theft, as do the vast majority of irrigators, who hold a strong desire for a robust and transparent compliance system.

Like any cross-section of society, there will be a small minority who deliberately choose to break the law. Cotton Australia submits that there is no evidence to suggest the proportion of irrigators breaking the law is any greater than what would be statistically expected.

8. In relation to any found instances of illegal take or work, whether appropriate enforcement proceedings have been taken in respect of such matters and if not, why.

This is discussed in more detail in Cotton Australia's responses to the Issues Paper.

9. Whether, in any event, the enforcement and compliance powers under the Act are adequate to prevent and address non-compliance with the Act and the Basin Plan, and any recommendations for legislative or other change if needed.

Cotton Australia has recently provided detailed commentary on this issue in submissions to the Productivity Commission and to the New South Wales Water Reform Action Plan ('WRAP') package consultation. We also discuss this issue in our detailed response to the Issues Paper.

Briefly, Cotton Australia's position is that we are fully supportive of a robust and transparent compliance regime. The recent inquiries suggest that the current regime is lacking and Cotton Australia agrees that it can be improved.

However, we submit that compliance enforcement should remain at a State level with the Commonwealth having an oversight role in compliance and work with the States. It is important that unnecessary duplication and complication is avoided. Cotton Australia is supportive of the recent NSW reforms package and its establishment of the Natural Resources Access Regulator

A strong transparent compliance and enforcement regime will instil confidence in both water users and the general public.

10. Whether monitoring, metering and access to relevant information (such as usage data) is adequate to achieve the objects and purposes of the Act and Basin Plan and the 'enhanced environmental outcomes' and additional 450 GL referred to above.

Cotton Australia is overwhelmingly supportive of improving the quality of metering and measurement of water. Having strong reliable data in the monitoring and measurement of take in the MDB will assist in achieving a robust compliance system.

Cotton Australia rebuts any claims that suggests there is large amounts of take that are not being metered or measured, but we do acknowledge that the current metering and monitoring regime is not perfect.

Cotton Australia, believes that all take should be metered in an ideal world. However, there are substantial practical and financial hurdles to overcome before that can become a reality. Price, availability, connectivity and reliability are the major hurdles to achieving universal metering in the Basin.

The NSW WRAP is specifically targeting this issue and has undergone significant consultation about the proposed framework and reforms.

11. Whether water that is purchased by the Commonwealth for the purposes of achieving the objects and purposes of the Act and Basin Plan and/or the ‘enhanced environmental outcomes’ and the additional 450 GL referred to above will be adequately protected from take for irrigation under water resource plans, and any recommendations for legislative or other change if needed.

This is discussed in detail in Cotton Australia’s responses to the Issues Paper.

12. Whether the Basin Plan in its current form, its implementation, and any proposed amendments to the Plan, are adequate to achieve the objects and purposes of the Act and Basin Plan, the ‘enhanced environmental outcomes’ and the additional 450 GL referred to above, taking into account likely, future climate change.

As discussed through this submission, Cotton Australia believes the implementation of the Basin Plan is largely on track, and the focus should now be on its full implementation rather than introducing further amendments which are outside the actual Basin Plan, as adopted in 2012.

Any other related matters.

Following is Cotton Australia's response to the areas identified in the Murray-Darling Basin Royal Commission Issue Paper as of being areas of focus.

Cotton Australia's Response to the Areas of Particular Focus identified in the Murray-Darling Basin Royal Commission Issues Paper

Process Used to Determine the "Environmentally Sustainable Level of Take"

Cotton Australia agrees with the approach and methodology used by the MDBA to determine the Environmentally Sustainable Level of Take ('ESLT'). The approach is strictly aligned with the requirements of the Water Act 2007 (Cth).

The MDBA in developing the methodology commissioned the expertise of consultants and independent contractors. The MDBA methodology considers the ecological value of sustainable take and the equally important socio-economic benefits of the water resource and the impact of any reduction in take. The MDBA's overall management objective is to have a Basin that has a healthy environment, strong communities and a productive economy¹⁵.

An important part of the ESLT methodology is its malleability. This is evident through the important, but still to be completed, implementation of the Northern Basin Review, Sustainable Diversion Limit Adjustment Mechanisms and the 450GL up water. All of which have significantly contributed to fulfilling the MDBA's statutory responsibilities under the Act.

There are always differing views on how a method or calculation should be constructed. However, the process which the MDBA has used to determine the methodology for the ESLT has been consultative, independent and open.

¹⁵ Murray-Darling Basin Authority, *The Proposed 'environmentally sustainable level of take' for surface water of the Murray-Darling Basin: Method and outcomes*, Page v, <<https://www.mdba.gov.au/sites/default/files/pubs/eslt-mdba-report.pdf>>

36 Supply Measure Projects

Cotton Australia fully endorses the MDBA's 2016 introduction of supply measure projects. It provides the Basin Plan with a multi-faceted approach to achieving the set environmental outcomes while delivering the plan in full. The supply measure projects should be supported by all stakeholders. It provides a balanced approach to the achieving the objects of the Basin Plan set out in the Act.

The ability to introduce efficient infrastructure and other projects that deliver equivalent or better environmental outcomes, while maintaining the consumptive water pool is a positive result.

Cotton Australia acknowledges that there is very limited detail about the projects in the public domain, and while this is not desirable, it cannot be avoided at this time due to the time limits set around Basin Plan implementation.

However, the Sustainable Diversion Limit Adjustment Mechanism removes the risk from the Authority and the environment, and places it with the consumptive pool. If the modelled environmental outcomes are not achieved by the 2024 audit, the Authority, if necessary, amends the Sustainable Diversion Limits, and through acquisitions the full 605GI of outcome is achieved.

Water Recovery to date

Cotton Australia has no reason to believe that the full 2,106.4GI currently either held by the Commonwealth or contracted to it, will not be achieved.

Cotton Australia concedes that it is not easy to reconcile the difference between what is shown as purchased and contracted, against what has been formally transferred to the Commonwealth and now managed by the CEWH.

Cotton Australia believes it would be valuable for the Royal Commission to determine whether any contracted transfers are at risk.

Northern Basin Review

The Northern Basin Review ('NBR') is an integral component of the Basin Plan since it was ratified in 2012. It is important to note that it has always been part of the Basin Plan.

The NBR was commissioned, with bi-partisan support, due to a realisation that there was a deficiency in knowledge surrounding the environmental, social and economic factors that affect the northern basin in comparison to the southern basin.

The MDBA undertook directly and through consultants an extensive study into the northern basin. That study was independently peer reviewed and involved heavy consultation with stakeholders spanning over four-years. The recommendations of the *Murray-Darling Basin Plan Northern Basin Review*, were finalised in early 2017.

The NBR advised that the overall water recovery should be reduced from 390GL to 320GL. The NBR examined extensively the socio-economic impact that the reduced recovery target would achieve. Ultimately, the Review concluded that the proposed reduction to 320GL would reduce job losses from 710 to 530 in the Northern Basin - a significant amount of jobs for those rural communities.

The review also found that by better targeting the water acquisition, which forms part of the amended plan, greater environmental outcomes could be achieved through the 320GL adjustment.

It is important to note that the Basin Plan was shepherded through Federal Parliament in 2012, by the Honourable Tony Burke MP, the then Minister for Sustainable, Environment, Water, population and Communities and held bipartisan support.

This bipartisan support was also bolstered by the Basin States and Federal Government agreeing to invest in a range of "toolkit" or "complementary measures". These provide even greater environmental outcomes, including enhanced measures to protect environmental flows generated by held environmental water.

The 'successful' motion of disallowance which was moved by Senator Hanson-Young has placed the entire Basin Plan at risk. Senator Hanson-Youngs motion was supported by the Senate with a two vote majority on the 14 February this year.

The negative impact of this disallowance motion is not a view held solely by Cotton Australia. The Basin States of New South Wales and Victoria expressed their concern through threatening to pull out of the Basin Plan. Frustration was also expressed by MDBA Board Member, Professor Barry Hart where he stated that; the very reason those who supported the Disallowance, stated as their reasons for opposing the amendments, were the very reasons the amendments would have been delivered.

To be clear, Cotton Australia did not, and does not believe that the Northern Basin review amendments went far enough. Cotton Australia, along with many other groups and individuals argued that the water recovery should have stopped at 278GI. The money saved from not requiring additional water recovery should have been invested in complementary measures, which would have leveraged greater environmental gains from the release of environmental water.

However, Cotton Australia takes a balanced approach to the Basin Plan and accepts that the Plan requires compromise. Cotton Australia respects that after four years of detailed study, the recommendations of the MDBA should have been up held.

Cotton Australia is hopeful that the Northern Basin Review amendments, in either their original form or modified form will still be accepted by the Australia Parliament.

If the 390GI recovery target remains, there will still need to be significant effort. If the 320GI target is re-instated, then the task becomes significantly more manageable and achievable with the support of all Basin states.

Views of Indigenous People

Cotton Australia is supportive of Part 14 of the Basin Plan relating to identifying the objectives of indigenous people and the management and respect for cultural flows in the water resource plans.

We acknowledge the importance of the MDB and the water within it is used to improve the spiritual, cultural, environmental, social and economic conditions of those Indigenous Nations.

Cotton Australia, submits that although the cultural flows embody those five characteristics, water to be used for economic purposes should be clearly identified as such.

Cotton Australia, believes any water acquired for Indigenous economic outcomes, should be acquired through the market.

Illegal Take

Cotton Australia is unambiguous in its position with regards to 'illegal take' in the Murray-Darling Basin. As the peak representative body for Cotton growers we have a zero-tolerance approach to water theft.

Cotton Australia does not hold any regulatory or compliance authority and fully supports a robust and effective compliance system to protect the water resource.

There has been a suite of inquiries and reforms focusing on alleged water mismanagement, meter tampering and water theft in the Murray-Darling Basin in response to the airing of the ABC programmes last year.

The inquiries and reforms have been at a Federal, State and regulatory level in addition to vast public and political commentary relating to the allegations.

It is important for our industry and other like stakeholders that these allegations are fully investigated and due process occurs. However, it is also important that the allegations made in the ABC programmes are placed in context of the entire MDB.

There are currently around 40,000 water licence holders throughout the MDB. However, there are only 13 complaints on the MDBA complaints register covering the period from July, 2015 to November 2017.

Cotton Australia concedes that given compliance is primarily a State's base, complaints to the State based regulators are higher, but it is hard to get accurate figures, particularly at a level of detail that identifies the nature of the complaint.

However, the suggestion that MDB is being plundered and abused by a large number of irrigators is farcical. The ABC's commentary on the issue was cherry picked and uninformed. This is substantiated through reports such as the Matthews Inquiry. The reports and inquiries all noted that there needs to be improvement in compliance, metering and transparency in the MDB but did not make comment that there was evidence of illegal take on a grand scale.

Cotton Australia is awaiting the outcome of those allegations which are now being considered by the courts. The relevant parties, as is their right, should be afforded due process and are innocent until proven guilty. It needs to be reinforced that the allegations remain allegations until proven otherwise and those parties are to be afforded their inherent right of innocent until proven guilty.

Cotton Australia supports the initiatives by Federal and State governments to improve the current compliance systems in the Basin. A robust and transparent compliance regime will only improve our industry, communities and the Basin. There is also strong community expectation for robust and transparent compliance regime.

Cotton Australia has recently submitted detailed responses to the NSW Water Reform Action Plan consultation and those responses have supported the vast majority of the NSW Governments' reform agenda.

Cotton Australia awaits the Queensland Government's release of its metering audit and without pre-empting its content and associated recommendations. Cotton Australia is very supportive of the implementation of a world class, effective and cost-effective metering and compliance regime in Queensland.

The irrigation industry is no different to other cross-sections of society. The vast majority of entitlement holders abide by the rules and regulations. However, there will always be a small percentage of the community who will do the wrong thing.

Again, Cotton Australia has a zero-tolerance approach for deliberate water theft and meter tampering and supports the prosecution of any illegal behaviour and supports the implementation of a more robust and transparent compliance regime.

While there have been some allegations of water theft, the ABC programmes, and subsequent commentary by many, have also damaged the reputation of many irrigators on unregulated rivers, suggesting they have been accessing water purchased for environmental flows and have acted in an illegal manner doing so.

However, it is important to understand the geographical regulatory framework in which these allegations were made; the Barwon-Darling.

Some key aspects of the Barwon-Darling are;

- On an unregulated river such as the Barwon-Darling access to water flows is primarily determined by river gauge measurements. That is, a river height flow target is hit upstream (and maintained downstream) then the irrigator is **legally** able to pump.
- Currently, the source of the water, or its purpose, does not affect access.
- Total take is controlled through the long-term water sharing plan rules and account limits.

Further, it is essential to acknowledge that when the Commonwealth purchased water entitlement either on the Barwon-Darling or its tributaries they were fully aware of the rules and regulations of that part of the river and where the environmental flows would run through.

Having said this, irrigators on unregulated rivers generally accept that they should not get a benefit from being able to legally access and environmental water event, but likewise they should not be penalized.

In our recent submission to the NSW Water Reform package we said:

Cotton Australia does acknowledge that it is a reasonable public expectation that held environmental water is protected.

However, there are already rules in place that protect environmental water, primarily using total extraction limits. These rules were in place when the Commonwealth purchased this water.

While Cotton Australia concedes that the Australian public expects a higher level of protection, the pathway to achieving that additional protection should start from a public and very respectful acknowledgement that access to water to date has been in accordance with licence conditions, and any changes to those conditions may have negative impacts on licences holders, and these impacts will be mitigated and/or compensated for.

Cotton Australia is aware that for at least the past two years irrigation entitlement holders have been willing to have discussions with both the Commonwealth Environmental Water Holder (CEWH) and the NSW Government to find a way environmental flows can have a higher degree of protection than currently provided. However, there appears to have been a lack of enthusiasm by jurisdictions to enthusiastically enter into these discussions.

Irrigated Crops

On a semi-regular basis the question is asked – Why do we grow “thirsty” crops like cotton and rice in Australia?

This question shows a distinct lack of understanding regarding both water management in Australia and the crops themselves.

Firstly, no water is allocated to a specific crop within the MDB. Irrigation entitlement holders are allocated a share in the available resource. During periods of drought that share is small, during wetter periods it is larger. Water is only allocated when it is available.

Some licences have a higher security than others. That is their share is filled or at least partially filled, before licences with a lower level of security are allocated any water.

Different States have adopted different approaches, and therefore different industries have developed around that security.

For example, it is very unusual for South Australian River Murray entitlement holders to have allocations less than 100%, and with that security (underpinned by upstream flows) they have developed horticultural industries that require a highly reliable water supply.

In the Northern Basin, there is only a small amount of high security entitlement on issue. With the vast majority of entitlement being general security or medium priority water. It is not uncommon for valleys to have zero allocations, allocations in the order of 30% to 40% and occasionally during high flow, wet periods, allocations of 100%.

Due to the unreliability, and high degree of variance, industry in this area has focused on annual crops. If water is available a crop is planted, if it is not available the crop is not planted. If there is a small amount available, a reduced crop is planted.

The effect is easily illustrated by historical cotton production. Over the past 25 years, Australian production has been as low and 600,000 bales and as high as 5.3 million bales. The variation is almost entirely due to water and moisture availability.

Having received an allocation, from the base entitlement, the irrigator has a choice of what crop to grow. In general, the decision is normally to plant the crop that will give the best return, given the range of resources and other skills the irrigator has.

Generally speaking, in the northern Basin, and increasingly in the southern basin of the Murray and Murrumbidgee Valleys of NSW, the highest crop return is cotton, and therefore the crop of choice.

You could ban the growing of cotton in Australia tomorrow, but the nation would still use the same amount of water, it would just force its use onto whatever the irrigator identified as the second most profitable crop.

There is a misconception that cotton is a thirsty crop, and usage statistics from the Northern Basin do show the majority of water used is on cotton, but that is because of the reasons outlined above.

If you were to grow a cotton crop, next to a maize crop, next to a sorghum crop, each would use a very similar amount of water, it is a matter of evapotranspiration.

In an international sense, Australian cotton producers are recognised as the best in the world in converting water into kilograms of cotton. Australia's average yields are three times the world average, and our quality is recognised as being superior to most other cotton producing countries.

The Australian Cotton Industry is very proud that it can demonstrate continual improvement with its water use efficiency. In the decade up to 2012 the industry measured a 40% improvement in water efficiencies and this improvement has been ongoing.

Constitutional Basis for the Water Act

Cotton Australia has no comment on this area, except to say that the Basin Plan is in place, and it should be fully implemented.

Darling River and Menindee Lakes

Cotton Australia has addressed this extensively in the main body of its submission. In addition it has attached the report "*Northern Basin Historic Flow and Usage Report*" by Barma Water Resources Pty Ltd (**Attachment A**).

Deadline for Water Resource Plans

There is some commentary that raises concerns as to whether the State and Federal Government has the ability to meet the required deadline for the Water Resource Plans. Cotton Australia is not privy to the real-time status of the Plans but recognises that there has been a concerted effort by all parties to complete the plans in the given time period.

An important concern for Cotton Australia regarding these plans is that they should not be at the expense of the rights of entitlement holders. Additionally, if there are any changes that impact on the rights and reliability of irrigation entitlements they need to be fully consulted on, with any impacts mitigated and/or compensated for.

Cotton Australia is aware of the Commonwealth's step-in powers under the Act but respectfully submits that the MDBA is completely under-equipped to effectively exercise those powers. Cotton Australia can only recommend that all parties continue with their efforts to deliver the plans by the set date.

Environmental and Ecological Health of the Murray-Darling Basin

Cotton Australia largely defers to the MDBA's 2017 Evaluation Report and the various reports from the CEWH that shows that at this very early stage there is evidence that the health of the Basin is improving due to the efforts of the Plan.

Cotton Australia also submits that the full benefits to the environment from the Plan will not be recognised for many years. It also submits that the Basin is a working Basin, and there should be no illusion that it will ever return to a pre-development state.

Finally, everyone should be very aware that even in its pre-development state, the Basin Rivers bore no similarity to the constantly flowing rivers of Europe.

Finally, while Cotton Australia believes that water acquired by the Basin Plan for the environment can be used to achieve environmental outcomes, full environmental gains will only be achieved through a holistic approach which includes adopting a range of complementary measures such as, but not limited to:

- The removal of European Carp
- Improved fish passage
- Improved fish habitat
- Mitigation of cold pollution

Recovery of 450GL for Enhanced Environmental Outcomes

Cotton Australia has never been an enthusiastic supporter of the 450GL "Efficiency Measures". We have submitted that the Commonwealth should first demonstrate responsible management of the 2750GL of environmental water or equivalent first.

However, Cotton Australia does recognise that the "Supply Measures" and Northern Basin Review do form an integral part of delivering the Basin Plan in full, and therefore the 450GL "Upwater" is part of the Plan.

The report delivered in January this year by Ernest & Young, titled, Analysis of efficiency measures in the Murray-Darling Basin is welcomed by Cotton Australia. The report recommends a multi-faceted program to deliver the required water within the time period, in addition to the program being flexible and adaptive for the purpose of conducting annual reviews and so that goals can be re-defined.

The report further outlines a price discovery mechanism that incentivises early participation and ongoing management and assessment of the program. Overall the report highlights the need for a flexible approach to meet the key requirement so that the “Efficiency Measure” can be achieved in a way that ensures “neutral or improved socioeconomic outcomes”.

On-farm irrigation efficiency projects may be one way of meeting this requirement, but serious consideration must be given to a wider range of recovery mechanisms. In particular, mechanisms that do not reduce the pool of water available for extractive use.

Cotton Australia, is concerned that the Basin Plan and the (CEWH) appears to have a very strong, almost singular focus, on holding water entitlements as the only way to meet the environmental water requirements.

Cotton Australia was supportive of the changes to the Commonwealth Water Act, Section 106, that provides the CEWH with greater flexibility to trade water entitlements and allocations. Cotton Australia believes that CEWH, like a modern irrigator, needs to be a nimble trader of water assets.

Further, it should be explored whether other water products which would assist the CEWH in meeting their requirements in the most efficient way possible should be adopted. While, also allowing where appropriate, the use of environmental water for extractive use; with the proceeds being invested into environmental outcomes.

Conclusion

Cotton Australia would welcome the opportunity to meet with the Commission and discuss further issues raised in this submission or other related matters. For further information please contact Michael Murray, General Manager – 0427 707 868 or michaelm@cotton.org.au .



Advancing Australian Cotton

Yours sincerely,

Michael Murray,
General Manager,
Cotton Australia

Attachment A: Northern Basin Historic Flow and Usage Report by Barma Water Resources Pty Ltd

Attachment B: Cotton Australia's Submission to the Productivity Commission – Murray-Darling Basin Plan Five Year Assessment

Northern Basin Historic Flow and Usage Report

FINAL

April 2018

Prepared by Barma Water
Resources Pty Ltd



Report Prepared by Mr. Daren Barma of Barma Water Resources (BWR) Pty Ltd

Daren is a hydrologist, river system modeller and Director of Barma Water Resources. He has extensive knowledge in water management having been involved in water management related to the Australian and in particular the Murray-Darling Basin for most of the last 27 years.

Daren has carried out numerous technical, policy and planning studies in relation to water resource management. This includes water balance and data analysis projects as part of his work in developing IQQM, eWater Source and hydrodynamic models and water sharing strategies for NSW valleys of the Murray Darling Basin. He has also conducted river system model reviews of the Condamine Balonne, Fitzroy, Cape York and Wet Tropics IQQMs in Queensland. He was the external reviewer for river system models as part of the CSIRO Murray Darling Basin Sustainable Yields Project. Daren has also reviewed the river system models used in development of the Murray Darling Basin Plan and was most recently a member of the CSIRO Scientific Leadership Team for development of an Ecological Elements Scoring Method for SDL adjustments under the Murray Darling Basin Plan.

Disclaimer

To the extent permitted by law, the authors of this report exclude all liability to any person for any consequence, including but not limited to all losses, damages, costs, expenses, and any other compensation, arising directly or indirectly from the use of this report (in part or whole), and information or material contained in it. This report does not purport to give legal advice.

The methodology adopted and sources of information used are outlined in this report. While the authors of this report have made reasonable endeavours to ensure the accuracy and currency of this document, no independent verification of this information was undertaken beyond the agreed scope of works, and the authors assume no responsibility for any inaccuracies or omissions. The information contained within this document should not be relied upon for commercial dealings and the accuracy and currency of this material should be verified by users with the relevant state and local authorities.

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Executive Summary

Cotton Australia engaged Barma Water Resources (BWR) Pty Ltd to undertake an independent assessment of the historic flow and usage characteristics of the Barwon Darling river, along with comparisons to the flow characteristics of the major upstream contributory valleys.

An assessment of flows and water availability has been made for the period 2012/13 to 2016/17. Mid system flows were chosen to represent water availability in the Northern Basin tributaries, and tributary end of system flows were selected to represent water availability in the Barwon Darling. The following observations have been made:

Climate

- J A comparison of recent years annual rainfalls from 2012 to 2017 with that experienced during the millennial drought from 2001 to 2009 indicate that rainfalls are below average, but not to the extent that they were during the drought. However, in areas in the Northern and western parts of the Northern Basin such as Toowoomba and Bourke, there have been very few years with above average rainfalls since the millennial drought began.

Water Availability

- J Over the past five years (2012/13 to 2016/17), a number of Northern Basin tributaries have experienced total mid system flows and inflows to the Barwon Darling which are similar to those experienced during the millennial drought.
- J The sum of **all** mid system tributary flows over the five years from 2012/13 to 2016/17 have been approximately just one and a half times those experienced during the worst period in the millennial drought. Whilst total inflows to the Barwon Darling have been approximately twice the amount experienced during this period.
- J The three individual years from 2013/14 to 2015/16 have experienced total mid system tributary flows and inflows to the Barwon Darling with a similar order of magnitude to those experienced during the worst years of the millennial drought.
- J The sum of all mid system and tributary inflows to the Barwon Darling over the five years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.
- J The sum of all mid system flows from 2012/13 to 2016/17 have only been lower for approximately thirteen other *five year periods* out of a total of 83 periods from 1922 to 2008, whilst inflows to the Barwon Darling have only been lower for approximately twenty one *five year periods* indicating very dry condition and limited water availability.

- J Over the period 2012/13 to 2016/17 three of five years have had more water lost through evaporation from Menindee Lakes than gained through inflows to the Lakes.
- J Over the period from 2012/13 to 2016/17, 58% of Menindee inflows have been lost through evaporation.

Usage

- J At the time of report preparation tributary usage has been within the diversion limits that have been set for all tributary valleys. Furthermore, as stated in “*MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting*”, all Cap valleys in which a cumulative balance is the basis of compliance have remained compliant over the reporting period.
- J Over the 2012/13 to 2016/17 period, Barwon Darling annual extraction has ranged from 11% to 30% of the annual system inflow. Average usage in the Barwon Darling over the past five years of 134 GL per annum has been within the systems Annual Share Entitlement total of 251.4GL.
- J The Barwon Darling average usage over the past five years of 134GL/Yr is well within the Barwon Darling the long-term average annual extraction limit for the system of 189GL/Yr.

Conclusions

In conclusion, the Northern Basin has experienced well below average conditions in terms of climate and water availability over the 2012/13 to 2016/17 period. These conditions have been felt across the entire Northern Basin and are not limited to specific river systems. Furthermore, despite the highly variable nature of water availability in the Northern Basin, below average water availability conditions have persisted since the onset of the millennial drought.

Usage across the Basin has been constrained by limited water availability over the 2012/13 to 2016/17 period, with diversions remaining within all valleys long-term average annual extraction limits.

1 Introduction

Cotton Australia engaged Barma Water Resources (BWR) Pty Ltd to undertake an independent assessment of the historic flow and usage characteristics of the Barwon Darling river, along with comparisons to the flow characteristics of the major upstream contributory valleys. The aims of the analysis were to:

-) Compare the historic mid system average flows of the past five years in upstream tributaries above major extraction points with those that have occurred over the millennium drought and historic long-term
-) Compare the historic tributary inflows to the Barwon Darling over the past five with those that have occurred over the millennium drought and historic long-term.
-) Compare the historic average flows of the past five years at locations along the Barwon Darling and Lower Darling with those that have occurred over the millennium drought and historic long-term.
-) Compare historic usage in the Barwon Darling against water availability.

The assessment has been undertaken using:

-) Historic streamflow data from the NSW Governments Water Information Website.
-) River system model data provided by the NSW Department of Industry.
-) River system model data provided by the Queensland Department of Science Information Technology and Innovation.
-) Water usage data provided by the NSW Department of Industry.

Chapter 2 of this report compares the past five years climate and flows at different locations within the Northern Basin (2012/13 to 2016/17). Chapter 3 of this report compares usage to water availability in the Barwon Darling over recent times. Chapter 4 summarises the studies overall conclusions.

2 Climate and Streamflows (2012/13 to 2016/17)

2.1 Recent Climate (2012 to 2017)

As shown in Figure 1, rainfall over the years 2012 to 2016 in Northern section of the Murray Darling Basin has been highly variable. 2012 and 2016 are years in which rainfall has been average to above average (light blue to dark blue) in many locations, whilst the years in between have seen below average rainfall in much of the Northern Basin (light red to dark red).

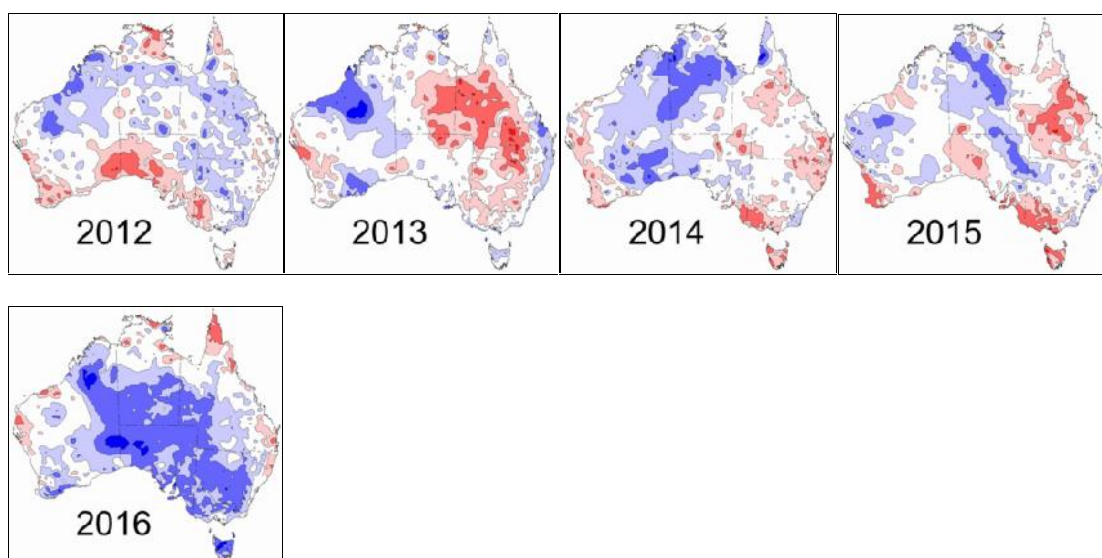


Figure 1 – BOM Rainfall Deciles By Year

The highly variable nature of rainfall in the Northern Basin is also shown in Figure 2, which compares rainfall at a number of key locations in terms of departure from the long-term average. As can be seen rainfall patterns exhibit long periods of relatively wet years and dry years. A comparison of recent years annual rainfalls from 2012 to 2017 (green bars), with those experienced during the millennial drought from 2001 to 2009 (red bars), indicate that rainfalls are below average but not to the extent that they were during the drought. However, in areas in the northern and western parts of the Northern Basin in regions such as Toowoomba and Bourke there have been very few years with above average rainfalls since the millennial drought began.

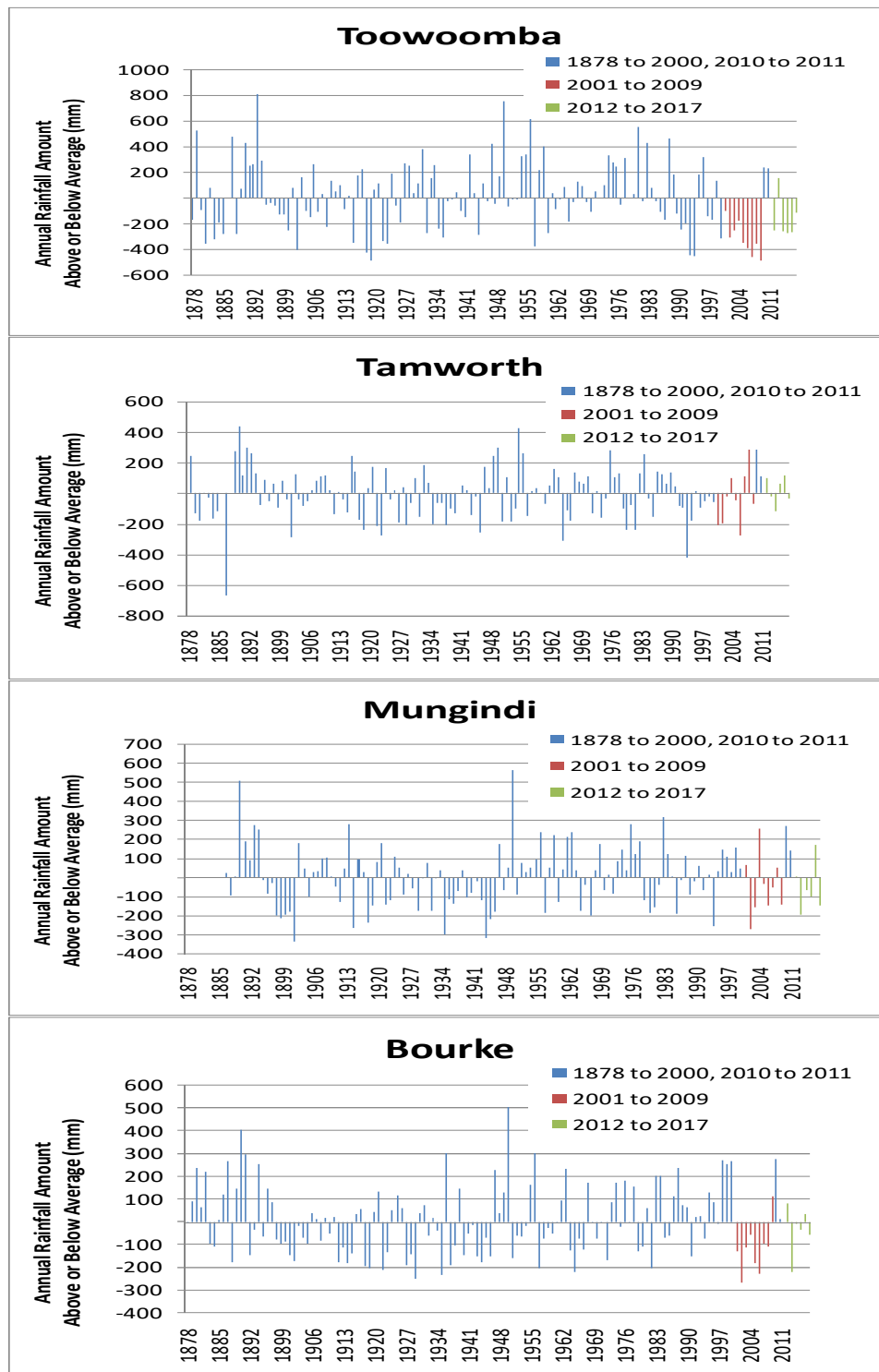


Figure 2 – Long-term Annual Rainfall Departure from Average

2.2 Long-term Streamflow Variability

The highly variable nature of rainfall in the Northern Basin manifests itself in a highly variable streamflow regime. This can be seen for mid system tributary flow and Barwon Darling tributary inflow totals in Figure 3 and Figure 4, where there are many sequences of years where flows are below average, and shorter periods where flows greatly exceed the average.

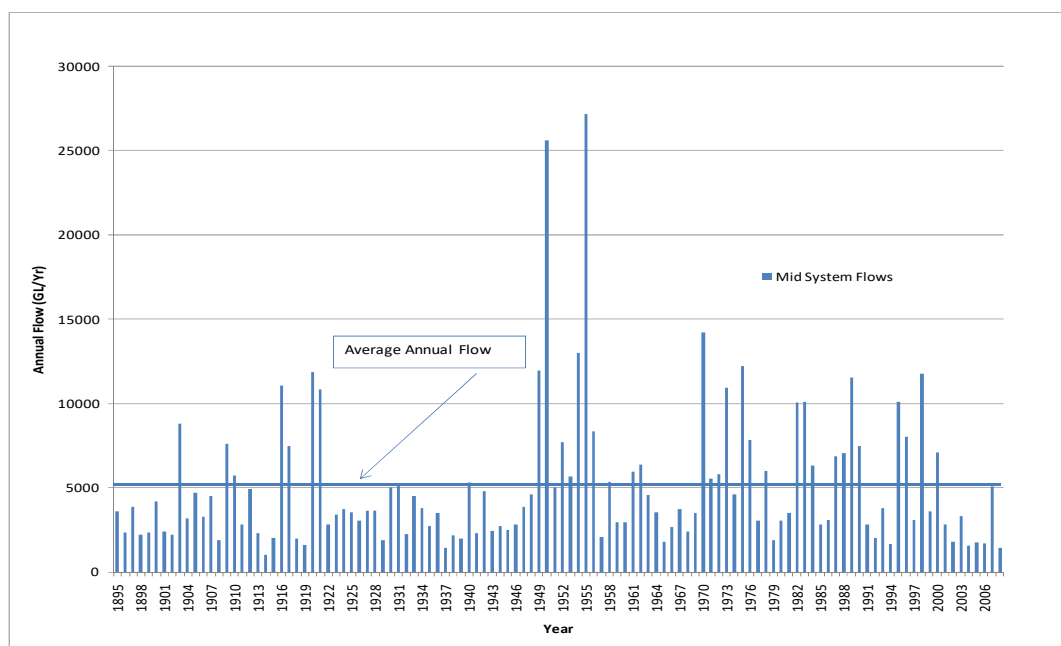


Figure 3 - Mid System Flow Comparison

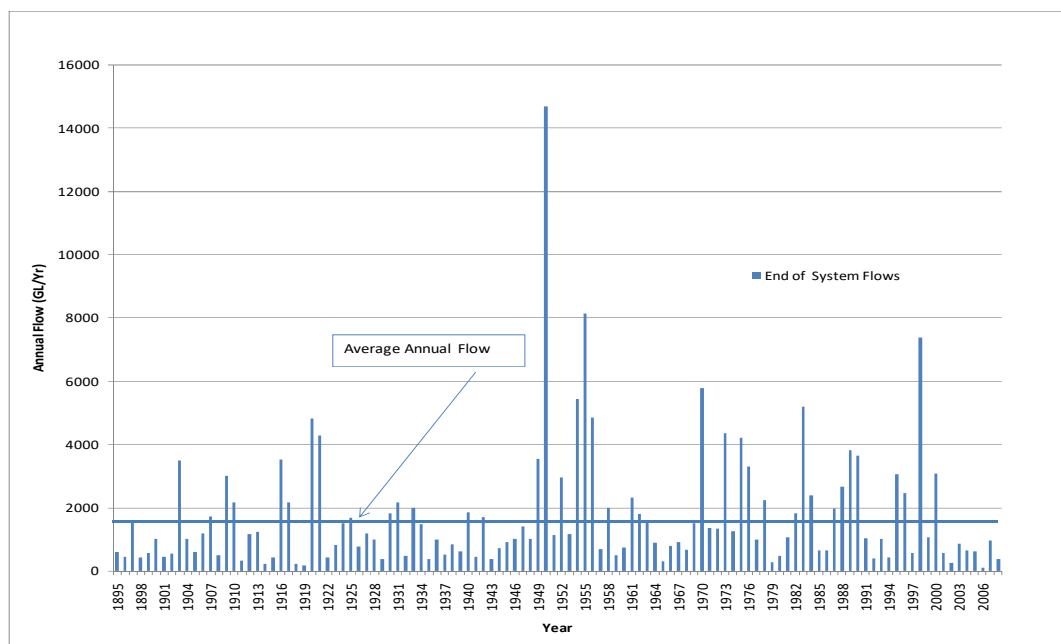


Figure 4 – End of System Flow Comparison

2.3 Recent Streamflows (2012/13 to 2016/17)

2.2.1 Mid System Flows

Recent Annual Streamflows Compared to Millennium Drought Flows

The past five years historic flows for major tributaries of the Barwon Darling at locations upstream of the majority of irrigation extractions are presented in Table 1. Mid system flows over the past five years broadly reflect the climatic conditions presented in Figure 1. *It should be noted in the case of the Condamine Balonne the mid system point of St George is downstream of significant amounts of irrigation and as such will represent a significant under estimate of water availability. At the time of report preparation predevelopment flows up to the year 16/17 were not available for incorporation into the analysis.*

In order to put the past five years flows into the context of times of limited resource availability they have been compared to flows over the millennial drought from 2002/03 to 2006/07. Results are presented in Table 2 and Figure 3. Total flows over the period 2012/13 to 2016/17 are one and a half times those under the worst five year period during the millennial drought. However, as illustrated in Figure 3, the years 2013/14 to 2015/16 (red bars) have total annual mid system flows that are as low as those experienced during the drought (blue bars).

Table 1 – Northern Basin Five Yr Historic Mid System Flows (12/13 to 16/17)

Past Five Years Historic Flows (GL/Yr)	2012/13	2013/14	2014/15	2015/16	2016/17
Mid River Flow					
416002 - Mactintyre River at Boggabilla	868.4	325.9	239.1	264.6	1624.1
417204A - Moonie River at Fenton	197.8	15.7	4.5	1.1	102.3
418013 - Gwydir River at Gravesend Rd Bridge	709.7	584.7	299.4	188.8	611.7
419012 - Namoi River at Boggabri	585.7	373.5	119.0	80.1	629.4
421001 - Macquarie River at Dubbo	1175.9	456.1	198.4	304.3	2117.9
422201F - Balonne River at St. George	1545.0	174.2	213.0	125.0	420.6
423203A - Warrego River at Wyandra	3.8	8.1	134.0	147.8	387.4
424201A - Paroo River at Caiwarro	12.6	134.1	117.2	153.1	167.5
Total Mid System Trib Flow (GL/yr)	5098.9	2072.3	1324.6	1264.8	6060.9

Table 2 - Historic Mid System Flows (12/13_16/17) Compared to 5Yr Historic Flows (02/03_06/07)

	Average Annual Mid System Flows (Current Development)		
	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Average Annual Flow 2002/3 to 2006/7 (GL/Yr)	Percentage
416002 - Macintyre River at Boggabilla	664.1	275.4	241%
417204A - Moonie River at Fenton	66.1	79.6	83%
418013 - Gwydir River at Gravesend Rd Bridge	478.6	404.1	118%
419012 - Namoi River at Boggabri	357.3	220.7	162%
421001 - Macquarie River at Dubbo	850.1	343.9	247%
422201F - Balonne River at St. George	495.3	198.1	250%
423203A - Warrego River at Wyandra	136.2	229.0	59%
424201A - Paroo River at Caiwarro	116.8	215.4	54%
Total Mid System Trib Flow (GL/yr)	3164.5	1966.3	161%

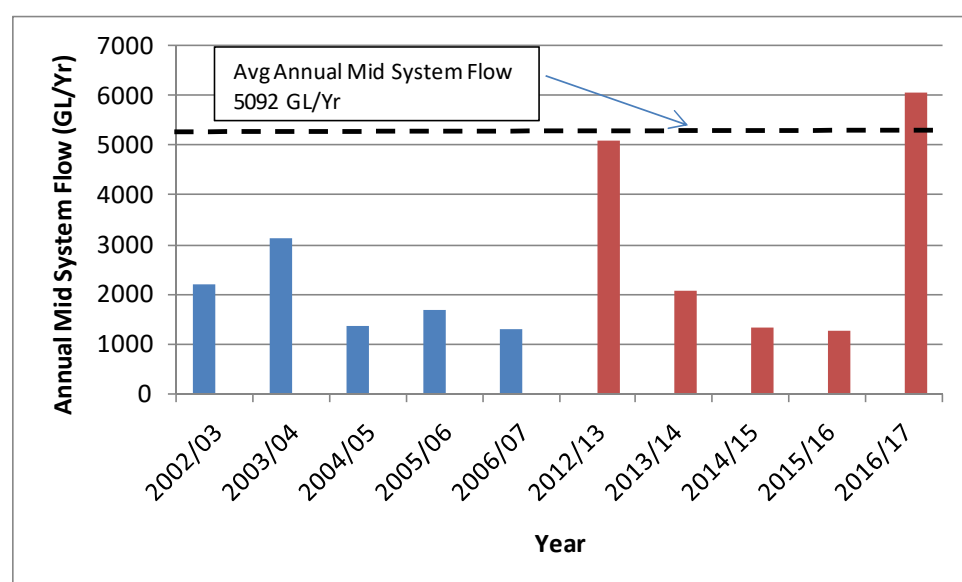


Figure 5 - Mid System Flow Comparison

Recent Annual Streamflows Compared to Longer Term Annual Flows

Recent flows can also be compared to flows over a longer climatic period. In Table 3 flows over the period 2012/13 to 2016/17 are compared to flows over the period from 1922 to 2008. As can be seen from the Table, the average mid system flows over the period from 12/13 to 16/17 is less than the modelled long-term average for all tributaries. The total historic mid system flow for all the tributaries of the Northern Basin is just a little over half of the long-term average flows for recent development further indicating that water availability has been below average across much of the northern basin during this period. This is further emphasised when comparing the past five years average annual flows with blocks of five year average flows for the period 1895 to 2008 in Figure 6. As

can be seen, five year average flows have only been lower for approximately thirteen other five Year periods out of a total of eighty three periods from 1922 to 2008 (15 % of this time), with the flow period from 2002/03 to 2006/07 being the worst on record.

Table 3 - Historic Mid System Flows (12/13_16/17) Compared to Long-term Current Development Five Yr Historic Flows (1895 to 2008)

	Average Annual Mid System Flows (Current Development)		
	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Long-term Average Modelled Flow (GL/Yr)	Percentage
416002 - Macintyre River at Boggabilla	664.1	755.5	88%
417204A - Moonie River at Fenton	66.1	69.4	95%
418013 - Gwydir River at Gravesend Rd Bridge	478.6	737.3	65%
419012 - Namoi River at Boggabri	357.3	715.6	50%
421001 - Macquarie River at Dubbo	850.1	1057.3	80%
422201F - Balonne River at St. George	495.3	888.2	56%
423203A - Warrego River at Wyandra	136.2	419.9	32%
424201A - Paroo River at Caiwarro	116.8	449.3	26%
Total Mid System Trib Flow (GL/yr)	3164.5	5092.5	62%

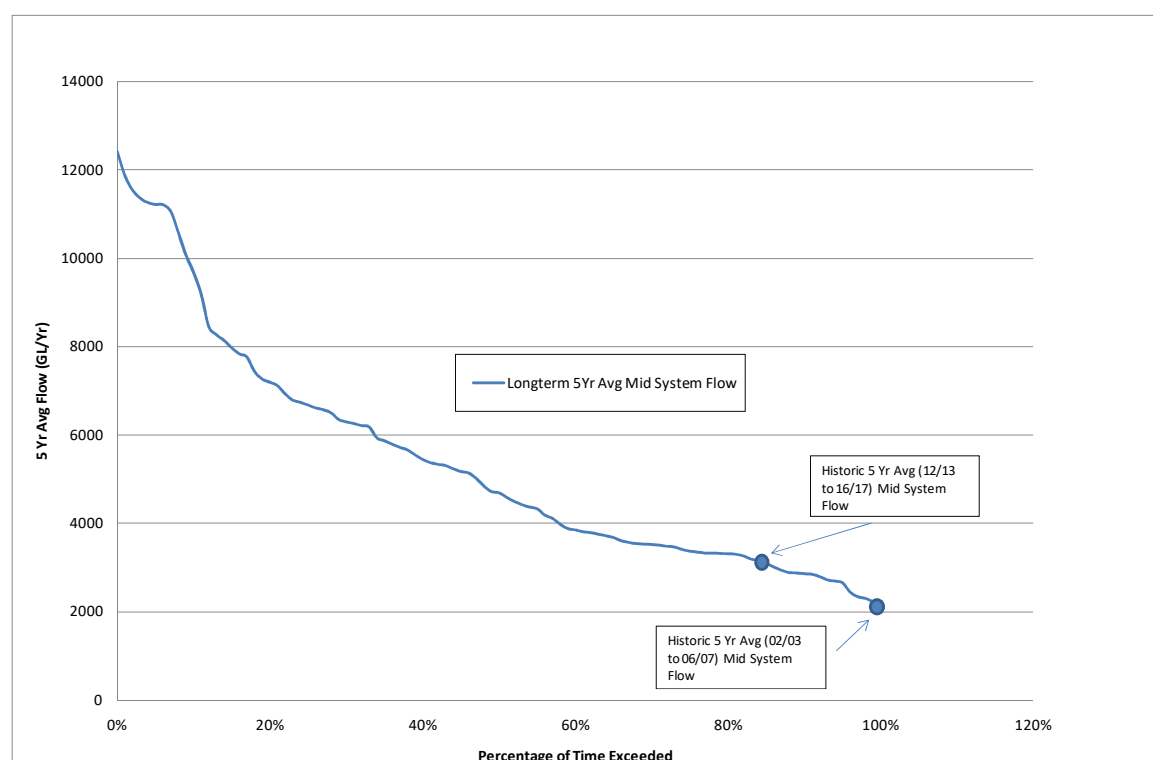


Figure 6 – Percentage of Time Five Year Average Mid System Flows are Exceeded

Conclusions

The following conclusions can be made relating to Northern Basin tributary mid system flows:

-) A number of northern basin tributaries have experienced average mid system flows over the past five years which are similar to those experienced during the millennial drought.
-) Total mid system tributary flows over the five years from 2012/13 to 2016/17 have been approximately just one and a half times those over the worst period in the millennial drought.
-) The three years from 2013/14 to 2015/16 have experienced mid system flows with a similar order of magnitude to those experienced during the worst years of the millennial drought.
-) Average Northern Basin mid system flows over the five years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.
-) Total Northern Basin mid system flows from 2012/13 to 2016/17 have only been lower for approximately thirteen other five Year periods out of a total of eighty three periods from 1922 to 2008 indicating very dry conditions and limited water availability.

2.2.2 Barwon Darling Inflows

Recent Annual Streamflows Compared to Millennium Drought Flows

A similar analysis to mid system flows can be undertaken for inflows into the Barwon Darling. Much of the flow in the Darling's tributaries is extracted for irrigation, finishes up in wetlands, or is lost as seepage and evaporation from channels and floodplains, before it enters the main stem of the Barwon Darling system.

Tributary inflows over the 2012/13 to 2016/17 period are presented in Table 4 and compared to the mid system flows. The Border Rivers, the Namoi and the Macquarie systems have provided the greatest proportion of inflows over this period.

Over 2012/13 to 2016/17 the total inflow to the Darling from its tributary rivers has been less than half the total "mid-river" flow in the tributaries (33%). In three of the past five years it has been less than 25%. The ratio of mid river flow to inflow to the Darling varies greatly from tributary to tributary. Low ratios indicate that the channel systems in

their lower reaches are particularly “inefficient“. By contrast, higher ratios indicate the river channel systems are relatively efficient.

Table 4 – Northern Basin Five Yr Historic Barwon Darling Inflows Flows (12/13 to 16/17)

	12/13	13/14	14/15	15/16	16/17	% Contribution
Approximate Inflow to Darling						
416001 – Barwon River at Mungindi	595.5	76.9	100.5	79.0	398.4	24%
416052 – Gil Gil Creek at Galloway	63.8	12.3	21.1	6.8	12.5	2%
418055 – Mehi River at Near Collarenebri	193.3	28.1	31.4	6.6	49.7	6%
419026 – Namoi River at Goangra	208.4	48.6	4.5	25.9	471.5	15%
419049 - Pian Creek at Waminda	17.4	2.3	1.5	5.5	23.4	1%
421011 – Marthaguy Creek at Carinda	72.3	0.8	6.9	44.0	484.5	12%
421107 – Marra Creek at Billybingbone	28.9	4.9	3.6	15.9	165.1	4%
421012 – Macquarie River at Carinda	120.7	9.9	1.9	2.4	304.9	8%
421023 - Bogan River at Gongolgan	40.8	21.6	8.3	35.9	508.4	12%
422005 – Bokhara River at Bokhara	32.1	0.5	2.3	2.0	5.8	1%
417001 – Moonie at Gundablouie	181.1	19.0	2.7	3.3	106.6	6%
422006 – Culgoa River at D/S Collerina	213.0	29.9	37.2	28.5	86.3	8%
423001 - Warrego River at Fords Bridge	5.9	4.9	12.4	9.0	50.0	2%
Total Mid System Trib Flow (GL/yr)	5098.9	2072.3	1324.6	1264.8	6060.9	3164.3
Total Inflow to Darling (GL/Yr)	1773.2	259.7	234.3	264.8	2667.1	1039.8
Inflow as a % of Mid System Flow (GL/Yr)	35%	13%	18%	21%	44%	33%

Table 5 compares the past five years of inflows into the Barwon Darling with those over the period 2002/3 to 2006/07 during the millennium drought. Similar findings to mid system flows are apparent.

A number of Northern Basin tributaries have experienced average inflows to the Barwon Darling over the past five years which are similar to those experienced during the millennial drought. Total inflows to the Barwon Darling over the 5 years from 2012/13 to 2016/17 have been only two times the amount experienced over the worst period in the millennial drought, and as illustrated in Figure 5, the three years from 2013/14 to 2015/16 have experienced very low Barwon Darling inflows with a similar order of magnitude to those experienced during the worst years of the millennial drought.

Table 5 - Historic End of System Flows (12/13_16/17) Compared to 5Yr Historic Flows (01/02_06/07)

	Average Annual End of System Flows (Current Development)		
	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Average Annual Flow 2001/02 to 2006/07 (GL/Yr)	
416001 – Barwon River at Mungindi	250.1	142.7	175%
416052 – Gil Gil Creek at Galloway	23.3	41.4	56%
418055 – Mehi River at Near Collarenebri	61.8	44.4	139%
419026 – Namoi River at Goangra	151.8	118.4	128%
419049 - Pian Creek at Waminda	10.0	7.4	136%
421011 – Marthaguy Creek at Carinda	71.0	3.6	1990%
421107 – Marra Creek at Billybingbone	43.7	4.3	1015%
421012 – Macquarie River at Carinda	88.0	3.8	2336%
421023 - Bogan River at Gongolgan	123.0	4.4	2827%
422005 – Bokhara River at Bokhara	8.5	8.1	104%
417001 – Moonie at Gundablouie	62.6	69.3	90%
422006 – Culgoa River at D/S Collierina	79.0	39.2	202%
423001 - Warrego River at Fords Bridge	16.4	18.6	88%
Total End of System Flow (GL/yr)	989.2	505.4	196%

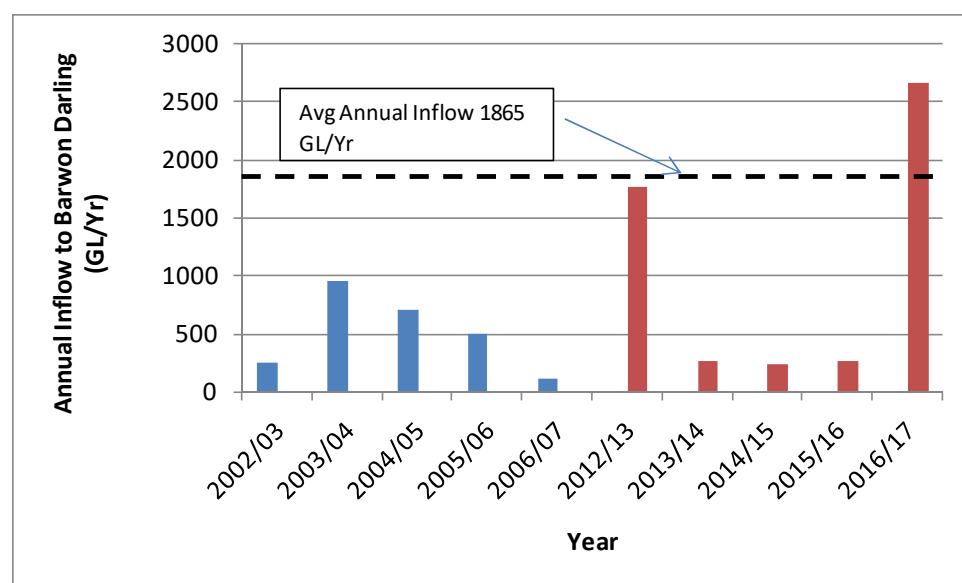


Figure 7 - Barwon Darling Tributary Inflow Comparison

Recent Annual Streamflows Compared to Longer Term Annual Flows

A comparison of recent tributary inflows to the Barwon Darling with long-term average annual inflows from 1922 to 2008 is presented in presented in Table 6. The results indicate that total inflows to the Barwon Darling are only half of what occurs on average over the longterm. This again shows that that recent historical inflow conditions have

been much drier than those which occur on average, and is further illustrated by Figure 8 when comparing the past 5 years average annual flows with block of five year average flows for the period 1895 to 2008. As can be seen, the total tributary system inflows to the Barwon Darling from 2012/13 to 2016/17 have only been lower for approximately twenty one other five year periods out of a total of eighty three periods from 1922 to 2008 (25 % of the time), with the flow period from 2002/03 to 2006/07 being the worst on record.

Table 6 - Historic Barwon Darling Inflows (12/13_16/17) Compared to Long-term Current Development 5Yr Historic Flows (1895 to 2008)

	Average Annual End of System Flows (Current Development)		
	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Long-term Average Modelled Flow (GL/Yr)	Percentage
416001 – Barwon River at Mungindi	250.1	357.4	70%
416052 – Gil Gil Creek at Galloway	23.3	64.4	36%
418055 – Mehi River at Near Collarenebri	61.8	89.1	69%
419026 – Namoi River at Goangra	151.8	547.2	28%
419049 - Pian Creek at Waminda	10.0	45.2	22%
421011 – Marthaguy Creek at Carinda	71.0	71.0	100%
421107 – Marra Creek at Billybingbone	43.7	25.3	173%
421012 – Macquarie River at Carinda	88.0	79.5	111%
421023 - Bogan River at Gongolgan	123.0	229.4	54%
422005 – Bokhara River at Bokhara	8.5	26.3	33%
417001 – Moonie at Gundablouie	62.6	70.6	89%
422006 – Culgoa River at D/S Collierina	79.0	202.2	39%
423001 - Warrego River at Fords Bridge	16.4	58.0	28%
Total End of System Flow (GL/yr)	989.2	1865.5	53%

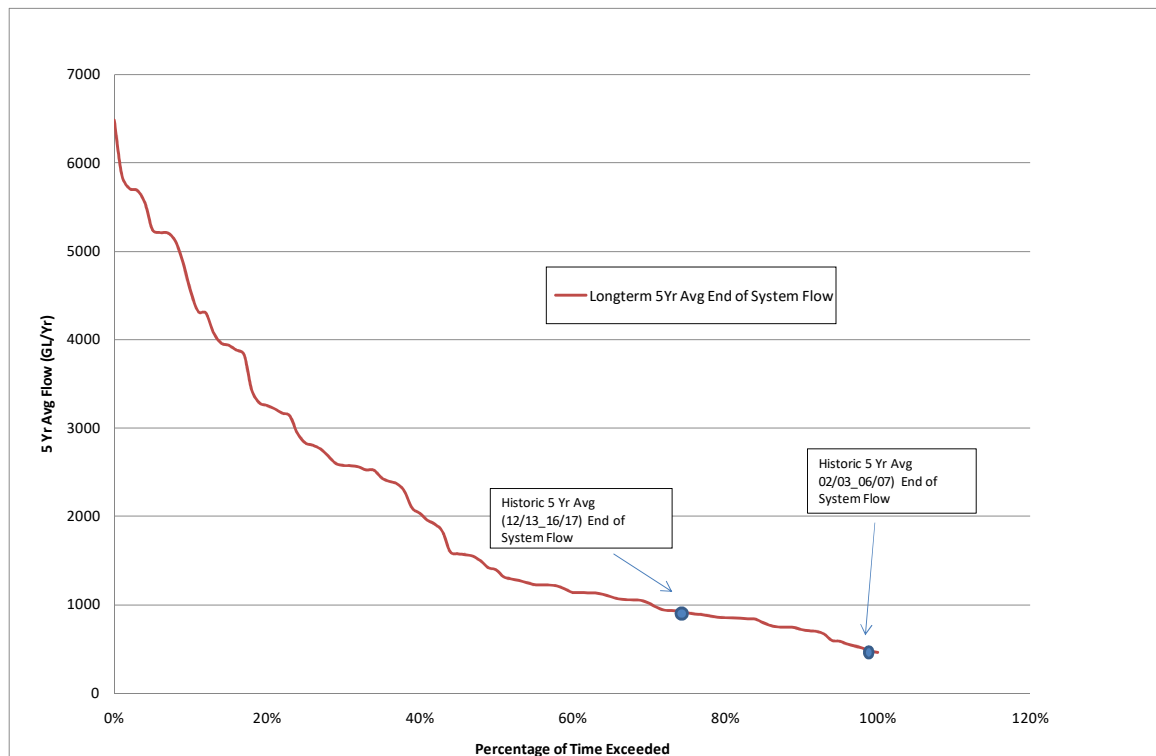


Figure 8 - Percentage of Time Five Year Average End of System Flows are Exceeded

Conclusions

The following conclusions can be made relating to Northern Basin tributary inflows to the Barwon Darling:

-) As with mid system flows a number of Northern Basin tributaries have experienced inflows to the Barwon Darling over the past five years which are similar to those experienced during the millennial drought.
-) Total inflows to the Barwon Darling over the 5 years from 2012/13 to 2016/17 have been approximately only twice the amount experienced over the worst period in the millennial drought.
-) The three years from 2013/14 to 2015/16 have experienced very low Barwon Darling inflows with a similar order of magnitude to those experienced during the worst years of the millennial drought.
-) Average inflows to the Barwon Darling over the 5 years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.
-) The total tributary system inflows to the Barwon Darling from 2012/13 to 2016/17 have only been lower for approximately twenty one other five year periods out of a total of eighty three periods from 1922 to 2008 indicating very dry conditions.

2.2.3 Barwon Darling Streamflows

Recent Annual Streamflows Compared to Millennium Drought Flows

The previous analysis of mid system tributary flows and inflows to the Barwon Darling has highlighted the limited water availability and drier than average conditions that have existed over the past five years. An analysis of flows once they enter the Barwon Darling system is presented in this section. Table 7 and Figure 8 show annual and daily flows at a number of locations along the river. As can be seen despite irrigation extractions the Barwon Darling River gains flows between Brewarrina and Bourke due to tributary inflows but then loses flows below Bourke and the Menindee Lakes Scheme where extractions and inflows are lower, but losses are higher.

Table 7 - Barwon Darling Flows

Past Five Years Historic Flows	12/13	13/14	14/15	15/16	16/17	Average	% Change
Barwon Darling Flows (GL/Yr)							
422002 – Barwon River at Brewarrina	1204.5	128.8	83.9	118.5	1604.7	628.1	
425003 – Darling River at Bourke	1715.8	154.4	99.1	124.9	2494.8	917.8	+46%
Menindee Inflows	1635.9	140.1	60.2	68.7	2029.7	786.9	-14%
425012 – Darling River at Weir 32	1427.8	235.1	57.6	19.3	531.9	454.3	-42%

Table 8 and Figure 10 present a comparison between flows in the Barwon Darling over the five years from 2012/13 to 2016/17 to those from 2002/03 to 2006/07. Results of Table 8 show that recent average flows have been approximately two to three times greater than those over the worst five year period in the millennial drought. However, as illustrated by Figure 10, three of the five years (2013/14 to 2015/16) have experienced very low Bourke annual flow volumes of a similar order of magnitude to those experienced during the worst years of the millennial drought. Furthermore, most of the years since the millennium drought commenced have had well below average annual flows.

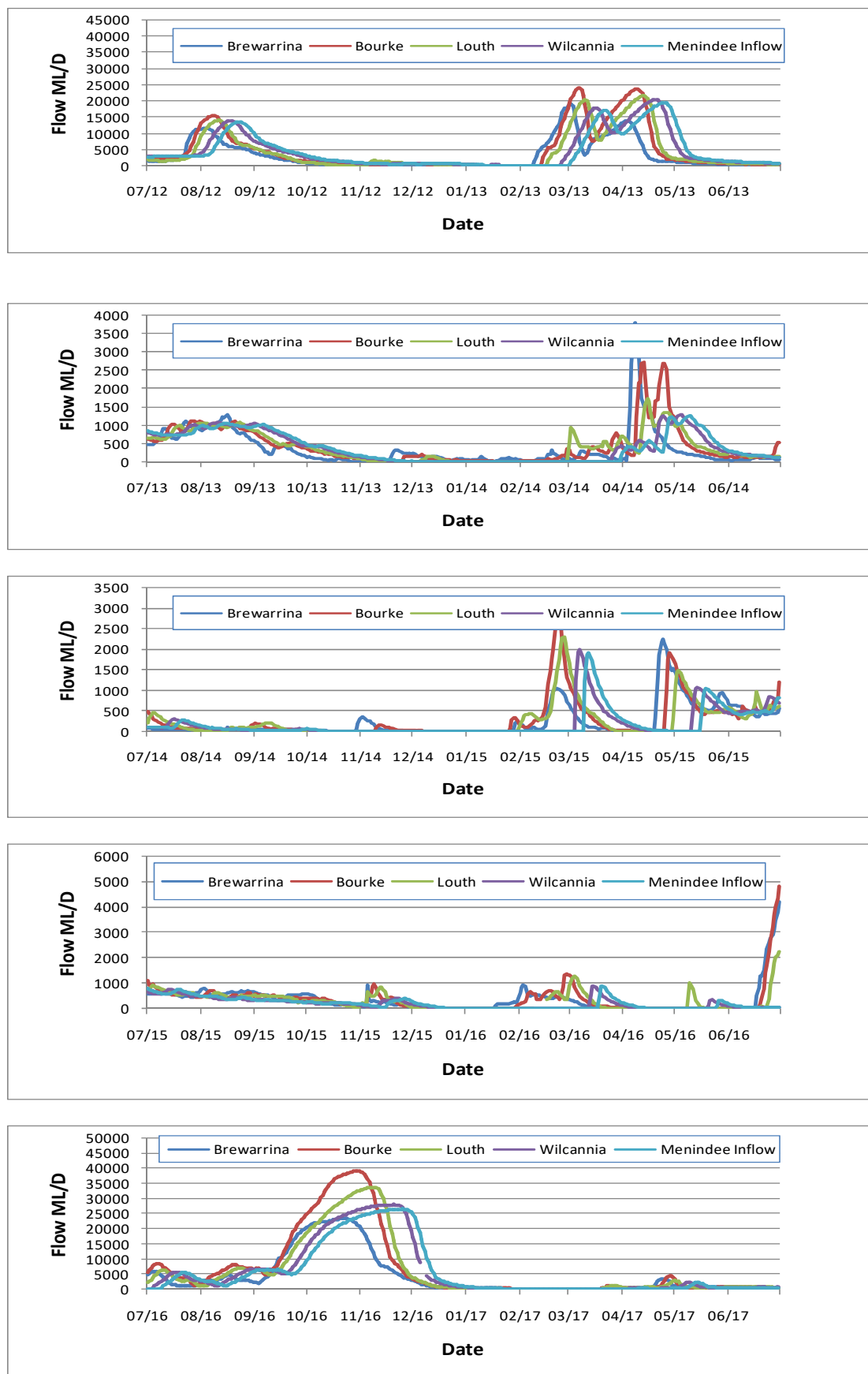


Figure 9 - Historical Flow Hydrographs at Brewarrina and Bourke (2012 to 2017)

Table 8 - Barwon Darling Flows (2012/13 to 2016/17) compared to (2002/03 to 2006/07)

Past Five Years Historic Flows	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Average Annual Flow 2002/03 to 2006/07 (GL/Yr)	Percentage
422002 – Barwon River at Brewarrina	628.1	326.5	192.4%
425003 – Darling River at Bourke	917.8	342	268.4%
Menindee Inflows	786.9	247	318.6%
425012 – Darling River at Weir 32	454.3	76.7	592.3%

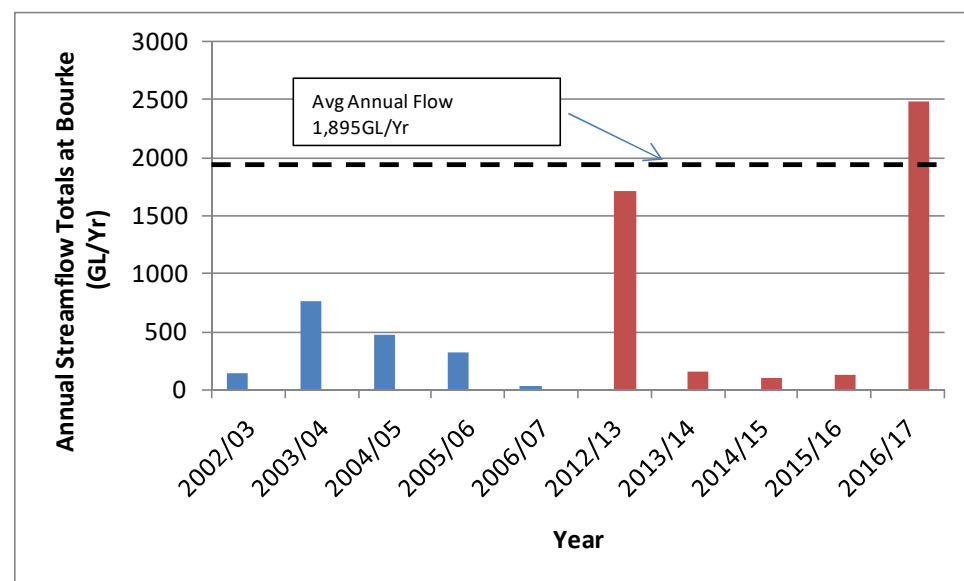


Figure 10 - Barwon Darling Bourke Flows Comparison

Recent Annual Streamflows Compared to Longer Term Annual Flows

The average of the past five years annual historic flows in the Barwon Darling are compared to long-term average annual flows from 1895 to 2008 in Table 9. As can be seen from the Table, average flows for the past five years are less than half of long-term flows along the river system indicating considerably drier than average conditions. This has been exacerbated downstream, of the Menindee Lakes Scheme due to the large losses associated with evaporation from the Scheme. This is also presented in the form of a water balance for the Scheme in Table 10 and Table 11. The results of Table 11 show that that over the period 2012/13 to 2016/17 three of five years have had more water lost through evaporation than gained through inflows, and that on average over the five years from 2012/13 to 2016/17, 58% of Menindee inflows have been lost through evaporation.

Table 9 - 5Yr Historic Flows (12_17) Compared to Long-term 5Yr Historic Flows (1895 to 2008)

	Average Annual End of System Flows (Current Development)		
	Average Annual Flow 2012/13 to 2016/17 (GL/Yr)	Long-term Average Modelled Flow (GL/Yr)	Percentage
422002 – Barwon River at Brewarrina	628.1	1468.23	43%
425003 – Darling River at Bourke	917.8	1895.5	48%
Menindee Inflows	786.9	1693.3	46%
425012 – Darling River at Weir 32	454.3	1326.4	34%

Table 10 – Menindee Lakes Scheme Water Balance

Year	Inflow (GL/Yr)	Rain on Storage (GL/Yr)	Evaporation from Storage (GL/Yr)	Storage Release (GL/Yr)	Change In Storage (GL/Yr)
2012/13	1,678	102	789	1,658	-667
2013/14	136	43	631	418	-871
2014/15	65	28	260	125	-292
2015/16	68	11	85	28	-34
2016/17	2,030	71	790	624	686
Average	795	51	511	571	-235

Table 11 – Menindee Lakes Scheme % of Inflow Lost through Evaporation and Seepage

Year	Inflow (GL/Yr)	Net Evap (GL/Yr)	% Of Inflow Lost to Net Evap and Seepage
2012/13	1,678	687	41%
2013/14	136	588	432%
2014/15	65	232	357%
2015/16	68	74	109%
2016/17	2,030	719	35%
Average	795	460	58%

Conclusions

-) The Barwon Darling River gains flows between Brewarrina and Bourke due to tributary inflows but then loses flows below Bourke and the Menindee Lakes Scheme.
-) Total flows in the Barwon Darling over the five years from 2012/13 to 2016/17 have been approximately two to three times greater than those over the worst five year period in the millennial drought. However three of the five Yrs (2013/14 to 2015/16) have experienced very low annual flow volumes of a similar order of magnitude to those experienced during the worst years of the millennial drought.
-) Average flows over the five years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.

- J Over the period 2012/13 to 2016/17 three of five years have had more water lost through evaporation from Menindee Lakes than gained through inflows to the lakes, and that on average over the five years from 2012/13 to 2016/17, 58% of Menindee inflows have been lost through evaporation.

3 Historic Usage and Water Availability (2012/13 to 2016/17)

3.1 Historic Usage and Water Availability.

At the time of report preparation Barwon Darling tributary usage is within the long-term average annual extraction limits that have been set for all valleys. Furthermore, as stated in the *MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting* all Cap valleys in which a cumulative balance is the basis of compliance have remained compliant over the reporting period.

Usage for the Barwon Darling is presented for the 2012/13 to 2016/17 period in Table 12. Barwon Darling annual extraction has ranged from 11% to 30% of the annual system inflow. Average usage in the Barwon Darling over the past 5 years of 134 GL per annum has been within the Annual Share Entitlement Volume of 253GL indicating that pumping opportunities have been less frequent when annual inflows are below average.

The average usage over the past five years of 134GL/Yr is well within the Barwon Darling long-term average annual extraction limit for the system of 189GL/Yr (Source: Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012).

An assessment of the Barwon Darling and Lower Darling combined annual diversions against Cap diversions over the period from 1997/8 to 2015/16 are also presented in Figure 11. As can be seen there are very few individual years in which annual diversions (red bars) have exceeded the Cap targets (blue dashes). Furthermore, cumulative diversions as illustrated by the green line are in credit and well with the Cap.

It should be noted that daily usage data was not available for the Barwon Darling so a comparison of periods of extraction with flows at a daily time scale and an assessment of compliance with license conditions could not be undertaken as part of this study.

Table 12 - Historic Usage (12/13 to 16/17) Barwon Darling

RIVER SECTION	12/13	13/14	14/15	15/16	16/17	Share
BOOMI RIVER CONFLUENCE TO UPSTREAM MOGIL MOGIL WEIR POOL MANAGEMENT ZONE						0.2
UNREGULATED RIVER (A CLASS)	0	0				0.0
UNREGULATED RIVER (B CLASS)	0	0				0.1
BOOROOMA TO BREWARRINA MANAGEMENT ZONE						49.8
DOMESTIC AND STOCK					0	0.4
LOCAL WATER UTILITY	0	0			0	1.0
UNREGULATED RIVER					0	1.5

UNREGULATED RIVER (A CLASS)	943	100	2631	5426.6	7622.2	1.7
UNREGULATED RIVER (B CLASS)	16245	12966	0	6677	24915.8	13.1
UNREGULATED RIVER (C CLASS)	39020	3279	0	3024	38312	32.2
BOURKE TO LOUTH MANAGEMENT ZONE						26.3
DOMESTIC AND STOCK	17	17	0	0	0	0.0
LOCAL WATER UTILITY	0	15		25	17	0.0
UNREGULATED RIVER (A CLASS)	8	0	0			0.9
UNREGULATED RIVER (B CLASS)	15251	3637	0	1577	10514	13.6
UNREGULATED RIVER (C CLASS)	10514	2655	0	1459	19264	11.7
BREWARRINA TO CULGOA RIVER JUNCTION MANAGEMENT ZONE						14.1
UNREGULATED RIVER (A CLASS)	218.5	108.5	0	426.4	441.6	0.4
UNREGULATED RIVER (B CLASS)	14649	7562	0	3808	25460.4	13.6
UNREGULATED RIVER (C CLASS)	0					0.0
COLLARENEBRI TO UPSTREAM WALGETT WEIR POOL MANAGEMENT ZONE						9.4
DOMESTIC AND STOCK	17	17	0	0	0	0.0
UNREGULATED RIVER (A CLASS)	0	0		0	320	0.5
UNREGULATED RIVER (B CLASS)	7165	8342	5243	11242	22695	8.9
CULGOA RIVER JUNCTION TO BOURKE MANAGEMENT ZONE						103.6
DOMESTIC AND STOCK	8.5	8.5	0			0.1
LOCAL WATER UTILITY	0	1712	0	1671	1954	3.5
UNREGULATED RIVER (A CLASS)	221	204	11299	13724	13010	14.1
UNREGULATED RIVER (B CLASS)	66035	15917	0	11510	86221	82.6
UNREGULATED RIVER (C CLASS)	1538	530	0	0	15	3.4
DOWNSTREAM MOGIL MOGIL TO COLLARENEBRI MANAGEMENT ZONE						18.4
LOCAL WATER UTILITY	0	198.1				0.4
UNREGULATED RIVER (A CLASS)	0	0			1218	0.3
UNREGULATED RIVER (B CLASS)	203	400	1012	1469	1047	10.7
UNREGULATED RIVER (C CLASS)	0	0				7.0
DOWNSTREAM WALGETT TO BOOROOMA MANAGEMENT ZONE						14.5
UNREGULATED RIVER (A CLASS)	0	0		1279	5537.7	0.9
UNREGULATED RIVER (B CLASS)	4819	4877	322	1274	21197.3	8.4
UNREGULATED RIVER (C CLASS)	3552	4495	0	750	888	5.1
LOUTH TO TILPA MANAGEMENT ZONE						0.9
UNREGULATED RIVER (A CLASS)	0	0				0.0
UNREGULATED RIVER (B CLASS)	0	0				0.8
MUNGINDI TO BOOMI RIVER CONFLUENCE MANAGEMENT ZONE						7.5
UNREGULATED RIVER (A CLASS)	8	37	8	20	36	0.0
UNREGULATED RIVER (B CLASS)	5684	7279	8636	9612.4	11053.2	7.5
UNREGULATED RIVER (C CLASS)	0					0.0
TILPA TO WILCANNIA MANAGEMENT ZONE						2.4
LOCAL WATER UTILITY	0	0			0	0.4
UNREGULATED RIVER (A CLASS)	0	0				0.5

UNREGULATED RIVER (B CLASS)	0	0				1.5
WALGETT WEIR POOL MANAGEMENT ZONE						3.3
UNREGULATED RIVER (A CLASS)	0	0	60.5	0	455	0.3
UNREGULATED RIVER (B CLASS)	3190	4050	595	871	6672	3.0
WILCANNIA TO UPSTREAM LAKE WETHERELL MANAGEMENT ZONE						1.1
UNREGULATED RIVER (B CLASS)	0	0				1.1
Total Usage (GL/Yr)	189.3	78.4	29.8	75.8	298.9	251.4
Total Inflow to Barwon Darling (GL/Yr)	1773.2	259.7	234.3	264.8	2667.1	
Proportion of Inflow Extracted (GL/Yr)	11%	30%	13%	29%	11%	
Total Flow at Bourke (GL/Yr)	1715.8	154.4	99.1	124.9	2494.8	

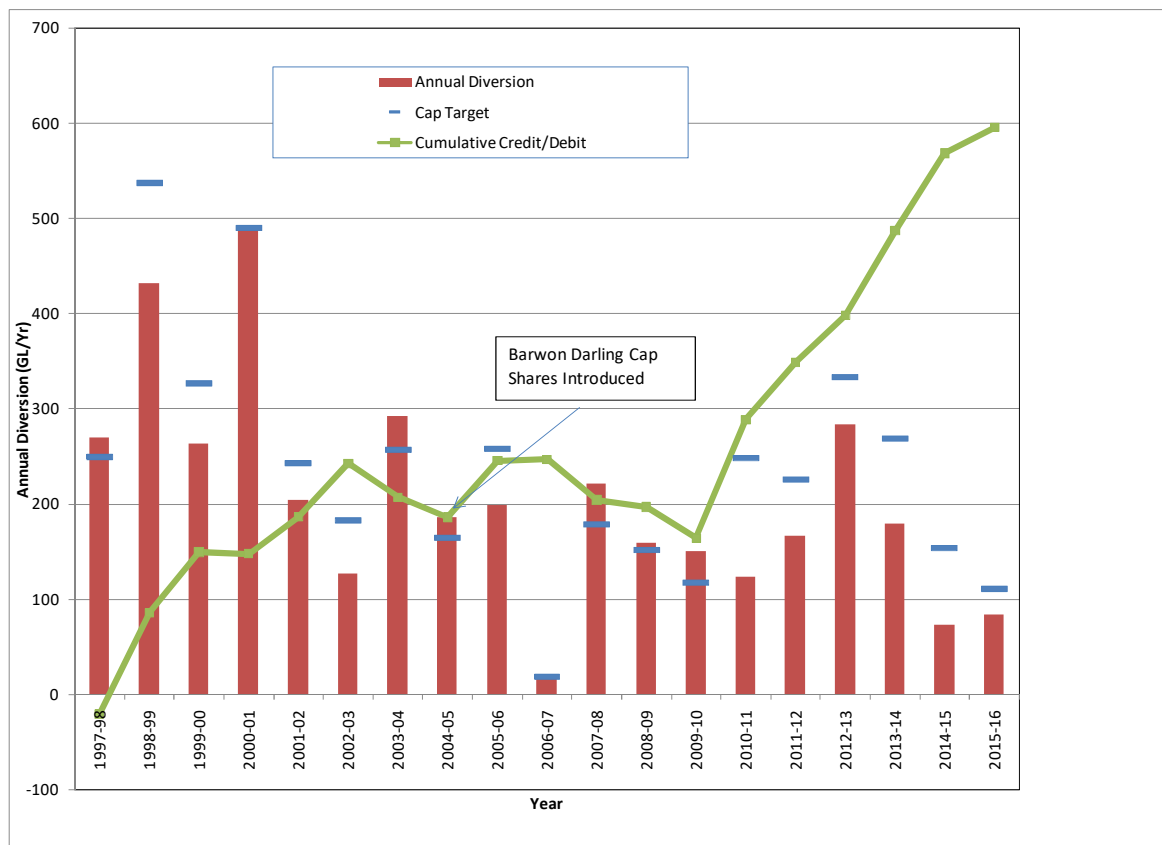


Figure 11 - Barwon Darling and Lower Darling Cap Performance

Conclusions

At the time of report preparation tributary usage has been within the diversion limits that have been set for all valleys. Furthermore, as stated in “*MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting*”, all Cap valleys in which a cumulative balance is the basis of compliance have remained compliant over the reporting period.

Barwon Darling annual extraction has ranged from 11% to 30% of the annual system inflow. Average usage in the Barwon Darling over the past 5 years of 134 GL per annum has been within the Annual Share Entitlement.

The Barwon Darling average usage over the past five years of 134GL/Yr is well within the Barwon Darling the long-term average annual extraction limit for the system of 189GL/Yr.

4 Conclusions

An assessment of flows and water availability has been made for the period 2012/13 to 2016/17. Mid system flows were chosen to represent water availability in the Northern Basin tributaries, and tributary end of system flows were selected to represent water availability in the Barwon Darling. The following observations have been made:

Climate

-) A comparison of recent years annual rainfalls from 2012 to 2017 with that experienced during the millennial drought from 2001 to 2009 indicate that rainfalls are below average, but not to the extent that they were during the drought. However, in areas in the Northern and western parts of the Northern Basin such as Toowoomba and Bourke, there have been very few years with above average rainfalls since the millennial drought began.

Water Availability

-) Over the past five years (2012/13 to 2016/17), a number of Northern Basin tributaries have experienced total mid system flows and inflows to the Barwon Darling which are similar to those experienced during the millennial drought.
-) The sum of **all** mid system tributary flows over the five years from 2012/13 to 2016/17 have been approximately just one and a half times those experienced during the worst period in the millennial drought. Whilst total inflows to the Barwon Darling have been approximately twice the amount experienced during this period.
-) The three individual years from 2013/14 to 2015/16 have experienced total mid system tributary flows and inflows to the Barwon Darling with a similar order of magnitude to those experienced during the worst years of the millennial drought.
-) The sum of all mid system and tributary inflows to the Barwon Darling over the five years from 2012/13 to 2016/17 are almost half of what would be expected over the long-term from 1922 to 2008.
-) The sum of all mid system flows from 2012/13 to 2016/17 have only been lower for approximately thirteen other *five year periods* out of a total of 83 periods from 1922 to 2008, whilst inflows to the Barwon Darling have only been lower for approximately twenty one *five year periods* indicating very dry condition and limited water availability.

- J Over the period 2012/13 to 2016/17 three of five years have had more water lost through evaporation from Menindee Lakes than gained through inflows to the Lakes.
- J Over the period from 2012/13 to 2016/17, 58% of Menindee inflows have been lost through evaporation.

Usage

- J At the time of report preparation tributary usage has been within the diversion limits that have been set for all tributary valleys. Furthermore, as stated in “*MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting*”, all Cap valleys in which a cumulative balance is the basis of compliance have remained compliant over the reporting period.
- J Over the 2012/13 to 2016/17 period, Barwon Darling annual extraction has ranged from 11% to 30% of the annual system inflow. Average usage in the Barwon Darling over the past five years of 134 GL per annum has been within the systems Annual Share Entitlement total of 251.4GL.
- J The Barwon Darling average usage over the past five years of 134GL/Yr is well within the Barwon Darling the long-term average annual extraction limit for the system of 189GL/Yr.

Conclusions

In conclusion, the Northern Basin has experienced well below average conditions in terms of climate and water availability over the 2012/13 to 2016/17 period. These conditions have been felt across the entire Northern Basin and are not limited to specific river systems. Furthermore, despite the highly variable nature of water availability in the Northern Basin, below average water availability conditions have persisted since the onset of the millennial drought.

Usage across the Basin has been constrained by limited water availability over the 2012/13 to 2016/17 period, with diversions remaining within all valleys long-term average annual extraction limits.

REFERENCES

DOI (Water) Water Sharing Plan for the Barwon-Darling Unregulated and Alluvial Water Sources 2012

MDBA Transition Period Water Take Report 2012–13 to 2015–16 Report on Cap compliance and transitional SDL accounting November 2017

WMA Water State of the Darling Stage 1 Hydrology Overview Technical Report November 2006

19-4-2018

Commissioners Doolan & Madden,
Murray-Darling Basin Plan: Five-year assessment,
Australian Government Productivity Commission,
basin.plan@pc.gov.au

Dear Commissioners Doolan and Madden,

Re: Murray-Darling Basin Plan: Five-year assessment

Introduction

Cotton Australia is the key representative body for Australia's cotton growing industry. Our industry is primarily, but not exclusively, located in the Murray-Darling Basin. It is a significant user of our nation's water resources, and it is justifiably proud of its water management, and it focus on being as efficient with this important resource as possible.

Cotton Australia welcomes the Productivity Commission's Five Year Assessment of the Murray-Darling Plan, but cautions that any assessment must be very much in the context that the plan will not be fully implemented till 2024, and even the Water Resource Plans and Sustainable Diversion Limits will not be formally in place till July 1, 2019.

There also must be very clear understanding that in a massive, modified natural system like the Basin, the full benefits of the Plan will only become apparent in the decades to come.

Cotton Australia is an active member of the National Farmers Federation (NFF), National Irrigators Council (NIC), NSW Irrigators Council (NSWIC) and Queensland Farmers Federation (QFF) and endorses their submissions to this Inquiry.

In light of the comprehensive submissions being lodged by the above organisations Cotton Australia will keep its submission brief. The focus of this submission will be on issues that are particularly important to our industry. We welcome the opportunity to speak on behalf of cotton growers on this issue.

Key Issues

Sustainable Diversion Limits and Adjustments

Sustainable Diversion Limits Adjustment Mechanism

Cotton Australia is a strong supporter of the Sustainable Diversion Limits Adjustment Mechanism ('SDLAM') as an innovative way of achieving environmental outcomes, while maintaining access to water for extractive use. The SDLAM in part addresses Cotton Australia's single biggest criticism of the Basin Plan. Which is that the Basin Plan just focuses on a hydrology as the solution to the health of the Basin.

In today's world there are virtually no problems that are best addressed with single solution, certainly not when you are dealing with the long-term health of something as complex as the Murray-Darling Basin.

Cotton Australia does understand the concern expressed by many that there is little public detail on the business cases for the 36 "Supply" projects. We would agree in an ideal world it would be preferable to have significantly more information.

However, Cotton Australia also acknowledges the time constraints and accepts that it is not possible to have the level of detail desirable and meet the timetable mandated by the Basin Plan.

While many have argued the lack of detail represents a significant risk to the Basin Plan. There is a failure to recognise that if the modelled environmental outcomes are not achieved by 2024, the MDBA will have to reconcile the results achieved, and if necessary amend the Sustainable Diversion Limits (SDL). This effectively removes the risk to the plan, and in fact shifts it to those stakeholders who would like to minimise water recovery – if the environmental equivalent outcomes are not achieved, there will be further water acquisition.

While Cotton Australia readily acknowledges that it does not possess detailed information on any of the 36 projects, it does want to make a few comments regarding the Menindee Lakes project.

All projects that have looked at the Menindee Lakes over the past 20 years or so, have looked at ways to reduce evaporation losses, primarily by using the water stored in the Lakes faster.

The Lakes, by their very nature and location are an extremely inefficient storage. In the five years spanning 2012/13 to 2016/17, average inflows into Menindee Lakes was 795Gl with net evaporation and seepage averaged at 460Gl or 58%.

Given the above losses, it is natural to seek to reduce them. However, any attempt to use the water in the Lakes quicker, also means the average storage volume will be reduced, which increases the likelihood and frequency of critical shortages.

Menindee has a number of key stakeholders:

-) The people of Menindee and surrounding areas for whom the Lake has cultural, recreational and economic value.
-) Downstream irrigators and riparian users between the lakes and the confluence of the Lower Darling and the Murray-River near Wentworth.
-) The people of Broken Hill who have relied on Menindee Lakes as a significant source of their town water supply.
-) River users upstream of Menindee along the Barwon-Darling and its tributaries who forgo access to water to ensure inflows into the Lakes.

Many cotton growers fall into the last category, and until recently, there was one significant cotton growing farm downstream of Menindee.

Irrigators upstream of Menindee have been regularly blamed for the lack of water in the lakes. As a result, have had their legal right to water embargoed a number of times this century in an attempt to ensure inflows to the Lakes.

These embargoes are not driven by Water Resource Plans, but are an extra regulatory response, which reduce the irrigators' long-term legal take.

There is much commentary that irrigators support the Menindee project because it will make more water available to them. This is not the case, and unless there are significant mitigatory actions, then the Menindee Lakes project may lead to even less water for upstream irrigators.

While it is logical to reduce the amount of evaporation in Menindee, it is imperative that third party impacts be avoided, mitigated or compensated for.

The Federal Government's buyout of the water entitlements and compensation for decommissioning of irrigation capacity associated with Tandou (downstream of the Lakes), and the State Government's commitment to building a pipeline as an alternative water supply for Broken Hill, are two positive examples of mitigation.

However, there remains significant risk to other stakeholders, including upstream irrigators being asked (or made) to forgo access to their legal water entitlements.

The impact of the management approach to Menindee Lakes has been highlighted in recent history. In 2016/17, 2030GL of inflow was received by the lakes (four Sydney Harbours). Yet as we come towards the end 2017/18, there is only 254,000 megalitres in the Lakes.

Downstream water uses have been relentless in a political and media campaign blaming this lack of water on upstream extractions. However, the reality is that the overwhelming reason has been the rapid release of water from Menindee.

Nowhere else in Australia would it be deemed acceptable to allow 58% of water in storage to evaporate. Therefore, it is proper to do all that can be done to reduce evaporation. However, it shouldn't be at the expense of other users.

At some point, it might have to be agreed that an inefficient storage is better than no storage at all.

While Cotton Australia has never been an enthusiastic supporter of the 405GL "Efficiency Measures", consistently arguing the Commonwealth should have to demonstrate the responsible and effective management of the 2750GL of environmental water or equivalents first. Cotton Australia, does accept that along with the "Supply Measures" and the "Northern Basin Review" they do form an integral part of delivering the Plan in full.

Cotton Australia, welcomed the Ernest and Young Report, and supports more flexible ways of meeting the key requirement that the “Efficiency Measure” must be achieved in a way that ensures “neutral or improved socioeconomic outcomes”. Cotton Australia, acknowledges that on-farm irrigation efficiency projects may be one way of meeting this requirement, but serious consideration must be given to a wider range of recovery mechanisms. In particular, mechanisms that do not reduce the pool of water available for extractive use.

Cotton Australia, is concerned that the Basin Plan and the Commonwealth Environmental Water Holder (CEWH) appears to have a very strong, almost singular focus, on holding water entitlements as the only way to meet the environmental water requirements.

Cotton Australia, was supportive of the changes to the Commonwealth Water Act Section 106 that has given the CEWH greater flexibility to trade both water entitlements and allocations. Cotton Australia believes that like a modern irrigator the CEWH needs to be a nimble trader of water assets.

Further, there is room to explore other water products such as options, which would assist the CEWH to meet their requirements in the most efficient way possible. While also allowing, where appropriate, the use of environmental water for extractive use; with the proceeds being directed to environmental outcomes.

Northern Basin Review

The Northern Basin Review is and was an integral part of the Basin Plan, since it was ratified in 2012.

In a show of bi-partisan understanding, the Northern Basin Review was inserted due to the realisation that when compared to the collective knowledge around the southern basin, there was a deficiency in the understanding of the environmental, social and economic factors that make up the Northern Basin.

The Murray-Darling Basin Authority undertook both directly, and through the utilisation of consultants an extensive and peer reviewed four-year study of the Northern Basin.

In considering all the factors it concluded that not only could the SDL for the Northern Basin be modestly increased by 70Gls, through better targeting of where water was recovered, improved environmental results could also be obtained. Further, the reduction in 70Gl in water recovery would protect 180 full-time jobs across the Northern Basin.

If this was not enough alone to ensure support, it was agreed by the Basin States and the Federal Government would invest in a range of “toolkit” or “complementary measures”. These would provide even greater environmental outcomes, including enhanced measures to protect environmental flows generated by held environmental water.

It is a political disgrace that the Disallowance Motion opposing the Northern Basin Review Amendments was supported by the Australian Senate. It is worth noting comments made by the MDBA Board Member, Professor Barry Hart. Professor Hart stated that the very reason those who supported the Disallowance, stated as their reasons for opposing the amendments, were the very reasons the amendments would have been delivered.

To be clear, Cotton Australia did not, and does not believe that the Northern Basin review amendments went far enough. Cotton Australia, along with many other groups and individuals argued that the water recovery should have stopped at 278Gl. The money saved from not requiring additional water recovery should have been invested in complementary measures, that would have leveraged greater environmental gains from the release of environmental water.

However, Cotton Australia accepts that the Basin Plan by its very nature is a compromise. Cotton Australia respects that after four years of detailed study, the recommendations of the MDBA should have been up held.

Cotton Australia, is hopeful that the Northern Basin Review amendments, in either their original form or modified form will still be accepted by the Australia Parliament. Cotton Australia, cautions the Commission from making too firmer recommendations at this stage, on how the remaining water recovery required in the Northern Basin should be achieved.

If the 390Gl recovery target remains, there will still need to be significant effort. If the 320Gl target is re-instated, then the task becomes significantly more manageable.

Cotton Australia recommends to the Commission that the focus of the Federal Government should be the successful implementation of the Northern Basin Review recommendations.

If further water recovery proves necessary then in general Cotton Australia leans towards water recovery through well managed on and off-farm irrigation efficiency projects. In the northern basin that effectively means on-farm projects.

However, it respects the rights of individual water holders to offer water entitlement to the Commonwealth and for the Commonwealth to assess offers on their individual merits.

While not commenting on any particular transactions, it should be recognised that in cases where the purchase of water in effect means the cessation of a viable irrigation enterprise, there is a case for payments to exceed the strict value of the water entitlements.

Cotton Australia, submits that generally there has been too much preference by the Commonwealth for General Security or supplemented water, as opposed to unsupplemented water in Queensland or supplementary or unregulated water in NSW.

If an aim is try to replicate natural flows, the unsupplemented/supplementary/unregulated products achieve that. Those products are generated by the natural flows in the system and are not impeded by regulated storages.

Recovery of Water for the Environment

Everyone needs to recognise the tremendous effort that has occurred to date (Dec 2017) to recover 2106.4Gl out of the current 2019 recovery target of 2750Gl.

The successful defeat of the SDLM Disallowance motion and the successful re-introduction of the Northern Basin Review amendments will significantly, if not completely close the gap on the recovery effort required.

As mentioned earlier Cotton Australia while not a supporter of the 450Gl “Upwater” recognises like the SDLM and the Northern Basin Review , the “efficiency Measures” are an integral part of the Basin Plan and must be delivered in a manner consistent with the Basin Plan.

Cotton Australia, recognises that some representatives of extractive users are totally opposed to any of the “Efficiency Measures” water coming from the extractive pool. Cotton Australia, has a slightly broader view, and is generally supportive of good on and off-farm infrastructure projects, where they are recognised by entitlement holders as offering good value for money and participation is entirely voluntary.

However, Cotton Australia is of the view that the pilot Commonwealth On-Farm Further Irrigation Efficiency program (COFFIE) does not offer value for money and is unlikely to gain widespread irrigator acceptance.

Cotton Australia is very supportive of other on-farm projects, including the Queensland Healthy Headwaters project, the New South Wales Sustaining the Basin projects and the early Commonwealth project delivered by a variety of delivery partners.

It does have to be acknowledged that there is some ongoing concern around potential probity issues and these need to be fully addressed along with the veracity of any allegations either proven, or those named should receive full and unconditional apologies.

That aside, there has been some commentary that these programs have been too generous to irrigators and they do not represent good value for money to the taxpayer. There is no doubt that these programmes are more expensive in the short-term than just purchasing water. However, claims that they are too generous to the entitlement holders do not pass two simple tests.

1. In Queensland, just more than a sixth of the 117Gl recovered to date, has been through the Healthy Headwaters project. If the on-farm projects were over-generous to entitlement holders, the take-up would have been far greater.

2. The risk is borne entirely by the entitlement holder. Regardless of whether the expected savings are made or not. The entitlement holder must hand over the agreed amount of entitlement to the Commonwealth.

What is also without doubt is that these programmes offer long-term benefits to the communities that they are offered. This is borne out by the MDBA social and economic assessment work that was carried out as part of the Northern Basin Review.

The Goondiwindi area, where the majority of water recovery has been achieved through efficiency programs, was the only area that saw employment growth through the implementation of the Basin Plan.

Cotton Australia is aware of no efficiency or recovery project where there is any real risk of the Commonwealth not receiving its agreed level of entitlement. In fact, the risk lays entirely with the irrigators, because whether the estimated savings are achieved or not, the irrigators must hand over the agreed level of entitlement.

There has been a range of media stories over the past 9 months that have tried to link on-farm efficiency projects with other activities. These allegations are being dealt with by the appropriate authorities. However, on the facts available in the public domain it would appear to be a major stretch to suggest that even if the actions alleged have taken place, that they directly detract from the Commonwealth's right to secure its water entitlements and ensure the benefits are delivered to the environment.

Structural Adjustment Assistance

Cotton Australia's primary role is to support the rights of cotton growers, with the vast majority being valuable and active members of their communities.

It is not Cotton Australia's primary role to advocate for structural adjustment payments to communities.

However, it is Cotton Australia's view that while individual irrigators have been largely free to engage or not, in the trading of water entitlements to the Commonwealth, it is the communities that have suffered the most from the Basin Plan. All irrigation dependent communities across the Basin, have lost either actual economic activity or potential economic activity from the Commonwealth water acquisition program.

The Commonwealth's support for these communities through the Murray-Darling Basin Regional Economic Diversification program has been completely inadequate by any measure.

According to the Productivity Commission's discussion paper just \$73 million or just .73% of a \$10 Billion Murray-Darling Basin Plan has been committed to these communities. Unfortunately, a significant proportion of this grossly inadequate funding was directed to projects in communities that while they may have been located in the Basin, were not irrigation dependant. While other communities have lost significant jobs and population because of the Basin Plan have received nothing.

Cotton Australia strongly recommends that the Commission seek additional and effective diversification funding for these communities.

Water Resource Plans

Cotton Australia and many other groups, have long held serious concerns regarding the State and Federal Government's ability to meet the required deadline for Water Resource Plans.

Cotton Australia can only recommend a concerted effort by all parties to complete the plans. However, this completion cannot be at the expense of the rights of entitlement holders.

Any changes that impact on rights and reliability of irrigation entitlements must be fully consulted on with any impacts mitigated and/or compensated.

While Cotton Australia is well aware of the Commonwealth's step-in powers, it would respectfully submit that the MDBA is completely under-equipped to effectively exercise its step-in powers.

Environmental Water Planning and Management

Environmental water planning

Cotton Australia has long been concerned about what appears to be a strong presence of duplication between the Murray-Darling Basin Authority (MDBA) and the CEWH, when it comes to setting environmental watering priorities.

Cotton Australia contends while the MDBA has had the role of determining how much water should be available to the environment. The CEWH, should have the responsibility of determining how the Commonwealth owned water is managed.

Although, Cotton Australia also believes that the efficient management of environmental water by the CEWH can only be achieved when management is done in full co-operation with other holders and managers of environmental water.

Cotton Australia commends the CEWH's participation Environmental Water Advisory Groups (EWAGS) that operate in NSW and provide catchment level advice.

Cotton Australia strongly believes that the CEWH and other managers of environmental water have a responsibility to clearly communicate to communities prior to, during and after environmental releases.

The purpose/expected environmental outcome from a release should be specifically communicated. Progress to achieving the specific outcome/s should be communicated and the actual outcomes should be objectively measured and reported on.

Simply setting targets of trying to achieve certain hydrological results is simply not acceptable. Targets must relate to specific environmental outcomes.

This of course requires the environmental manager to be adequately resourced to properly monitor and evaluate the outcomes of a flow.

Coordination of environmental water delivery

Prerequisite Policy Measures (PPM)

Cotton Australia wishes to comment on one particular PPM, the so called “shepherding” of environmental flows.

Since the screening of the Four Corners programme “Pumped” in late July 2017, there has been considerable focus on the management of environmental water, particularly on the Barwon-Darling.

Cotton Australia has been very disappointed in much of the media reporting and general commentary.

To be clear, Cotton Australia has zero tolerance for water theft is aware of ongoing legal action that concerns potential water theft and/or meter tampering. These matters are properly dealt with by the authorities and the courts. However, we should all bear in mind that at this stage the allegations remain allegations and those named should be afforded the presumption of innocence until proven otherwise.

However, the media and commentators, have on many occasions skated on very thin ice, alleging (and/or seriously implying) that there has been illegal take of environmental water on a grand scale.

In simple terms, the imputation is that irrigators have been accessing water, that had been purchased for the environment.

It is absolutely critical for everyone considering this issue to understand a few of the facts.

-) On an unregulated river such as the Barwon-Darling access to water flows is primarily determined by river gauge measurements. That is, a river height flow target is hit upstream (and maintained downstream) then the irrigator is legally able to pump.
-) Currently, the source of the water, or its purpose, does not affect access.
-) Total take is controlled through the long-term water sharing plan rules and account limits.

Further, it is essential that everyone acknowledges that when the Commonwealth purchased water entitlement either on the Barwon-Darling or its tributaries it was fully aware of these rules. Therefore the challenges it imposed on protecting any particular flow.

Therefore, it is incredibly disrespectful to entitlement holders to imply that they are currently getting at worst an illegal benefit out of environmental flows or at best an immoral benefit.

However, Cotton Australia understands that there is a general acceptance that the current arrangements are not considered adequate and there is a community expectation of better protection for environmental flows.

Cotton Australia is aware that a number of irrigation entitlement holders on the Barwon-Darling are prepared to enter into genuine negotiations around how better to protect individual flow events, when access is only being triggered by the presence of environmental water.

Cotton Australia supports these respectful negotiations, providing everyone recognises that entitlement holders are currently operating within the rules, and those rules were clearly understood at the time the Commonwealth purchased the water entitlements.

Complementary Works

As discussed earlier, rarely is any problem solved with a single focus solution and therefore we have always strongly advocated for multiple solutions, that will leverage further gains from the environmental water currently available to the Commonwealth Environmental Water Holder (CEWH) and other managers of environmental water.

It should be noted that when the then Murray-Darling Basin Commission/Authority did its Sustainable River Audits, in almost all catchments the best performing indicator was hydrology, and areas of poorer performance included turbidity, fish, vegetation, macroinvertebrate, and physical form.

These results alone strongly suggest that real environmental improvement will only occur when a multi-faceted approach is taken.

A key factor in the recently rejected Northern Basin Review amendments was the adoption of a range of “toolkit” and/or “complementary” measures. If accepted these would have gone a long way towards improving environmental outcomes.

Cotton Australia would recommend the Commission seeks the advice of MDBA Board Member Professor Barry Hart, who closely oversaw the development of the Northern Basin Review recommendations, and could provide expert advice on the proposed “toolkit” measures.

While not being an expert in this area, Cotton Australia would recommend priority complementary measures should include:

-) Removal of European Carp
-) Mitigation of cold water pollution
-) Improved fish passage
-) Improved fish habitat

Cotton Australia recommends that the Basin Plan, and all involved in its implementation, use all opportunities available, to leverage environmental gains by adopting complementary measures.

Water Trading Rules

Cotton Australia is generally happy with the development of water trading in the Basin, although it struggles to attribute how much progress should be attributed to Government and the Plan, and how much should be attributed to the natural development of the water market.

Cotton Australia is concerned that there does appear to be at times a tendency to try to “over-develop” or “over sophisticate” the market. While the market is hugely important to the modern Australian irrigation industry, it is still in market terms a modest market.

Cotton Australia does suggest that government jurisdictions could still do more to improve the speed of transfers, allowing closer realisation of a “real-time” market. Cotton Australia notes that a number of private providers, provide water market information. However, for this to be truly effective they need access to all trades and this in reality can only be achieved through access to real-time (or near-to-real time water registers).

Compliance

MDBA compliance and enforcement

Cotton Australia supports a very robust and transparent compliance regime, and it is clear from recent revelations and inquiries that the current regime is lacking.

However, Cotton Australia does not believe that the current “compliance environment” is as broken as many portray and is confident that the vast majority of the Basin’s 40,000 licence holders have done and will continue to do the right thing.

This view is borne out by the fact that the MDBA Compliance Register for the 29 months from July 2015 to November 2017 shows only 14 complaints about water compliance made to the MDBA.

Cotton Australia, notes two points regarding the register;

- 1) The 13 complaints are allegations of wrong doing, not proven cases;
- 2) Not all complaints across the Basin would come to the MDBA, the majority would be directed to the State compliance agencies. However, the very low numbers reported suggests that there is not widespread abuse of the system.

Cotton Australia, would not be opposed to the Commonwealth having an oversight role in compliance and in principle working with the State jurisdictions to try and harmonise compliance. However, the degree of Cotton Australia’s support would clearly be dependent on the detail, with a clear commitment and demonstration that there was not unnecessary duplication and expense. In the first instance the Commonwealth should allow the various State jurisdictions to determine what reform they will

implement and then only consider additional layers of compliance if there is a clearly identifiable deficiency.

State compliance and enforcement

Cotton Australia has made it clear that it supports robust and transparent compliance systems that have the confidence of both the water users and general public.

Cotton Australia has recently submitted detailed responses to the NSW Water Reform package and those responses have supported the vast majority of the NSW Governments' reform agenda.

Cotton Australia awaits the Queensland Government's release of its metering audit and without pre-empting its content and associated recommendations. Cotton Australia, is very supportive of the implementation of a world class, effective and cost-effective metering and compliance regime in Queensland.

Conclusion

Cotton Australia looks forward to the following the progress of this review and providing ongoing input where it is appropriate.

Cotton Australia would like to reiterate that while the Basin Plan is not all that it would like as a body representing entitlement holders, it does recognise that such an ambitious plan will always rely on some compromise by all parties if it is to be implemented. It is therefore Cotton Australia's considered view that the Basin Plan should be implemented in full and the attention then needs to turn to optimising the management of the available pool of environmental water, coupled with complementary measures, to optimise environmental outcomes.

For more information on this submission please contact Michael Murray, general manager – 0427 707868 / michaelm@cotton.org.au .

Yours sincerely,



General Manager,
Cotton Australia