Our Ref: SLN:KME 90.9 (282257)

15th December, 2010.

Committee Secretary
Senate Standing Committee on Rural Affairs and Transport
PO Box 6100
Parliament House
Canberra ACT 2600
Australia

Via: https://senate.aph.gov.au/submissions/

Dear Sir/Madam

Re: Submission on the management of the Murray-Darling Basin

Please accept the Balonne Shire Council's submission on the management of the Murray-Darling Basin

Council has consulted widely with residents of the Balonne Shire and has established networks for effective two way communication during the Basin Planning process. Whilst individuals have different opinions on elements of the Guide to the Basin Plan, concern for the future of our Community is universal and this submission focuses on the social and economic impacts of the proposals contained in the Guide.

Scott L Norman
CHIEF EXECTUTIVE OFFCIER

Senate Standing Committee on Rural Affairs and Transport
Inquiry: The Management of the Murray Darling Basin

Introduction

The Balonne Shire Council is located in southern Queensland and includes portions of three Surface Water Sustainable Diversion Limit (SDL) areas including the Condamine-Balonne, Moonie and Nebine.1

The *Guide to the Basin Plan*, and associated documentation, supports a view that Balonne Shire, with a substantial part of the economy based on irrigation, will be very vulnerable to a permanent reduction in irrigation water, particularly in light of its lower levels of adaptive capacity and higher levels of social and economic disadvantage.

We believe the impact of the introduction of a 3,500 GL SDL at the Basin level on Balonne Shire will be the loss of between 242 and 362 jobs (between 9% and 13% of employment) and with population loss of between 460 and 690 people (between 9% and 13% of population), with these estimates based on using 2000-01 as a reference year. The predicted job and population loss will result in a residualised population with higher levels of disadvantage and decreased indicators of resilience, with this of particular concern in the light of existing low levels of adaptive capacity and high levels of social and economic disadvantage. A good deal of this impact will be felt by Aboriginal people as their employment opportunities decrease.

We have prepared the following submission to the Senate Standing Committee on Rural Affairs and Transport inquiry, ***The Management of the Murray-Darling Basin***. As per the Terms of Reference, we understand that this inquiry will consider the management of the Murray-Darling Basin, and the development and implementation of the Basin Plan, with particular reference to:

(a) the implications for agriculture and food production and the environment;
(b) the social and economic impacts of changes proposed in the Basin;
(c) the impact on sustainable productivity and on the viability of the Basin;
(d) the opportunities for a national reconfiguration of rural and regional Australia and its agricultural resources against the background of the Basin Plan and the science of the future;
(e) the extent to which options for more efficient water use can be found and the implications of more efficient water use, mining and gas extraction on the aquifer and its contribution to run off and water flow;
(f) the opportunities for producing more food by using less water with smarter farming and plant technology;
(g) the national implications of foreign ownership, including:
    (i) corporate and sovereign takeover of agriculture land and water, and
    (ii) water speculators;
(h) means to achieve sustainable diversion limits in a way that recognises production

1 Murray-Darling Basin Authority (2010) *Guide to the Proposed Basin Plan: Volume 1,* Canberra, Pg 105.

efficiency;
(i) options for all water savings including use of alternative basins; and
(j) any other related matters.

Response to Terms of Reference

We have prepared our submission in response to the relevant Terms of Reference and have drawn on documentation associated with the *Guide to the proposed Basin Plan* and other sources. We are particularly concerned with, and draw your attention to, our response regarding the likely socio-economic impacts of the proposed Sustainable Diversion Limits (SDLs) on the Balonne Shire. The submission also critiques the approaches used by various researchers commissioned by the MDBA to model and quantify the socio-economic impacts of proposed SDLs, and can be found at Appendix A.

(a) the implications for agriculture and food production and the environment

The Balonne Shire has a predominately agricultural economy, with cotton, wool, beef, grain and horticultural production being the most common industries.

The *Guide to the Proposed Basin Plan*, and its supporting documentation, identifies the following **implications for agriculture** in the Balonne Shire:

- Regional Economic Impacts, with regard to the 3,500 GL basin-wide scenario, for the Condamine-Balonne are predicted to be a $64-70 million reduction in Gross Value of Irrigated Agricultural Production (GVIAP), a $61-67 million reduction in Gross Value of Agricultural Production (GVAP) and a –0.1% decrease in employment. For the Moonie region, the impact is calculated to be a $13-15 million reduction in GVIAP, a $13-14 million reduction in GVAP and a –0.1% decrease in employment.2

- Industries with high water usage but lower or more volatile value products such as broadacre cereals, rice and cotton will be more severely impacted than other industries with higher value products such as grapes, nuts and fruit.3

- Reductions in watercourse diversions may lead to further investments in water-use efficiency, some sale of entitlements (where allowed), possible fall in cotton production, shifts to dryland farming, some farmers exiting the industry, property consolidation, possible closure of some cotton gins all resulting in reduced employment opportunities and possible increased migration of people from the region.4

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2 ABARE-BRS (2010c) *Assessing the regional impact of the Murray-Darling Basin Plan and the Australian Government's Water for the Future Program in the Murray-Darling Basin.*
3 Murray-Darling Basin Authority (2010) Ibid, Pg xx.
4 Murray-Darling Basin Authority (2010) Ibid, Pg 91.

- The most likely response to any permanent and material reduction in SDLs would be a wholesale shift into lower value dryland broadacre crops, with irrigation only being practiced on the rare occasions when water is very plentiful. A wholesale shift out of cotton would be a major concern to the region as irrigated cotton produces over eight times as much employment per hectare as dryland crop alternatives.5

- Possible benefits to floodplain grazing industry from the reduction of current diversion limits and some reinstatement of natural flooding regimes in the Lower Balonne are likely to be of limited benefit. "These benefits could modestly offset some of the costs associated with reductions in the value of irrigated agriculture, such as cotton production."6

- "Potential for extremely low or negative equity in enterprises if SDLs significant – would make accessing capital for adjustment or exiting the industry difficult".7

- Increased pressure on irrigators as water services charges for remaining customers [of the St George Irrigation Scheme] as fixed costs of supply are spread across a smaller customer base.8

The productive capacity of the Balonne Shire is significant. A large proportion of that capacity relies on access to water for irrigation and other uses. Significant reductions in diversion limits in this region will reduce this capacity as there are limited options for alternative higher-value and more efficient uses of water within the infrastructure system as it currently stands. The proposed SDLs will result in a reduced productive capacity in both the dry and wet years.

With regard to the environment, there are a number of engineering projects that have been developed on-farm and on private land to regulate flow to wetlands and other areas. Without on-farm stewards of the environment to maintain this infrastructure, these interventions and investment in management will be lost.

(b) the social and economic impacts of changes proposed in the Basin

The **social and economic impacts** of the proposed SDLs on Balonne Shire are likely to be severe, and opportunities for effective mitigations extremely limited. The *Guide to the proposed Basin Plan*, and its supporting documentation, recognise that the Balonne Shire is likely to be very vulnerable to a permanent reduction in irrigation water, with existing low levels of adaptive capacity and high levels of social and

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5 Marsden Jacob Associates, RMCG, EBC Consultants, DBM Consultants, The Australian National University, McLeod, G & Cummins, T (2010) Economic and social profiles and impact assessments for the Murray–Darling Basin Plan: synthesis report, report for the Murray–Darling Basin Authority, Canberra, Pg. 150-151.
6 Murray-Darling Basin Authority (2010c) *Guide to the Proposed Basin Plan: Volume 2 – Technical Background*, Pg. 233-234.
7 Marsden Jacob Associates et al (2010b) Ibid, Pg. 11.
8 Marsden Jacob Associates et al (2010b) Ibid, Pg. 21.

economic disadvantage. The Guide and its supporting documentation make the following points about the current status of the Balonne region that demonstrate this vulnerability.

- Severe and prolonged drought across the Basin (from 2000 to 2009) has resulted in a sustained period of substantially reduced water available for economic purposes. This has adversely affected the cash flows and capital and increased the debt levels of farms, households and businesses in the agriculture, forestry and fishing industry and related sectors.9

- Cotton-based regions and communities that are further inland tend to be more sensitive to potential reductions. The Condamine-Balonne is identified as a highly sensitive region10 in this regard due to its reliance on agricultural employment.11

- Smaller towns with heavy dependence on irrigated agriculture could experience greater social and economic implications due to their dependence and the lack of alternate industries.12 St George and Dirranbandi have been identified as towns highly reliant on expenditure from irrigation farms.13

- Communities in the Condamine-Balonne have been identified as having some of the lowest levels of adaptive capacity in the Basin. This means that due to general social and economic disadvantage, and not necessarily a dependence on irrigated agriculture, they are likely to have fewer resources and a lower ability to respond to changes in their circumstances.14

- "The Lower Balonne regional economy is probably more reliant on agriculture than any other regional economy in Queensland, with approximately 36% of employment directly in agriculture".15

- "SEIFA data shows the proportion of the population in the most disadvantaged quintile is almost twice the Queensland average".16

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9 Murray-Darling Basin Authority (2010) Ibid, Pg xxi.
10 "These areas have a combination of a higher dependence on water for agriculture at the farm level and a higher proportion of people in the community who are employed in agriculture and downstream agri-industries, such as food processing plants, abattoirs, canneries, etc compared with other areas. These areas have a very direct connection with irrigated agriculture." ABARE-BRS (2010b) *Indicators of community vulnerability and adaptive capacity across the Murray-Darling Basin – a focus on irrigation in agriculture*, report for the Murray Darling Basin Authority, Canberra, Pg 25-26.
11 Murray-Darling Basin Authority (2010) Ibid, Pg 84.
12 Murray-Darling Basin Authority (2010) Ibid, Pg xxi.
13 ABARE-BRS (2010a) *Environmentally sustainable diversion limits in the Murray–Darling Basin: socioeconomic analysis*, report for the Murray–Darling Basin Authority, Canberra. Pg 92.
14 ABARE-BRS (2010b) Ibid, Pg 26.
15 Marsden Jacob Associates, RMCG, EBC Consultants, DBM Consultants, The Australian National University, McLeod, G & Cummins, T (2010b) *Condamine-Balonne community profile: Sustainable yield regions*, report for the Murray–Darling Basin Authority, Canberra, Pg 5.
16 Marsden Jacob Associates et al (2010b) Ibid, Pg 21.

- While unemployment in the Lower Balonne is low, anecdotally underemployment is high.17

- "Debt levels are relatively high due to agricultural expansion prior to the drought and during the drought they increased significantly. Banks reluctant to provide further debt funding due to uncertainty of future water availability and higher degree of commercial risk".18

The *Guide to the Basin Plan*, and its associated documentation, supports a view that Balonne Shire, and indeed any community with a substantial part of the economy based on irrigation, is likely to be very vulnerable to a permanent reduction in irrigation water, particularly in the light of its lower levels of adaptive capacity and higher levels of social and economic disadvantage, and as a result experience significant **social and economic impacts**. As the Guide states,

- "Implementing SDLs may have significant social and economic implications for individual entitlement holders and communities across the Basin".19

- Any reduction in water availability will affect communities.20 The larger the reduction, the more significant the impact.21

With regard to local community impacts the Guide and its referenced documents state,

- The small, cotton-dependent communities in the Condamine Balonne are highlighted as particularly at risk of significant social issues due to potential out-migration of cotton-related workers, a subsequent loss of demand for community services and resultant increased welfare-dependency.22

- Those regions with a relatively high dependence on irrigated agriculture would be expected to experience a larger reduction in economic activity compared to regions with more diverse economic activities. The Condamine–Balonne is identified as a region that is expected to experience the greatest reduction in economic activity.23

- Decline in the rateable base for local government authorities and reduced demand for community services may result in reduced service provision, reduced access to services, reduced funds for maintenance and investment in community infrastructure, increased pressure on social and community networks.24

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17 Marsden Jacob Associates et al (2010b) Ibid, Pg 21.
18 Marsden Jacob Associates et al (2010b) Ibid, Pg 10.
19 Murray-Darling Basin Authority (2010b) *Summary of Condamine-Balonne from the Guide to the Proposed Basin Plan* and *Summary of Moonie from the Guide to the Proposed Basin Plan*.
20 Murray-Darling Basin Authority (2010) Ibid, Pg xx.
21 Murray-Darling Basin Authority (2010) Ibid, Pg 108.
22 Murray-Darling Basin Authority (2010) Ibid, Pg 85.
23 Murray-Darling Basin Authority (2010) Ibid, Pg xx.
24 Murray-Darling Basin Authority (2010) Ibid, Pg 98.

- "Demographics likely to change and welfare dependency likely to increase sharply, particular where less mobile workforce (eg Indigenous workers in Dirranbandi)".25

We have undertaken modelling and a review of ABS data relating to employment and land use over time with regard to the Balonne Shire.

- Based on the 2005-06 data, we find that the primary impact is a loss of employment of between 5% and 8% across the range of proposed SDLs, or in absolute numbers, between 109 and 172 lost jobs. Correspondingly, population loss of between 7% and 10% is expected, or between 306 and 481 people.

- Referring to 2000-01 data, and assuming this would be an average year, job losses against this benchmark are likely to be between 242 and 362 jobs (between 9% and 13%) and with population loss of between 460 and 690 people (between 9% and 13%).

- Comparing between 2000-01 and 2005-06, the area of cotton (the major irrigation crop) in Balonne Shire halved. Over the same period, 17% of jobs and 15% of population were lost, but these losses also reflect jobs in dryland, as well as irrigated agriculture.

- The predicted job and population loss will result in a residualised population with higher levels of disadvantage and decreased indicators of resilience. The impacts are likely to be most felt by Indigenous communities in Balonne Shire.

Our residents have expressed serious concerns about the potential 'domino effect' of population and employment loss as a result of the proposed reductions. As one resident said,

> "We are a town with a delicate or fragile community fabric, with only just enough people for certain things to happen. If we lose people a whole lot of things will start disappearing. One teacher might go, and then all of the supports for that one teacher will go. Maybe next it is the dentist or the tennis coach. A whole lot of little things build up and cause more people to go. This is what has not been thought through yet."

The Balonne Shire has much greater proportion of Indigenous residents at 14.9% than the Basin or Australia at 4% and 2.3% respectively.26 While many Aboriginal people of the Balonne Shire are likely to welcome proposals (such as the proposed SDLs) that will improve the health and environmental condition of waterways in the area27, it is

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25 Marsden Jacob Associates et al (2010b) Ibid, Pg. 26.
26 ABS (2006) Census of Population and Housing, Quick Stats. ABS (2008) Water and the Murray Darling Basin – A Statistical Profile Australia 2000–01 to 2005-06, Chapter 2 — People in the Murray-Darling Basin
27 MDBA (2010) Ibid, Pg. 98.

also likely that Aboriginal residents of the Balonne Shire would have similar concerns to those raised by the Northern Basin Aboriginal Nations and the NSW Aboriginal Land Council regarding the failure of the Guide to adequately explore or create a provision for 'culture flows'28 nor acknowledge the complexity of the relationship between the wellbeing of the agricultural sector and Aboriginal residents in an area (like the Balonne Shire) with little opportunity for significant industry diversification and replacement.

For the Balonne Shire, there is a clear reliance on irrigated agriculture with limited opportunities for diversification and new alternative industries. To a large extent, this employment landscape is similar for Aboriginal and non-Aboriginal residents where a large proportion of both groups of employed residents (20% and 40% respectively) are employed in Agriculture.29 We recognise that there remains a tremendous difference in unemployment rates between the general population and our Indigenous residents. At the time of the 2006 Census, the unemployment rate across the LGA was 3.3% while for Aboriginal residents the rate was 10.8%.30 However, the jobs held by Aboriginal residents in Balonne Shire in industries outside of Agriculture, such as Retail, Education and Training, and Health Care and Social Assistance are in many ways related and reliant upon the wellbeing of the economic base of the community, which is strongly agricultural, to maintain population and demand for such services. Many of these jobs would likely be threatened in the face of further population declines and resultant decline in demand for services and retail due to out-migration as a result of a declining agricultural sector.

We share the concerns expressed by the NSW Aboriginal Lands Council that, "the Aboriginal population of the Basin Area would seem to be disproportionately vulnerable to the socio-economic impacts of the proposed Basin Plan reforms".31 We would add that these concerns are particularly relevant for communities in the Northern Basin (of which Balonne is a prime example) which are remote, highly reliant on irrigated agriculture, already include a large proportion of Indigenous residents and have small populations.

(c) the impact on sustainable productivity and on the viability of the Basin

No comment

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28 While there are variations in definition of 'cultural flows' the definition accepted by the Murray Lower Darling Rivers Indigenous Nations (MLDRIN) is, "water entitlements that are legally and beneficially owned by the Indigenous Nations of a sufficient and adequate quantity and quality to improve the spiritual, cultural, environmental, social and economic conditions of those Indigenous Nations" as stated by Jackson, S., Moggridge, B., & Robinson C. (2010) Effects of changes in water availability on Indigenous people of the Murray Darling Basin, June. Pg 70.

29 ABS (2006) Census of Population and Housing, Census Tables, Industry of Employment by Indigenous Status for Balonne LGA.

30 ABS (2006) Census of Population and Housing, Basic Community Profile and Indigenous Profile for Balonne LGA.

31 NSW Aboriginal Lands Council (2010) Comments for the Murray-Darling Basin Authority on the Guide to the Proposed (Murray-Darling) Basin Plan, November.

(d) the opportunities for a national reconfiguration of rural and regional Australia and its agricultural resources against the background of the Basin Plan and the science of the future

The *Guide* and its referenced documents propose a number of mitigations in response to the likely social and economic impacts of the proposed SDLs for the regions of the Balonne Shire, particularly **opportunities for reconfiguration of agricultural resources** (through crop and agriculture diversification) and the development of alternative industries.

It is noted that many of these mitigations are based on theoretical considerations, however 'real world' considerations are more complex. Rizza (2010)32 is informative in this regard, as many of these mitigations rely on access to capital, and that report states the position of banks with regard to the provision of funding for the implementation of mitigation proposals. The banks also have a good knowledge of the practical position of local enterprises likely to be affected by the introduction of SDLs.

These proposed mitigations and their limitations, as stated by the *Guide* and referenced documents, are detailed here and include a critique of these stated mitigations as applicable to the Balonne Shire where relevant.

Crop & Agriculture Diversification

- "Opportunities for diversification into higher value crops (margins per ML) are agronomically possible but options are commercially limited by a lack of competitive advantage in the Lower Balonne and access to capital; markets tend to be very small and wholesale crop changes would likely result in significant reductions in prices received (due to oversupply into key markets)".33

- "Significant moves into irrigated grapes are unlikely to be commercially viable due to constrained demand".34

- "Growth in other sectors (particularly beef) to offset loses in irrigated agriculture is likely in the long term, but could also be constrained by other factors (eg. vegetation management regulations)".35

- "Opportunities for market-led transformation into other forms of agriculture are limited in the absence of structural adjustment".36

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32 Rizza, A, (2010), *The potential effects of changes to water allocation policy on financing the agricultural sector and businesses in the Murray Darling Basin.*
33 Marsden Jacob Associates et al (2010) Ibid, Pg. 150-151.
34 Marsden Jacob Associates et al (2010b) Ibid, Pg. 15.
35 Marsden Jacob Associates et al (2010b) Ibid, Pg. 21.
36 Marsden Jacob Associates et al (2010b) Ibid, Pg. 23.

Diversification strategies by agribusinesses are likely to focus outside their community of origin and so are unlikely to flow to local communities.37 The desire to diversify is not sufficient to ensure a successful transition, as these types of innovations and adjustments are largely market driven. Farmers are researching these types of opportunities regularly, and are often doing what best suits their capabilities and market realities.

Alternative Industries

- "From a structural adjustment perspective, the Lower Balonne provides a difficult challenge as there are few, if any, viable alternative economic activity opportunities in the region."38

- "Modest but expanding tourism industry, centred on region's natural and historic heritage and recreational activities. Many 'grey nomads' injecting relatively minor expenditure in local economy."39

The only alternative industry to irrigated agriculture in Balonne Shire is dryland grazing and/or opportunistic dryland cropping, with much lower returns compared to irrigated cropping. The area lacks other attributes such as extractive industry or tourism to act as a suitable replacement for the irrigated agricultural sector.

While tourism and providing 'alternative lifestyle' for migrants has the potential to add some opportunity to an area like Balonne Shire, there are plenty of other rural and regional areas competing for the same limited resource. It will never be anywhere near a replacement for the core business of our community, which is agriculture.

(e) the extent to which options for more efficient water use can be found and the implications of more efficient water use, mining and gas extraction on the aquifer and its contribution to run off and water flow

The *Guide* and its referenced documents propose a number of mitigations in response to the likely social and economic impacts of the proposed SDLs for the regions of the Balonne Shire, particularly **options for more efficient water use** (including trade and technological advancements – particularly engineering solutions). These proposed mitigations and their limitations, as stated by the *Guide* and referenced documents, are detailed here and include a critique of these stated mitigations as applicable to the Balonne Shire where relevant.

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37 Rizza (2010) at page 12.
38 Marsden Jacob Associates et al (2010) Ibid, Pg. 152.
39 Marsden Jacob Associates et al (2010b) Ibid, Pg. 19.

Permanent and Temporary Trade[40]

- "Permanent water trading between irrigators as a market-driven structural adjustment mechanism is not possible in the Lower Balonne".41

- "The sale of permanent water to the Commonwealth is now possible in the Lower Balonne".42

    - The Australian Government conducted its first tender in the Lower Balonne in early 2010, and recently (19 November) advertised a $100 million water entitlement buy back tender. While the amount purchased from the first tender is not publicly available at this time, the average price of offer pursued is stated to be $1,433.30.43

    - Due to the delay in commencing the water buy back program in Queensland, 'the gap' between the proposed SDLs and the any entitlements already obtained is large.44

- "Temporary water trade is not possible in the Lower Balonne Water Management Area which reduces options for water availability risk management".45

- "Temporary trade is possible in SunWater's St George Irrigation Scheme, largely to finish off crops (typically less than 20,000 ML/annum)".46

Given the wide range in the productive use of irrigation water across the Basin, permanent and temporary trade has the opportunity to mitigate impacts at the Basin and national level. However at the local level, some communities are likely to be net exporters of water, with a commensurate loss of business and services and facilities in that community, and the ability to benefit from trade will also depend on connectivity. In the case of Balonne Shire, it could be anticipated that trade will reduce impact on horticultural uses, but will not mitigate any impacts on cotton production. There is limited opportunity to expand horticultural uses of irrigation water in Balonne Shire and they provide a small contribution to the economy.

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40 These comments probably apply to the inability to trade water prior to ROP being finalised this year, however we note that notwithstanding there being ability to trade water, very little has happened.
41 Marsden Jacob Associates, RMCG, EBC Consultants, DBM Consultants, The Australian National University, McLeod, G & Cummins, T (2010) Economic and social profiles and impact assessments for the Murray–Darling Basin Plan: synthesis report, report for the Murray–Darling Basin Authority, Canberra, Pg. 150-151.
42 Marsden Jacob Associates et al (2010) Ibid, Pg. 150-151.
43 Australian Government (2010) Water for the Future website, accessed online at www.environment.gov.au/water/policy-programs/entitlement-purchasing/average-prices.html, 24 November 2010.
44 Held environmental water to off-set reductions at 30 June 2010: Condamine-Balonne = 1 GL/yr (range of gap 204-274 GL/yr), Moonie = 1 GL/y (range of gap 11-14 GL/yr) as detailed in MDBA (2010) Ibid, Table 11.1 Environmental water available for off-set. Pg. 153.
45 Marsden Jacob Associates et al (2010) Ibid, Pg. 150-151.
46 Marsden Jacob Associates et al (2010) Ibid, Pg. 150-151.

With regard to the permanent buy back of entitlements by the government, the concept of a "willing buyer and willing seller" is ill defined. It is important that the market rate is paid for water, and that the price recognises the inherent infrastructure cost that has been invested to utilise that water. It is also important to recognise that water markets in the lower Balonne are thinly traded and not mature, the buy back could well be a market maker and as almost sole purchaser will set the price. The most recent value of water sold as part of water and land can be inferred as approximately $2,200 per ML. A very limited amount of water has been purchased under the buy back, with this coming from financially distressed sellers. This water has traded at approximately $1,400 ML. The concept of a "willing seller - willing buyer" appears to be a farce.

Improvements in Water Use Efficiency

- "Enhancements to scheme efficiencies by SunWater (e.g., lining channels) are limited as they generally are not commercially viable within current pricing arrangements".47

- "As most irrigators are now utilising soil moisture testing and efficient application timing, the most likely viable water use efficiency option is to deepen on-farm storages".48

- "Options for further efficiencies in cotton extremely limited by absence of co-investment".49

Rizza50 states that banks are unlikely to provide funding for the implementation of water efficiency schemes. Such schemes are likely to require considerable investment by government. There are also concerns about the cost effectiveness of such schemes by the Productivity Commission.51

In our view, engineering projects that will produce increasing returns into the future need to be favoured over those with reducing returns. If you make a storage deeper the resultant evaporation savings only increase in value over time, however if you invest in lateral move irrigation to replace flood irrigation the machinery will wear out and need replacing.

Engineering projects for water savings should be prioritised and commenced as soon as possible. In addition, these projects and their projected savings should be taken into account when determining the SDL's. It appears hypocritical to commence a buy back of water on the basis that "it is self evident where water needs to be purchased" but not to urgently address the self evident engineering solutions, such as what could be required at Menindee Lakes.

The cost per ML should not necessarily be the driving factor when deciding which

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47 Marsden Jacob Associates et al (2010) Ibid, Pg. 150-151.
48 Marsden Jacob Associates et al (2010b) Ibid, Pg. 5.
49 Marsden Jacob Associates et al (2010b) Ibid, Pg. 12.
50 Rizza (2010) at page 7.
51 51 Productivity Commission (2010), *Market Mechanisms for recovering water in the Murray-Darling Basin.*

engineering solutions to fund. Projects that save water that is critical to maintaining the viability of Basin Communities must receive priority. The value of reduced social upheaval and a strong Regional Australia need to be considered along with the cost per ML saved, that is the full cost to the Australian community needs to be assessed.

(f) the opportunities for producing more food by using less water with smarter farming and plant technology

No comment

(g) the national implications of foreign ownership, including:

(i) corporate and sovereign takeover of agriculture land and water, and

(ii) water speculators

No comment

(h) means to achieve sustainable diversion limits in a way that recognises production efficiency

No comment

(i) options for all water savings including use of alternative basins

No comment

(j) any other related matters

We believe the Water Act 2007 should be amended to properly take into account the social and economic impacts of SDLs by accounting for the opportunity cost of water. In this regard, we support the recommendations of the Productivity Commission. The Productivity Commission had a number of broad criticisms related to the Water Act and the setting of SDLs. In particular, it strongly recommended that the opportunity cost of water be considered when allocating water to the environment.

- "SDLs must be based on scientific assessments of the amount of water that is required to avoid compromising key environmental assets and processes. Good science is a necessary but not sufficient basis for optimising the use of the Basin's water resources. The value people place on environmental outcomes, the opportunity cost of foregone irrigation, and the role of other inputs, such as land management, must also be considered. If the Water Act 2007 (Cwlth) precludes this approach, it should be amended".52

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52 Productivity Commission (2010) *Market mechanisms for recovering water in the Murray–Darling Basin*, Productivity Commission research report, Canberra, page xxii.

We are particularly concerned with many aspects of the economic modelling carried out in support of the Basin Plan. More detailed comments are attached at Appendix A.

Appendix A: Critique of Basin Plan Economic Modelling

While the documentation referenced in the *Guide to the proposed Basin Plan* is generally quite clear with regard to the overwhelmingly adverse nature of the qualitative impacts of the introduction of SDLs, economic modelling carried out for the Guide has a number of areas of concern.

These include:

- Lack of transparency
- Incorrect or limiting assumptions
- Inappropriate methodology
- A failure to consider opportunity cost
- A lack of alignment with empirical data
- High degree of sensitivity to small variations in assumptions
- A failure to compare alternate futures
- Different methodologies applied to benefits and to costs

The effect of these various concerns appears to be to systematically understate the negative socio-economic impacts of the introduction of SDLs.

Lack of transparency

In our view, a transparent analysis would consider the impacts of policy initiatives separately, with clearly defined system boundaries around time and geography, and would vary one thing at a time.

The ABARE-BRS (2010a & c)53 approach, and the results presented in the *Guide to the Proposed Basin Plan*, reflect the long run predictions, and at the national, basin and regional scale. The model has two parts, the Water Trade model and the AusRegion model. The Water Trade model allows water to trade between various uses so that it is allocated to the most profitable use. The effect on GVIAP is then calculated, and the AusRegion model then models the impacts of reduction in the GVIAP on the regional economy.

The results as presented have essentially two transparent inputs, reduced irrigation water with and without buyback, and three outputs, the long term impact on Gross Regional Product with and without the introduction of water purchases and the long term impact on unemployment. In fact there are three inputs tested. These are the introduction of SDLs, the removal of restrictions to trade within the MDB and the impact of buybacks. These inputs then generate two outputs, the impact on GVIAP

53 ABARE–BRS (Australian Bureau of Agricultural and Resource Economics – Bureau of Rural Sciences) (2010a) *Environmentally sustainable diversion limits in the Murray–Darling Basin: socioeconomic analysis*, report for the Murray–Darling Basin Authority, Canberra; ABARE–BRS (2010c) *Assessing the regional impact of the Murray–Darling Basin Plan and the Australian Government's Water for the Future program in the Murray–Darling Basin*, report for the Department of Sustainability, Environment, Water, Population and Communities, Canberra.

with and without buybacks. This data is then further processed with two outputs generated, the long term impact on employment and GRP with and without the buyback. While the impact on GRP may be correct, the impact on unemployment is probably because of a reduction in immigration allowing an opportunity for displaced labour to be taken up by other industries, as there is a marked discrepancy between predicted change in employment and change in GRP. Other modelling commissioned by the authority takes a similar approach.

A transparent presentation would show the effect on GVIAP without trade, then show the mitigating effect attributed to trade. The immediate impact on employment would then be shown, at different levels and in absolute numbers as well as percentage. The quantum of those supposed to be employed by other industries would then be explicitly stated. If the conclusion is that, for example, a large number of people will be unemployed but that that number is proportionally small at the scale of the Australian economy, then that should be explicitly stated. Such an approach would separate out the effects of the three (not two) policy initiatives modelled, and would present those effects across a range of temporal and geographical scales, showing the short run and long run impacts and the differential geographic impact. Importantly, it would show the effects of the removal of trade restrictions in mitigating socio-economic impacts rather than conflating their removal with the introduction of SDLs.

Incorrect or limiting assumptions

The ABARE-BRS (2010a & c) model assumes that the supply of land suitable for irrigation is fixed, that is that it cannot expand in response to trade. There is empirical evidence to suggest this assumption is incorrect, with irrigated area in the Victorian Mallee reported to have increased by 30,130 hectares or 75% between 1997 and 2009 with most of this increase by private diverters and most growth in permanent plantings.54 A comparison of the calculated baseline scenario has significant discrepancies with empirical data, showing misalignments with CPI adjusted MDB GVIAP data, both in quantum, and more importantly, in proportion. In particular, and of concern in the interlinked Southern Basin, the model overestimates the proportion of lower value crops which are likely to lose water such as hay and rice (by 19-24%), and underestimates the proportion of higher value crops such as horticulture and vegetables (by 5-15%) which are sectors likely to purchase water. The net effect is likely to be that there is more water in lower value uses by comparison with reality, so that the economic impact of the introduction of SDLs will be ameliorated.
The model assumes that structural unemployment is at best transient, that is that displaced labour can move freely into other industries, but there is evidence, from structural change in other parts of Australia, of sustained resulting structural unemployment over a period of thirty years.

Inappropriate methodology

The MDBA appears to have chosen to use a Socio-Economic impact Assessment

54 Mallee Catchment Authority, (2010), *MalleeIrrigated Horticulture 1997 to 2009,* Mildura, page 8.

(SEIA).55 However a combination of two approaches, Cost Benefit Analysis (CBA) and SEIA would appear appropriate. The MDBA is in the position of selecting between different policy alternatives, with those alternatives being the scale and geographical distribution of SDLs. Accordingly, Cost Benefit Analysis is the appropriate methodology. Importantly, SEIA is appropriate when a policy or action has been selected for implementation, and the broader economic impacts need to be understood. Government guidelines predominantly favour the use of CBA and it would appear to be best practice.

Failure to consider opportunity cost

The principle of opportunity cost is central to CBA. In the case of water for SDLs, the opportunity cost will be the economic value if that water was used for the best use. For example, if the government controlled 3,500 GL of water, they may have two options. They can use the water for environmental flows or they can use it for agriculture. In the case of using the water for agriculture, the opportunity cost is not what the water is used for now, but what it could be used for. For example it may be possible for the government to allocate the water to horticultural uses in the lower Murray. Such uses typically employ 15-20 people per Gl and around 30-40 people per Gl with a local multiplier.56 If that was the case, then the opportunity cost would be 105,000 to 140,000 jobs. If the water was used for rice or cotton, the opportunity cost would be around 8,000 jobs. These figures are much higher than the 800 lost jobs predicted by the MDBA. More importantly, failure to consider opportunity cost masks the true cost to the Australian Community of the introduction of SDLs.

A lack of alignment with empirical data

As discussed above, the output of the model does not align with empirical data. A similar problem is found with other modelling commissioned by the MDBA. Modelling by University of Queensland57 predicts increasing area under irrigation with decreasing availability of water for irrigation, and with that prediction utterly at odds with empirical data showing a decrease in area under irrigation with decreasing availability of water for irrigation. Modelling by Wittwer58 grossly underestimates employment impact in Condamine Balonne. However independent modelling by Stubbs *et al59* appears to show a reasonable alignment with published data on changes in GVIAP and water availability in the MDB over time.

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55 Sinclair Knight Mertz (2010) *Demonstrating Use of Best Available Scientific Knowledge and Socio-Economic Analysis – Part 2: Best Available Socio-Economic Assessment.*
56 Stubbs, J *et al* (2010) *Report 4: Exploring the Relationship between Community Resilience and Irrigated Agriculture in the MDB: Social and Economic Impacts of Reduced Irrigation Water.*
57 Mallawaarachchi,T, Adamson, D, Chambers, S & Schrobback, P (2010) *Economic analysis of diversion options for the Murray–Darling Basin Plan: returns to irrigation under reduced water availability*, unpublished paper for the Murray–Darling Basin Authority, Risk and Sustainable Management Group, University of Queensland.
58 Wittwer, G (2010) *The regional economic impacts of sustainable diversion limits*, unpublished report, Centre of Policy Studies, Monash University, Melbourne.
59 Stubbs, J *et al* (2010), *op cit.*

It is a fundamental principle of the scientific method that, when a hypothesis is tested and the results do not align with the predictions of the hypothesis, the hypothesis should be modified or rejected. The hypothesis of the three modelling approaches commissioned by the MDBA is that they reflect reality, but this is demonstrably not the case, hence the models should be rejected or modified so as to obtain an alignment. We note the requirement of the Water Act to use the best available science, and note that the use of the ABARE-BRS economic modelling is clearly at odds with the requirement of the act.

If the authority wishes to rely on such models, the models should at least predict the past if they are to be given any weight. As a minimum, the authority should require modellers to predict the 2000-01 or 2005-06 year, or should require them to use the 2000-01 year to calibrate the model and then predict the 2005-06 year. If the models cannot accomplish this simple task, they should be given little or no weight.

High degree of sensitivity to variation in assumptions

The ABARE-BRS model appears to be one of a family of models which aim to model changes in the real world by modelling the theoretical response of farmers to changes in water availability. However such models appear to give a wide range of outcomes. The sensitivity of the modelling to assumptions is evident in the output of Quiggin *et al*,60 with their table 9 showing (for 2040), reductions in irrigated water use of 28% (similar to that modelled by ABARE-BRS (2010C)) resulting in a 65% reduction in output, 13 times the impact predicted by ABARE-BRS (2010C) for similar reductions in irrigated water use.

More importantly, extensive sensitivity modelling is not carried out by the various groups commissioned by the MDBA. Such modelling would require varying each assumption of the model across a reasonable range, and seeing how much the predictions vary. Such an analysis will allow a judgement to be formed around the weight to be given to the model predictions, with a more robust model given more weight compared to a less robust model.

A failure to compare alternative futures

There are in fact a number of alternative futures, but only one future is being modelled. That future appears to be one in which SDLs are introduced along with removal of constraints to trade, structural unemployment is minimised and immigration is cut back to absorb excess labour.

Without modelling each alternative future, it is not possible to understand the socio-economic impacts of the introduction of SDLs under the Basin Plan. Those alternate futures are:

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60 Quiggin. J., D. Adamson, P. Schrobback and S. Chambers. (2008). *Garnaut Climate Change Review: The Implications for Irrigation in the Murray-Darling Basin*. University of Queensland.

- No SDLs and removal of restrictions to trade
- SDLs and removal of restrictions to trade
- SDLs, removal of restrictions to trade and free mobility of labour

Each future should be modelled, and the results presented separately.

Different methodologies applied to benefits and costs

In the calculation of environmental benefits,61 the authority takes an opportunity cost approach and reports the results as net present value. By contrast, when calculating the socio-economic costs, a socio-economic impact assessment approach is taken, and costs are presented in annual value. If the cost methodology was applied to environmental benefits, they would be valued at zero. Conversely if the benefit methodology was applied to costs, they would be valued at around $254 billion. In the authority's documentation, the benefits are reported as $7.6 billion, and the costs are reported as $0.9 billion per year, but the comparisons are not equivalent.

61 Morrison, M & Hatton MacDonald, D (2010) *Economic valuation of environmental benefits in the Murray–Darling Basin*, report for the Murray–Darling Basin Authority, Canberra.