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**Queensland Government
Supplementary Submission to the
Windsor Inquiry**

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Brisbane, Queensland

Queensland Government Supplementary Submission to the Windsor Inquiry – March 2011

Background

Queensland is appreciative of the opportunity offered by the Standing Committee on Regional Australia to contribute to the Inquiry and hopes it will lead to recommendations that resolve many of the issues that have been identified in the initial Queensland Government submission.

The Queensland Government supports the development of the Murray-Darling Basin Plan (Basin Plan) and is keen to see that its past efforts and experience in water resource planning can be used to contribute to the development of the final Basin Plan while acknowledging that primary responsibility for it rests with the Murray-Darling Basin Authority (MDBA).

It is accepted that there are areas across the Queensland Murray- Darling Basin (QMDB) where there is a need for improving environmental flow outcomes and more can be done in managing water for the environment. Multiple strategies exist for achieving this with reduction in take being only one of the three main approaches available. The other opportunities that should be considered include the better management of the currently available environmental water through the provision of smarter flow sharing rules and the extent to which environmental works and measures can feature in the integrated solution. In addition to this a well developed iterative planning process where regional communities are well informed and engaged is crucial to achieving a successful outcome.

Some further background on the Queensland Murray- Darling Basin (QMDB) is provided in Appendix A.

The *Guide to the Proposed Basin Plan* (the Guide) released in October 2010 has proposed a number of water reduction scenarios which will challenge regional economies and, if implemented to the extent being currently promoted, will require the development and execution of a well considered broad ranging adjustment program. At this stage the package of coping and adjustment strategies is poorly developed and this is impacting significantly on the ability of any needed planning reforms to gain broad community and government support.

In this context it is important that all stakeholders including all levels of government, industry and regional communities are well informed about the impact of proposed Basin Plan scenarios. Only by being informed about the potential impacts can government work with communities to design the transitional arrangements needed to deliver the change necessary to improve the environmental health of the Murray-Darling Basin.

An important step in developing a positive outcome for the Murray-Darling Basin, the basin States, consumptive water users, and the environment, is to acknowledge that a one size fits all approach will not work for the Basin. The development of the Basin Plan and the broader water reforms being undertaken under the 'Water for the Future' program will need to address the different environmental, economic, and social needs across the Basin.

In addressing these needs, it is also important that alternatives to the signature water recovery mechanism of buying back water entitlements are actively considered and investigated to ensure that any proposed reductions are managed in such a way to minimise social and economic impacts on the basin community and the national economy.

The Guide presented three reduction scenarios but detailed only one approach to how they may be implemented - through reductions to entitlements and existing use. There are other options to achieve the volume of water required which may be considered but which apparently have not been investigated. One example would be the potential for environmental works and measures to

improve environmental flow outcomes. Such programs may allow for the transfer of water from consumptive use to the environment while minimising social and economic impact.

While it is true that there is an important need to protect the environment, there is also an equally important need to protect the economies and communities which depend upon the continued success of the Basin. With this in mind, the state of Queensland is pleased to provide the following insights and advice in relation to the Inquiry’s terms of reference.

The direct and indirect impact of the Proposed Basin Plan on regional communities, including agricultural industries, local business activity and community wellbeing

Estimate of Impacts

Surface Water

Based on Scenario 1 contained in the Guide which assumes an additional 3000 GL of water for the environment, the share of surface water to be contributed from Queensland catchments is 278 GL (Table 8.3, page 132 of the Guide).

The Department of Environment and Resource Management has undertaken a rapid assessment to identify how the possible take up and implementation of the Commonwealth’s two water recovery programs focussed on realising water through investment in infrastructure improvements and buyback with willing participants may possibly occur (Table 1). This information will be used by the Queensland Government to assess the impact of the scenarios presented in the Guide.

Table 1 – Assessment of the likely volumes and locations of water recovery under the ‘Water for the Future’ program (volumes in Gigalitres/year)

Catchment	Region	Extent	SDL reduction	UA*	Buy back	Infrastructure Investment	Total
Condamine Balonne	Upper Condamine	Killarney –U/S Chinchilla	203		15	15	30
	Middle Condamine	Chinchilla – U/S St George			10	3	13
	Lower Balonne	St George to Border			130	30	160
Border Rivers	Granite Belt		43	4		0	4
	Mid Border	U/S Goondi including Mac Brook			4	1	5
	Lower Border	D/S Goondi including Weir River			19	15	34
Moonie	Whole area	Most take occurs Nindigully to Border	11.7		7	4.7	11.7
Nebine			2.4		2.4		2.4
Warrego			18	8	0	0	8
QMDB Totals			278.1	12	187.4	68.7	268.1 [^]

*unallocated water (Warrego water already gifted to the Commonwealth Environmental Water Holder).

[^] apportioned total is 10 GL less than Guide target to account for what is understood to be concession to be provided to the Warrego in recognition of its poor connectivity to the Basin.

Note that this assessment:

- is not intended to foreshadow the outcomes of the Basin Plan in respect to the Sustainable Diversion Limits (SDL's) required in each catchment but has used the SDL targets described in the 3000 GL/year scenario in the Guide.
- is not departmental policy in terms of targeting areas for buyback or infrastructure efficiency.
- is not informed by achieving specific flow or environmental outcomes.
- is using best judgement of the broad magnitude of possible efficiency gains that might be possible in parts of the QMDB catchments, based on knowledge of storages, and general understanding of the current level of interest in infrastructure investment.
- is not currently supported to the extent described in the existing *Water for the Future* water recovery programs.
- may be improved through further discussion with key stakeholders.

Groundwater

Groundwater is a key resource in the QMDB and as such modelling and assumptions behind any Sustainable Diversion Limit (SDL) need to be carefully assessed to ensure the full and true impacts are given proper consideration.

Assessments of the current SDLs in the Guide have made assumptions in regard to certain groundwater management areas. Based on these assumptions there will be a real reduction in current use for the Condamine Alluvium, Condamine Basalts and Border Rivers Alluvium.

The Guide's current diversion limit figures are based on current use estimates as a basis to quantify reductions, not on an actual reduction in entitlements. Queensland determines entitlements for these Groundwater Management Units as a combination of allocated volumes under licence and estimates of stock and domestic take. The SDLs proposed for the Condamine Basalts, Condamine Alluvium and Border Rivers Alluvium represent substantial reductions in the volumes of water currently used by entitlement holders.

The Queensland government has been in discussions and negotiations with the MDBA in regard to these differences in SDLs and hopes to resolve this issue which, unless addressed, will result in significant reductions in available water to groundwater users.

Social and Economic Assessments

Social and economic assessments based on the provisions included in the Guide are presently being undertaken by the Queensland Government and the results will be made available to the Windsor Inquiry when the assessments have been completed.

As the Inquiry will understand, Queensland has been going through a challenging period and all available resources have been dedicated to flood recovery activities and therefore there have been limited resources available to undertake this assessment at this time. Additional information on the Queensland Government's assessment of the economic and social implications of the provisions contained in the Guide will be provided to the Inquiry by the end of March 2011.

Preliminary Conclusions – Economic and Social Impacts

Based on preliminary assessments to date, if the provisions detailed in the Guide were to be implemented they would have a significant impact on the rural communities of the Queensland Murray-Darling Basin. This is especially so for the more vulnerable communities in the Lower Balonne, including the indigenous people on those communities.

It would be expected that there would be significant job losses, a decline in rural productivity and dislocation of the population which may result in the closure of some communities and the destruction of the way of life for many families. It is likely that this would also result in increased migration to the larger centres which in turn would result in pressure on infrastructure and increased housing costs.

How to manage these likely impacts is an important issue to be considered by the Inquiry, the Murray-Darling Basin Authority and the Commonwealth Government. Without the development of mechanisms to minimise the social and economic impact of the provisions in the Basin Plan, the future of sections of the Queensland rural community and the State economy will likely be

irreparably damaged. Possible solutions to this problem include the use of structural adjustment mechanisms which take into account the needs of the entire community, not just that of the holders of water entitlements and the provision of better information and certainty to allow communities to confidently make decisions on how they may manage within a changed economic environment.

Overall, the agriculture-reliant communities of the QMDB are facing an uncertain future due to lack of information regarding future water allocations. Because of delays and uncertainties in the development and finalisation of the Basin Plan, agricultural producers in the QMDB are finding it difficult to make investment decisions and to plan for the future. Clarity is needed for irrigators to plan and make good business decisions for the long term. To this end information is required regarding the Commonwealth's intentions as to water buybacks for the QMDB and details as to how the Commonwealth's farm infrastructure investment program can be used to assist those irrigators in the QMDB to make full use of water efficiencies.

While it is acknowledged that direct water recovery measures through buyback and infrastructure investment will assist in reducing the impact of reductions on entitlement holders, concerns remain regarding how the Commonwealth's water recovery measures have been designed and are being delivered. The Commonwealth's 'Water for the Future' initiative, with its willing seller and participant concept has merit; but it does not address impacts to the broader communities affected by the buy-back of water entitlements nor does it account for the flow-on impacts to communities, local businesses, and services. It is likely that, in some areas, if large volumes of water are purchased for environmental purposes, the resulting reduction in agricultural production could impact on the viability of some communities.

A significant decrease in employment of agricultural industry workers, which is likely to result from water availability reductions, is likely to have severe flow-on effects throughout the local communities. Larger towns are more likely to be able to adapt to such a decrease, having employment in other industries to fall back on. However, smaller agriculture-reliant towns may reach a 'tipping point', where rising unemployment and the resulting decrease in local spending leads to services such as medical, educational, law enforcement etc, becoming uneconomically viable.

This can have a snowball effect as a dwindling population is forced to travel further afield for such services so the attraction of living there also decreases. A decreasing population can also have a negative impact on the social capital of smaller towns and communities, as the pool of community leaders, volunteers and participants also declines, leading to a growing burden and fatigue for those left behind. Whether or not the Commonwealth Government proposes to provide support to those communities is unknown.

The MDBA and the Commonwealth Government need to provide clarification on support and the range of broader adjustment and assistance measures the Commonwealth Government is willing to provide to assist impacted regional communities beyond direct dealing with water allocation holders only. It is recognised that structural adjustment programs are not within the scope of the MDBA, but it is within the scope of the MDBA to communicate the importance of broader structural adjustment programs to the Commonwealth Government. This is, after all, an issue that impacts on the MDBA's ability to effectively deliver a basin plan that has broad community and government support.

Linkage with Other Planning Instruments

The Basin Plan should not be developed in isolation. There are a number of other planning instruments for the QMDB which are being or have been developed by local, state and commonwealth agencies. There is a need for the Basin Plan to take into account the objectives of these plans as they may include provisions which will assist in mitigating the impact of water reductions or propose the expansion of alternative industries.

One of the Queensland Government's major initiatives (QPlan) is to ensure the integration of policy between the Commonwealth, State and Local Government levels. Vertical and horizontal policy integration through the three levels of government ensures that the various policies inform each other resulting in policy alignment. For example, in Queensland this means that State interests are reflected through regional plans which inform local government planning schemes, and vice versa. Community values which are embedded in local government planning schemes feed into and inform the policy preparation of regional plans. It is expected that the Basin Plan will interact with existing planning instruments in a similar fashion.

Regional plans are developed in partnership with State agencies, local governments, the community and stakeholders and play a key role in helping Queensland meet the challenges associated with managing rapid growth, population change, economic development, protecting the environment and infrastructure provision across multiple local government areas. Regional plans operate in conjunction with other statutory planning tools, including State planning policies, local government planning schemes, State planning regulatory provisions and development assessments.

An example of this is the Draft Surat Basin Regional Planning Framework which is an initiative of the Surat Basin Future Directions Statement. The Surat Basin includes the local government areas of Maranoa, Toowoomba and Western Downs Regional Councils, including significant areas within the Queensland section of the Murray-Darling Basin. The Statement aims to maximise economic benefits and minimise any unintended consequences for the area by:

- setting out an effective framework to shape a prosperous and sustainable Surat Basin;
- identifying the major issues (including planning, infrastructure provision, economic development, Government services and regional liveability) facing the region, and providing an integrated approach to how the region will address those issues; and
- establishing clear mechanisms to coordinate the work of the Queensland Government and other Surat Basin stakeholders.

The Draft Framework establishes a regional vision and key planning themes with associated strategies and initiatives to achieve the vision. These themes include sustainability and climate change, environment and natural resources, strong communities, housing choice and affordability, strong economy, rural futures, resource sector growth and infrastructure and servicing. As such, the Basin Plan should be cognisant of the intentions of the Draft Framework and develop appropriate water reduction and adjustment measures.

There is the potential for the use of regional plans and frameworks to assist in the development and implementation of policies which may minimise the impacts on local communities of changes to water availability which may result from implementation of the Basin Plan. This is an area which the Inquiry may wish to further investigate as it represents an alternative mechanism for delivering structural adjustment programs.

The use of the network of Regional Development Australia (RDA) Committees, set up by the Commonwealth Government may also provide a useful forum for development of any structural adjustment mechanisms. The collaborative approach adopted through the RDA model is a good example of how the different levels of government can work together to deliver positive, on the ground outcomes. Additionally, they can provide an additional vehicle for engagement with the community on planning issues, such as the Basin Plan. It is recommended that the Inquiry consider how these groups can assist in the development and implementation of tools to manage the social and economic impacts of the Basin Plan on rural communities.

Options for water-saving measures or water return on a region-by-region basis with consideration given to an analysis of actual usage versus licence entitlement over the preceding fifteen years

Options and Opportunities for Water Saving Measures

Water for irrigation purposes represents the major use of this resource across the QMDB landscape and many regional communities have developed a significant economic dependency on a vibrant irrigation and related services sector.

There are a range of water saving measures that can be adopted by the irrigation industry to achieve the proposed Queensland water saving targets and these are outlined below. Some of these initiatives are already in place, but their expanded application should be considered by the Commonwealth in conjunction with the Queensland Government and local communities.

Healthy HeadWaters Water Use Efficiency program

The Healthy Head Waters Water Use Efficiency program (HHWUE) is one area in which Queensland and the Commonwealth are involved in investing \$115 million to achieve anticipated total water savings of approximately 50 GL (based on the initial round of funding). Half of these water savings would be made available to the Commonwealth Environmental Water Holder (CEWH) for subsequent management to improve outcomes for water dependent ecosystems across both the QMDB and the northern MDB generally.

The HHWUE program will invest in on-farm works and measures which will lead to improved water use efficiency, with the resultant water savings being shared between the environment and participating water users who take up the co-investment opportunity. The majority of the investment will be directly spent on co-investment in on-ground works with a further \$14.5 million allocated to supporting landholders' knowledge of and uptake of the program.

Two areas of the Healthy HeadWaters program currently being implemented include:

- A knowledge-gathering and appraisal phase to identify the investment focus for on-farm water use efficiency works and measures both in spatial and relevant technology terms. Current projects being run as part of this program include Irrigation Benchmarking to enable irrigators to compare the water use efficiency of Centre Pivot and Lateral Move systems; a Water Storages project to increase awareness of the potential savings and likely costs and benefits of typical storage modifications; and funding also being allocated to provide advice to irrigators assessing water use efficiency as well as to those considering changes to their irrigation infrastructure.
- The main program commences in 2010/11 and runs for the following six years. It provides the main vehicle for rolling out the co-investment package. This package aims to recover and share water savings from implementing on-farm water saving technologies. So far twelve projects have been accepted by Queensland and the Commonwealth for investment. It is expected that 15 300 ML of water will be saved from this round of projects with half of this water being made available to the CEWH. Supporting this ongoing investment in the on-farm element will be the delivery of a package of marketing, education and extension activities to give the project the best possible chance of success.

A worthwhile approach to improve the effectiveness of this program is to negotiate, on a regional/sub-regional basis, an integrated package of proposals rather than individual calls for projects. It is understood a number of irrigators in the Lower Balonne have ideas for such an integrated sub-regional package.

Rural Water Use Efficiency Initiative

The Queensland government is currently funding an initiative called Rural Water Use Efficiency (RWUE4) which is a partnership between the Queensland government and major rural industries, where the government supports industry groups to provide services to irrigators to improve on-farm irrigation management practices and efficient use of water and energy.

The current program is being delivered state-wide, however is not primarily directed at broadacre irrigation enterprises. Within the QMDB, the extent of RWUE4 is mainly in the Stanthorpe region where Growcom is undertaking workshops/field days to provide advice on ways to improve water use efficiency and conducting assessments on irrigation and pumping systems to determine their efficiency and to identify where water and energy savings can be made.

RWUE4 builds on previous initiatives which have included three earlier phases of the initiative and a program specific to South East Queensland.

Rural Water Use Efficiency Phase 1 (RWUE1) operated between 1999 and 2003 and involved the dairy/lucerne, cotton/grains, horticulture and sugar industries. Each industry program consisted of adoption and extension programs and financial incentive schemes (providing subsidies for selected water-efficient irrigation and irrigation management equipment). RWUE1 focused on water-use efficiency, and achieved water savings conservatively estimated at greater than 150 GL per year for a total funding of approximately \$32.5 million.

Rural Water Use Efficiency Phase 2 (RWUE2) operated between 2004 and 2005 and involved the same industries as RWUE1 but had an expanded focus. The objective was to build on the achievements of RWUE1 and to address the issues of farm management systems and off-farm impacts of irrigated farming activities such as nutrient control. It is estimated that RWUE2 achieved water savings of approximately 50 GL per year for a total funding of approximately \$7.5 million.

Rural Water Use Efficiency Phase 3 (RWUE3) operated between 2005 and 2009 and involved a partnership between the Department of Environment and Resource Management and seven irrigation industries across Queensland. These were the dairy, horticulture, cane and cotton industries from previous programs with the addition of the production sectors of the nursery, flower growing and turf industries. RWUE3 provided the industries with the means to help irrigators adopt practical water efficiency measures on their properties and to reduce off-farm impacts. An assessment on the amount of water saved under this program has not yet been undertaken.

The South East Queensland Irrigation Futures Phase 1 (SEQ-IF1) program operated between 2005 and 2009 and was a partnership between the Department of Environment and Resource Management and major rural industries engaged in irrigation in south-east Queensland. Through on-ground services provided by the industries, irrigators were given assistance to help them improve on-farm water use efficiency as well as address natural resource management issues.

The main objectives of SEQ-IF were to:

- improve on-farm water use efficiency
- implement farm management systems
- address priority natural resource management issues.

It is estimated that SEQ-IF1 achieved water savings of approximately 21 GL per year for a total funding of approximately \$6 million.

The Commonwealth should hold discussions with the Queensland Government and industry bodies on how it can invest in the enhancement of this program. Linkages between this program and the Healthy Head Waters Water Use Efficiency program should be investigated to develop alternative approaches to the provision of water for environmental benefit.

Engineering Works and Measures

Alternative engineering works and measures must also be considered as part of the package to be included in the Basin Plan. These measures might reduce the amount of water required to meet the environmental water requirements of the Northern Darling River system.

Queensland has provided the MDBA with a list of potential works and measures (Appendix B) which have been discussed broadly in community forums over the last decade. As these proposals would require substantial investigation it has not been possible to calculate the full extent of the environmental benefits to the basin, or any capital and ongoing costs. However, this list contains the works and measures that Queensland believes should be given consideration, as a starting point.

Further work needs to be done by the MDBA in assessing these possible measures and establishing the extent to which they need to feature in a more integrated Basin Plan.

Reuse of Coal Seam Gas Water

The Department of Environment and Resource Management is currently investigating the technical feasibility of injecting coal seam gas (CSG) water into the Central Condamine Alluvium. This project is funded by the Healthy Headwaters program and forms part of the Coal Seam Gas Feasibility Study which is examining the use of CSG water in assisting to address water sustainability and adjustment issues in the Queensland Murray-Darling Basin. When completed, this project will provide a better understanding of the opportunities for, and associated risks of injecting treated water into the Central Condamine Alluvium.

The reuse of CSG water to possibly mitigate the impact of any reductions resulting from the implementation of the Basin Plan is an area which the Queensland Government considers is worthy of further consideration and investigation.

Conclusions - Water Saving Measures

Both the Healthy Headwaters and the Water Use Efficiency programs seek to improve the efficiency of on-farm infrastructure, through Commonwealth and/or State funding. While these programs receive general support by the community, the committed funding levels will only go a small way towards meeting the MDBA's proposed levels of water reduction required in the QMDB.

From these estimations, a significant amount of environmental water will still need to be returned to the system outside of programs such as the HHWUE, which potentially results in a large number of entitlements subject to Commonwealth buyback.

Overall the Queensland Government is generally supportive of the Healthy Headwaters Program but recognises that the water use efficiency component will have limited effectiveness in meeting the likely reductions to be required under the Basin Plan. The current Commonwealth commitment under the water use efficiency component is \$115 million, which equates to a total saving of about 50 GL, with 25 GL to be returned as environmental water, based on the assessment of the initial round of funding projects. However, this will only account for between 7-9% of the proposed additional 278 GL to 364 GL of environmental water required for the Queensland portion of the Basin based on the scenarios included in the Guide.

Under the 'Restoring the Balance' component of the program (water buybacks) there is the potential to purchase much of the water required to meet the targets likely to be included in the Basin Plan. To date this program has been successful although it is recommended that the program be reviewed to examine alternative approaches to the recovery of water, such as through the acquisition of a wider variety of water products (such as decommissioning overland flow water storages or the retirement of groundwater entitlements) and the flexibility to work with regional communities to negotiate an integrated package of water products for recovery. An example of where this approach may have application is in the Lower Balonne where there large number of overland flow storages.

Improved alignment with the Basin Plan is also required as the timeline for Healthy Headwaters (to end in 2018) differs from the implementation of the Basin Plan. In Queensland, amendments to existing water resource plans to be consistent with the Basin Plan must be completed by September 2014, whereas Victoria must amend its water resource plans by 2019. It is these types of inconsistencies across the Basin which are a concern for the Queensland Government.

This lack of coordination between the two initiatives may result in the need to reduce water availability to water users while funding, which may in effect buy that water back, is still available. With these inconsistent timelines, water resource plans will have to be developed that implement the Basin Plan without the Queensland Government and the community being fully aware of the volume of water which may be purchased to mitigate the impacts of any reductions.

This discontinuity is a major area of concern for the Queensland Government and the community.

It is recommended that all jurisdictions have until at least 2019 to transition to the new diversion limits through amendments to their water resource plans.

The use of CSG water to either mitigate the impacts of any reductions resulting from the implementation of the Basin Plan or to provide additional water for environmental purposes should be further investigated.

Water Use Compared With Entitlement

An assessment of actual usage in the QMDB over the past 15 years compared with licenced entitlement readily tells the story of high variability in river flows in the northern basin. The rivers within the QMDB valleys are ephemeral. That is, they are dry for large parts of the year with only intermittent flow occurring. Water users rely on periods of high flow, which will usually occur for short periods typically during the summer season. When the rivers do flow, the take of water from these valleys occurs primarily through individual privately owned infrastructure, with individual water users operating under various conditions that allow access to water during these periods of flow. The harvested water is then stored in private off-stream storages for future use on the farming enterprise.

Government owned structures (mainly operated by SunWater, a Government owned Corporation) are minor in terms of the size of infrastructure and water availability, when compared with private development. Private on-farm storage volume at 2000GL represents 4 times the volume of storage in major government storages. Table 2 compares the relative amount of long term diversion between the supplemented water supplies (from government schemes) and the unsupplemented water entitlements (under private authorised diversions) within the major Queensland valleys. These volumes have been calculated in accordance with the approved water resource plan and resource operations plan requirements.

Table 2 - Comparison of long term surface water diversions for water products in each valley (based on the diversion Caps approved by the Murray–Darling Basin Authority)

Basin	Supplemented Allocations GL/yr	Unsupplemented Allocations GL/yr	Other Entitlements¹ GL/yr	Total Entitlements GL/yr
Condamine and Balonne	108	486	134	728 ³
Queensland Border Rivers	49	152	49	250
Moonie	0	29	6	35
Warrego	2.5	36	9.5 ²	48
Nebine	0	5.5	1	6.5
Paroo	0	0.1	0.1 ²	0.2

1 – Includes overland flow, town water supply, unconverted licenses, unallocated water and environmental water allocations held by the Commonwealth Environmental Water Holder.

2 – An overland flow volume is not available due to lack of information.

3 – A Cap proposal has been submitted to the MDBA.

In recognition of this relativity the Queensland water planning framework has adopted a rules based approach to water sharing and flow event management. These measures aim to adjust water access related to periods of flow to provide additional water availability for the environment that best mimics the natural variability of the flow regime in the Queensland valleys. These water sharing or flow event rules are embedded into the Queensland water resource plans and resource operation plans.

Accordingly, water take in the Queensland valleys is highly variable. Seasonal conditions and water sharing rules will dictate when and how much water is available to be taken and the amount of water used (see Table 3).

Table 3 – Annual surface water diversions from Queensland valleys in gegalitres/year (as reported by the MDBA’s Independent Audit Group)

Year	Condamine and Balonne	Border Rivers	Moonie	Nebine	Warrego	Paroo	Total
1997/98	545	186	8	0	2	0	741
1998/99	467	123	8	0	10	0	609
1999/00	366	163	8	0	3	0	541
2000/01	360	288	31	0	9	0	688
2001/02	162	163	6	0	10	0	341
2002/03	123	78	6	0	7	0	214
2003/04	575	204	26	0	11	0	815
2004/05	167	192	23	0	11	0	392
2005/06	186	125	2	0	3	0	316
2006/07	57	71	9	0	21	2	160
2007/08	776	210	41	0	23	4	1054
2008/09	190	157	29	0	6	1	383
2009/10	1049	122	43	1	15	2	1232

The volume of water taken is reported to the Commonwealth through the Murray-Darling Basin Authority’s Independent Audit Group. The volume taken is also compared with the allowable take under a full entitlement regime in each of the valleys. Table 3 indicates that there has been variable volumes of water taken over the last few years which reflects the ephemeral nature of the system. In all cases, annual valley diversions have been well within annual cap volumes allowed under the Murray-Darling Basin Ministerial Council agreements.

The role of governments, the agricultural industry and the research sector in developing and delivering infrastructure and technologies aimed at supporting water efficiency within the Murray-Darling Basin

The Queensland government is committed, along with the Commonwealth Government, through the ‘Water for the Future’ program, to projects that aim to deliver enduring benefits to QMDB communities and their water-dependent ecosystems.

Other areas where the Queensland Government has contributed to water use efficiency include:

- The four phases of the Rural Water Use Efficiency Initiative which has resulted in significant improvements in water use efficiency across a range of industries.
- Funding for extension staff based in the field and working with growers and consultants which ensures the continued adoption of new technologies and practices as they are developed.

- Investment in irrigation research capacity (in partnership with industry research funds) focusing on maximising profitability of irrigated cropping in response to limited water.
- The development of web-based tools (CropWaterUse and now WaterSCHED) to assist irrigators better plan their irrigation enterprises and manage the allocation of water in their cropping systems in response to available water supply.
- The requirement to meter water use in accordance with national standards and Queensland's *Metering Water Extractions Policy*.

In achieving the development and delivery of infrastructure and technologies to support the QMDB, it is critical that key stakeholders work to their strengths. The Commonwealth Government role as a funding source and project facilitator is essential to support water use efficiency throughout the QMDB. The Queensland Government as a stakeholder can complement the Commonwealth by providing local and regional expertise; having a presence within regional centres throughout the QMDB, and having strong regional community and stakeholder relationships. These have been developed through years of experience in the planning and delivery of water resource planning and management.

Programs should be delivered by the state where it is the most efficient and effective mechanism. A program that has been and continues to be successfully delivered by the state is the Great Artesian Basin Sustainability Initiative (GABSI). This program, jointly funded by the Commonwealth and Queensland governments, has provided a hugely successful ongoing program of water saving and efficiency since its commencement in 1999. In Queensland the state government has been instrumental in managing, implementing and promoting this water saving program that has so far resulted in water savings of 172 GL per annum between 1989 and 2010.

The Queensland Government is keen to assist in the development of proposals by other government agencies or the community aimed at water use efficiency, in particular to manage the impacts of reductions in water availability as a result of the implementation of the Basin Plan.

Recommendations

The Queensland Government recommends that:

- The MDBA and/or the Commonwealth Government better engage with state agencies and local communities of the QMDB to discuss and progress water buybacks and farm infrastructure investment for the area to minimise the negative impacts of decreasing water availability.
- The MDBA and/or the Commonwealth Government recognises the social and economic impacts of flow-on effects from water reductions to the regional and local communities and consider, develop and address how the Commonwealth Government can provide adjustment assistance to local communities that are severely affected by a significant economic loss which would result from permanent water reduction.
- A Basin wide program for developing and implementing adjustment mechanisms is undertaken by the Commonwealth Government which takes into account the various types of communities in the basin and is focussed on a regional and community basis.
- Better engagement processes be developed with affected regional communities so that respectful dialogue can arise and local communities can be involved in the design of their future.
- The Commonwealth Government refine the 'Water for the Future' program to better align it to assist in the delivery of the likely outcome of the Basin Plan. This would include the addition of other products to the program, such as funding for the retirement of works that take overland

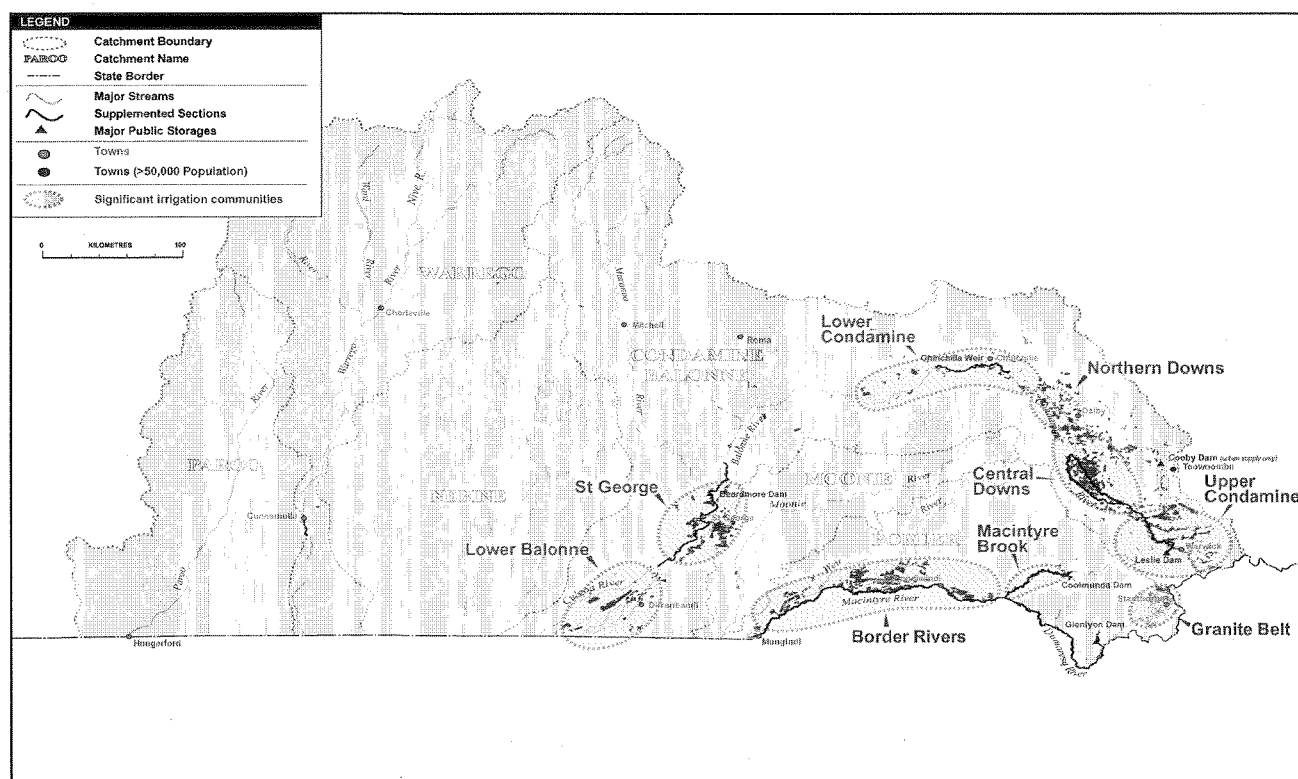
flow, and other mechanisms that are outside the current scope of the program but linked to its objectives.

- The timelines for the implementation of the Basin Plan and the funding arrangements for ‘Water for the Future’ are better coordinated and allow transitions to the new Basin Plan limits by at least 2019. This would ensure there is no need for states to impose water reductions through the development of water resource plans where funding through that program is still available.
- The MDBA investigate and report on the extent to which environmental works and measures can be part of the solution as an alternative to the impacts that pure water buybacks will have on the basin communities.
- The socio-economic benefits due to the improvement in the health of the QMDB rivers from return of water to the environment are considered, especially on community well-being, tourism and indigenous values.
- The development of the Basin Plan take into account and link with the various Commonwealth, State and local government plans and planning frameworks.

Appendix A - The Queensland Murray-Darling Basin

Of the entire Murray-Darling Basin area (1 061 469 square km) about 25% (260 011 square km) is located in Queensland. Major Queensland rivers in the QMDB are the Condamine and Balonne, Queensland Border Rivers, Moonie, Warrego, Paroo and Nebine (Figure A1).

Figure A1 - Location of major rivers and irrigation areas in the Queensland Murray-Darling Basin



River flows in the QMDB are highly variable, with little to no permanent baseflows and long periods of no flow (drought and flood cycle). Annual streamflow is dominated by summer rainfall and is most variable in the QMDB. Rivers generally decrease in natural capacity downstream with significant portions of flow spreading out onto floodplains and into wetlands.

On an average annual basis Queensland contributes about 11% of all inflows into the whole MDB catchment. Due to the long travel distances and the use of water for environmental and consumptive purposes, only approximately 1% of the flows at the mouth of the Murray have their origin in Queensland.

This low contribution is primarily a consequence of natural river processes such as instream seepage, evapo-transpiration and floodplain wetting as well as diversions as flows travel downstream from Queensland to the mouth of the Murray. Only large flood flows make it to the end of the Darling as the Menindee Lake system exists as an extensive and effective barrier to the natural passing of flow emanating from the various tributary streams of the northern basin. It is only extremely large infrequent flooding events in the northern basin which will contribute to flows at the mouth of the Murray.

On average, Queensland extracts less than 6% of the total diversions in the Murray–Darling Basin. The diversion and contribution percentages vary considerably on an annual basis as Queensland rivers flow intermittently and there are no very large dams in streams. This is in contrast to southern valleys where the rivers are controlled by large in-stream storages and other works and tend to flow throughout the year.

Water Management in Queensland

Water diversions in the Queensland section of the MDB in any given year are a combination of ‘supplemented’ (drawn from public storages), ‘unsupplemented’ (drawn primarily from natural flow in watercourses) and ‘overland flow’ (drawn from flows across the landscape and flood plains), and groundwater extractions.

Diversions occur under conditions and controls outlined in the Queensland *Water Act 2000*, the *Water Regulation 2002* and respective water resource plans. These statutory plans require that there be no increases in take permitted above that provided for in the plans. Controls exist to legally limit supplemented, unsupplemented, overland flow take and groundwater extractions.

‘Unsupplemented’ diversions predominate in the QMDB. Limitations on take are prescribed in water sharing rules outlined in each water resource plan and resource operations plan for the respective valleys. These plans also specify stream flow levels which must be exceeded before diversions can occur.

Under the provisions of the Queensland *Water Act 2000*, statutory based water resource plans have been finalised for all QMDB catchments, namely the Queensland Border Rivers, Condamine and Balonne, Moonie, Warrego, Paroo and Nebine catchments. These plans are recognised as transitional water resource plans under the Commonwealth Water Act 2007.

Appendix B – Examples of Engineering Works and Measures for Future Consideration

Planning Area	Activity	Description
QMDB	Menindee Lakes	Engineering works to reduce evaporative losses on the Menindee Lakes would create considerable water savings that should reduce the need to seek cutbacks to water entitlements in the Barwon Darling system. (Category One)
Condamine Balonne	Build weir on Narran Ramsar site - Clear/Back lake	The northern Narran Lakes Ramsar sites are filled first from upstream inflow and will slowly empty into the Main Lake. Major bird breeding in the Northern Lakes are affected by the depth and duration of water held in the Northern Lakes, therefore a regulating weir could provide greater control to prolong the duration and maintain the depth of water in the Northern Lakes. (Category Two)
Condamine Balonne	Build conveyance channel between Culgoa-Narran Systems	Culgoa - Narran conveyance channel to take water held in private storage along the Culgoa river system to provide for supplementary flows to the Narran River and Ramsar site. (Category Two)
Condamine Balonne	Modify Dumaresq-Barwon Border Rivers Commission - Bifurcation weirs	The bifurcation weirs on the distributary system in the Lower Balonne could include outlet works to be used to manipulate flows in the braided floodplain stream in the Lower Balonne to maximise the travel lengths of flows in the Lower Balonne, including flow redirecting to Narran Lakes Ramsar Site. (Category Two)
Condamine Balonne	Use private storage & diversion works on Narran River	During a flow event in 2008, river flow was captured (under the rules of the water resource plan) in a private storage along the Narran River system. A quantity of the stored water was purchased by the Commonwealth and released back into the river system to prolong the 2008 major bird breeding event that occurred in the Narran lake system. (Category Two)
QMDB	CEWH to own off stream storage and diversion works	Off-stream diversion works to take Commonwealth water during announced periods for later targeted release for environmental benefit. (Category Two)
Moonie	Bullamon Plains artificial wetland	Bullamon Plains on the Lower Moonie gravity diverts water into low lying areas to produce stock fodder. The operation also has created a large wetland which is artificially made but has promoted significant bird life. Purchase of entitlement and other diversion arrangements to continue this operation may have mutual benefit to the property owner (largest entitlement holder on the Moonie River) and to maintain a wetland area. (Category Two)

Condamine Balonne	Install fishways on key structures	Major storages along the Condamine and Balonne River system, including Chinchilla Weir, Beardmore Dam and Jack Taylor Weir (both at St George). These structures do not have provision for fish passage at this time. (Category Three)
Border	Install fishways on key structures	Fishway on causeway on tributary to Calliguel Lagoon, a high conservation value ecosystem. Fishways to be incorporated on re-regulating weirs such as Mungindi Weir, Boomi Weir, Glenarbon Weir, etc. (Category Three)
Warrego	Install fishways on key structures	Install fishway on Allan Tannock Weir at Cunnamulla. (Category Three)
Border	Modify existing fishways	Modification of existing fishways to enable more effective operation ie Boggabilla Weir and Goondiwindi Weir on the Macintyre River. (Category Three)
Condamine Balonne, Border, Warrego	Gate automation on regulating weirs	Gate automation on regulating weirs to enable environmental flow manipulation. SunWater modernisation business case under the Healthy Headwaters program proposed such activities on SunWater structures throughout its 6 QMDB schemes. Other structures including Dumaresq Barwon Border Rivers Commission Weirs should also be considered. (Category Four)
Condamine Balonne, Border, Warrego	Increase capacity of outlet works on dams and regulating weirs	Increase outlet works on key structures to improve efficiency of water delivery (reduce transmission losses) and also improve ability to release environmental flows. SunWater modernisation business case proposed such activities on key structures throughout its 6 QMDB schemes. (Category Four)

Category One

- Strategic works and measures that generate water savings or bring additional water into the Basin, with the potential to allow SDLs to be increased.
- Works in this category could include - projects that generate water savings thereby offsetting any reduction in diversion limits, for example by reducing evaporation at Menindee Lakes; and schemes to augment Basin water resources by transferring additional water into the Basin thereby allowing SDLs to be increased.

Category Two

- Works and measures that allow environmental outcomes to be achieved at a site or across a range of sites using less water than would otherwise be required to inundate the relevant areas, thereby creating potential for SDLs to be increased in some cases.
- This would include works such as channels, levee and regulators which allow watering of floodplain and wetland assets without depending on high river flows. Examples in the Southern Basin include Chowilla Creek environmental regulator and Hattah Lakes pumping station,

regulators and stop banks as part of the Living Murray Works and Measures Program. Opportunities for constructing similar works in the northern basin should be investigated.

Category Three

- Works and measures that enhance environmental outcomes from normal river operations, using the same amount of water. This could include fishways, barrier removal, ameliorating cold water pollution issues, habitat restoration activities such as resnagging and addressing floodplain harvesting infrastructure.

Category Four

- Works and measures that overcome constraints on the delivery of environmental flows or increase flexibility in water management across the Basin. This could include acquiring flood easements and enlarging dam outlet capacities.