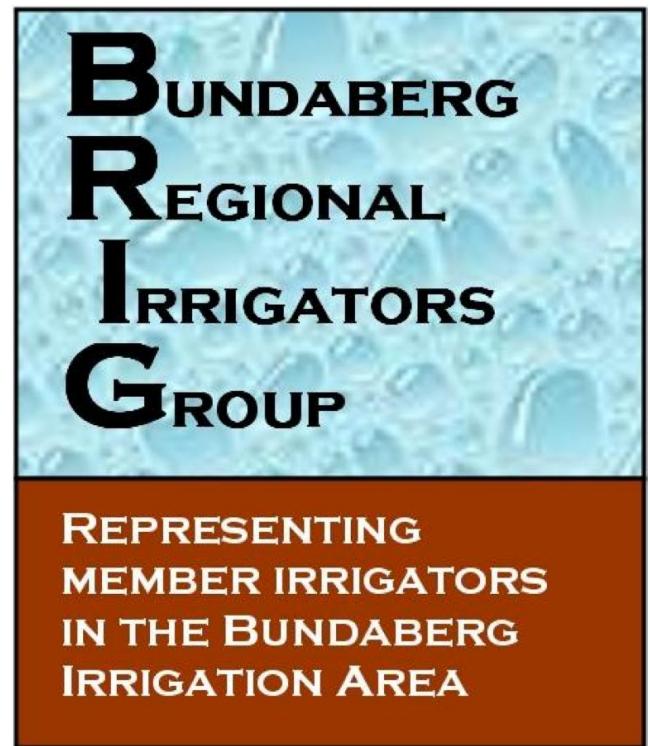


# Draft Water Resource (Burnett Basin) Plan 2013

A submission to the Department of Environment and  
Resource Management

**Bundaberg Regional Irrigators Group Ltd**

December 2013



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# 1 Introduction

This is a properly made submission from the Bundaberg Regional Irrigators Group Ltd (BRIG), in response to the Public notice of availability of the draft Burnett Basin water resource 2013.

Bundaberg Regional Irrigators Group Ltd (BRIG) supports and recognises the need for the Water Resource Planning process and welcomes the opportunity to comment on the new draft Water Resource Plan (WRP) for the Burnett Basin. An effective and appropriate WRP for the Burnett Basin is essential to provide:

- (a) long term security and certainty for existing and proposed water entitlement holders;
- (b) a clear definition of water entitlements;
- (c) business flexibility to irrigators in the Bundaberg region through the creation of an improved water market;
- (d) improved water sharing rules for the Bundaberg Water Supply Scheme that maximise the yield of the scheme for the benefit of water users while conforming with the broader objectives set in Water Resource Plan;
- (e) provide environmental flow objectives that maintain the environment for current and future generations;
- (f) provide suitable opportunities for further water resource development while protecting existing consumptive users; and
- (g) deliver associated flow-on economic benefits to the wider Burnett community.

## 1.1 Bundaberg Regional Irrigators Group Ltd

Bundaberg Regional Irrigators Group Ltd (BRIG) has been established to represent irrigators in the Bundaberg district across a range of commodity groups including sugarcane, grain and horticulture. Our purpose is to ensure a fair and reasonable system exists for the charging of use and access to water for irrigation purposes; to support and encourage self-management of the Bundaberg Irrigation scheme/s; and develop projects and policy to ensure the efficiency viability and sustainability of irrigators in the Bundaberg Region.

This submission considers issues in the draft WRP relevant to members of the Bundaberg Regional Irrigators Group Ltd (BRIG) as:

- major landholders and holders of water entitlements for supplemented water, unsupplemented water, subartesian groundwater and overland flow within the plan area;

- owners of farming, sugar milling, refining and heavy engineering businesses;
- substantial local employers; and
- as members of the wider Burnett community.

## 1.2 Scope of the Submission

This submission focuses on areas covered by the draft WRP where Bundaberg Regional Irrigators Group Ltd (BRIG) has a direct interest, that is:

- the Bundaberg Water Supply Scheme;
- the Lower Burnett and Kolan Water Management Area;
- unsupplemented surface water in the Elliott, Gregory and Isis River catchments;
- the Coastal Burnett Groundwater Management Area (CBGMA); and
- overland flow in the Kolan, Lower Burnett, Elliott, Gregory and Isis catchments.

The submission identifies:

- (a) provisions in the draft Burnett Basin Water Resource Plan (WRP) supported by BRIG;
- (b) provisions in the draft WRP that require amendment;
- (c) issues to be addressed in the implementation of the WRP; and
- (d) issues related to the draft WRP that need to be considered in the development of the Burnett Resource Operations Plan (ROP).

## 1.3 Structure of the Submission

The following structure has been adopted in this submission:

Section 1: Introduction

Section 2: A brief review of the previous water resource planning processes in the Burnett Basin

Section 3: A summary of the key issues in this submission for consideration in the draft WRP for the Burnett Basin

Sections 4 to 7: Full details of each issue, including the grounds of the submission and information to support the submission.

#### 1.4 Additional comment and further submissions

This submission has been developed in response to the draft Water Resource (Burnett Basin) Plan 2013 (draft WRP), the Draft Water Resource (Burnett Basin) Plan 2013 Overview Report and supporting documents, and from the previous experience of BRIG members in water resource planning processes in the Burnett since 2000 and water management prior to the first WRP in 2000.

BRIG has made all reasonable effort to ensure this submission is a comprehensive list of issues to be addressed in finalising the Burnett WRP. However, there are a number of complex issues addressed in the draft WRP and if further information becomes available, BRIG may raise additional issues, or provide further detail on issues identified in this submission with DNRM, following the closing date of the submissions or prior to the next formal opportunity for comment.

#### 1.5 Response to Submission

BRIG appreciates the time and effort that DNRM have put into consulting with BRIG during the development of the draft WRP. There are a number of significant and complex issues raised in this submission and we would welcome the opportunity to discuss these further with DNRM.

BRIG would appreciate the opportunity to meet with DNRM to follow up on the issues raised in the submission prior to the release of the final WRP.

#### 1.6 Further Information

Further information or clarification can be provided any aspects of this submission. Enquiries should be directed to Mr Dale Holliss, Secretary, Bundaberg Regional Irrigators Group Ltd on (07) 4151 2555.

## 2 Previous water resource planning process in the Burnett Basin

Irrigators in the Bundaberg region have benefited from the development and implementation of *Water Resource (Burnett Basin) Plan 2000*. In particular, the Water resource Plan (WRP) has delivered a clearer definition of water entitlements and transparency in the management of these entitlements, particularly in the Bundaberg Water Supply Scheme (WSS).

The WRP has provided an opportunity for water entitlement holders to gain a greater understanding of how their entitlements are managed, and the level of security attached to them. This awareness has direct application to on-farm planning relating to both water use throughout the water year and longer term planning for investment in irrigation infrastructure etc. The WRP, through clearly establishing existing water entitlements as a perpetual share of the resource, has delivered greater security and certainty to irrigators.

A drawback of the water resource planning has been the that the implications and practicality of many of the rules contained within the both the *Water Resource (Burnett Basin) Plan 2000* and the Burnett Basin Resource Operations Plan (ROP) were not evident until the implementation of the ROP. In many ways the water resource planning process is breaking new ground and a number of lessons have been learnt through the experience of developing and implementing the WRP and ROP. An opportunity exists to ensure that the next cycle of water resource planning for the Burnett Basin benefits from these experiences and knowledge and that the following areas are addressed:

- Strengthened Water Allocation Security Objectives (WASOs) for supplemented, unplemented and groundwater entitlements in the Bundaberg region;
- Improved water sharing rules for the Bundaberg WSS;
- More targeted and considered environmental outcomes and improved environmental management rules in the Bundaberg WSS; and
- Sensible management of overland flow take.

This submission draws heavily from the experience of irrigators in the Bundaberg region in identifying and highlighting the areas where the draft WRP represents an improvement on current arrangements and alternatively where further changes are needed to the draft WRP prior to commencement.

### 3 Key Issues to be addressed in the WRP

This section outlines the key issues identified in this submission. Bundaberg Regional Irrigators Group Ltd requests that DNRM pay particular attention to these issues when developing the final WRP. The following sections of this submission include the full details of each issue, including the grounds of the submission and information to support the submission.

#### 3.1 Interim Water Sharing Rules for the Bundaberg Water Supply Scheme (WSS)

The inadequacies in the current water sharing rules for the Bundaberg WSS need to be addressed urgently and it is essential that the water sharing rules are included in the WRP and begin on commencement of the WRP and not delayed until future ROP amendments.

This submission supports the inclusion of the interim water sharing rules for the Bundaberg WSS in the Water Resource Plan. BRIG also supports the changes that have been made to the water sharing rules including the 85:15 split of Fred Haigh Dam between the North and South subschemes and changes to the Reserve, storage losses and Transmission and Operation Losses. The proposed water sharing rules included in the draft WRP represent a significant step forward in determining announced allocations for medium priority allocations in the Bundaberg WSS.

DNRM should be commended for the thorough approach that has been taken in reviewing the water sharing rules for the Bundaberg WSS and the open consultation that has been undertaken with BRIG and the wider Bundaberg region irrigation community.

#### 3.2 Shares of the total water resource

Existing water entitlements, established under the *Water Resource (Burnett Basin) Plan 2000* should be viewed as perpetual and open ended shares of the resource. This submission raises a number of specific issues relating to Water Allocation Security Objectives in the draft Burnett WRP to ensure the current share of the total water resource held by irrigators is maintained for:

- Medium priority allocations in the Bundaberg Water Supply Scheme (WSS);
- Existing groundwater licence holders in the Coastal Burnett Groundwater Management Area (CBGMA);
- Unsupplemented water allocations in the Lower Burnett and Kolan Water Management Area; and
- Unsupplemented water entitlements in the Elliott, Gregory and Isis Rivers.

In particular, BRIG is very concerned that:

- The current performance of medium priority entitlements in the Bundaberg WSS is not adequately protected by the proposed Water Allocation Security Objectives, particularly

in light of changes that could be made during the life of the plan under the proposed stated amendments.

- There has been a significant, unjustified reduction in the Water Allocation Security Objectives for Area A in the CBGMA.
- The process that will be used as per the draft WRP to determine the values of nominal volumes in Area A of the CBGMA is unclear.
- There has been a change in definition for the Water Allocation Security Objectives for unsupplemented water entitlements. BRIG is concerned that the new definition does not provide sufficient protection of access to the full flow regime. It is also unclear if there has been an equitable translation of unsupplemented water entitlements in terms of adopted WASOs in the draft WRP. It is unacceptable that has not been more rigorously addressed.

### 3.3 Environmental Flow Objectives and Flow Release Strategies

DNRM should be commended on reviewing the groundwater dependent ecosystem requirements thoroughly and adopting a more targeted approach. Similarly, more targeted ecological outcomes have been specified for surface water allowing for improved environmental flow objectives to be developed.

Some fine tuning is still required for release rules on the Burnett River especially for releases from Paradise Dam and Ned Churchward Weir. BRIG also has some concerns about the impact of adopting higher nominal operating levels, particularly during periods of low announced allocations.

Considering the uncertainty associated with the effectiveness of the proposed rules, BRIG believes it would be prudent to undertake monitoring to assess the adequacy of the rules and include a comprehensive assessment in the Ministers report 5 years after the commencement of the WRP.

### 3.4 Minor or stated amendments to the plan

The draft Burnett WRP includes a comprehensive list of stated amendments that can occur without public notification and consultation. BRIG believes that a number of these amendments represent significant changes to the WRP and could lead to an erosion of entitlements in real terms, particularly where WASOs have been set at levels lower than the current modelled performance. This is unacceptable.

BRIG requests that only minor amendments to both the WRP and ROP be permitted and that the amendments only be permitted where the actual performance of existing water entitlements is not reduced, even within the allowable limits set by the WRP.

Any amendments to the WRP that may be necessary due to a change in practice (eg. increased overland flow take) or improvements in scientific knowledge (improved models, knowledge from environmental monitoring) should be subject to a full public review.

### 3.5 Implementation of the WRP

BRIG supports the inclusion in the draft WRP of a number of priority areas for the amending the current Burnett ROP including:

- Converting existing licences to water allocations to take groundwater in Area A of the CBGMA;
- Establish licences to take groundwater in Area B of the CBGMA;
- Specify water sharing rules, water allocation change rules and seasonal water assignments for the take of groundwater in the CBGMA;
- Provide environmental management rules, infrastructure operating rules, water sharing rules, water allocation change rules and seasonal water assignment rules for the Bundaberg WSS; and
- Conversion of licences to water allocations in the Gregory, Elliott and Isis catchments.

There is a need for these amendments to occur in a timely manner and for ongoing consultation with water users for all of the issues listed above during the development of the draft ROP.

## 4 Interim water sharing rules for Bundaberg WSS

### 4.1 Inclusion of Interim Water Sharing in the WRP

#### **Issue No 1. Support the inclusion of the interim water sharing rules in the WRP**

There is a need to urgently address the inadequacies in the current water sharing rules. Medium priority allocation holders in the Bundaberg WSS have experienced extended periods of low announced allocations since the implementations of the *Water Resource (Burnett Basin) Plan 2000*. This has partly been due to the extended drought conditions in the region, but also as a result of inadequacies in the current Burnett ROP, such as the inclusion of a significantly large Reserve volume in the water sharing rules, limiting the opportunity for announced allocation increases throughout the water year.

DNRM should be commended for the thorough approach that has been taken in reviewing the water sharing rules for the Bundaberg WSS and the open consultation that has been undertaken with BRIG and the wider Bundaberg region irrigation community. As a result, irrigators have had ample opportunity to review the proposed rules prior to the release of the draft WRP and have confidence that the proposed interim water sharing rules represent a significant improvement on the rules currently included in the ROP.

BRIG **strongly supports** the inclusion of the interim water sharing rules for the Bundaberg WSS in the Burnett WRP.

### 4.2 Interim Water Sharing Rules for the Bundaberg WSS

#### **Issue No 2. Bulk capacity shares for Fred Haigh Dam**

A range of trigger levels have been adopted in the last 10 years for splitting the Bundaberg WSS into two sub-schemes when levels in Fred Haigh Dam are low including 80 000 ML (ROP May 2003) and 200 000 ML (current ROP rule).

The option of permanently splitting the Bundaberg WSS into two sub-schemes was raised by irrigators as an option to facilitate flexible water sharing arrangements such as continuous sharing. In particular, BRIG asked DNRM to review the trigger level and associated announced allocation rules for splitting the Bundaberg WSS into two sub-schemes.

The draft Burnett WRP proposes adopting a permanent 85:15 split of the volume in Fred Haigh Dam to be shared between the North and South sub-schemes.

A significant number of iterations and model runs were undertaken by DNRM and results presented to water users, including BRIG, to identify the fairest split between the sub-schemes. Adoption of the 85:15 split of Fred Haigh Dam along with other proposed changes to the water sharing rules results in an **identical** monthly water sharing index for medium priority allocations (92.6%)<sup>1</sup> when compared with the rules included in the current WRP.

The 85:15 split balances the need to provide long term reliability for medium priority allocation holders in the North and South sub-schemes and maximise announced allocations at the start of the water year for both sub-schemes. BRIG believes that 85:15 split represents a fair and equitable share between users in the North and South sub-schemes.

BRIG **strongly supports** the inclusion in the WRP of a permanent scheme split in determining announced allocations and the 85:15 share proposed for the volume of Fred Haigh Dam in the interim water sharing rules for the Bundaberg WSS.

#### **Issue No 3. Reserve used in calculating announced allocations**

The Burnett ROP includes a Reserve volume to provide an allowance for the requirements of high and medium priority allocations. Post-Paradise, the Reserve volume in the Burnett ROP has increased from a maximum value of 47474 ML to 238812 ML.

The impact of the Reserve volumes on announced allocations medium priority allocations in the Bundaberg WSS, is particularly evident during dry periods. For example when significant inflows into Paradise Dam occurred in July 2008 and again in January 2009, the announced allocations for medium priority irrigators on the south side did not increase from the initial announcement of 46% made at the start of the water year on 1 July 2008.

The draft Burnett WRP adopts a substantially different Reserve based on securing high priority allocations on a 2 year rolling basis. BRIG **strongly supports** the adoption of the new Reserve included in the Interim Water Sharing Rules for the Bundaberg WSS

#### **Issue No 4. Transmission and Operational Losses used in calculating announced allocations**

The draft Burnett WRP includes amended Transmission and Operational Losses (TOL) that have been calculated considering the location of the allocations. The proposed TOL values are lower in periods of high announced allocations and higher in periods of lower announced allocations when compared with the current water sharing rules.

BRIG tentatively supports the proposed TOL values subject to these values being reviewed in the future, at a minimum at the 10 year review period for the WRP.

#### **Issue No 5. Storage Loss used in calculating announced allocations**

The draft Burnett WRP includes amended Storage Losses that incorporate rainfall on storages for the Bundaberg WSS. BRIG **supports** the adoptions of these amended Storage Loss values.

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<sup>1</sup> DNRM (2013) Information sheet – New draft Burnett Basin WRP – Bundaberg Water Supply Scheme

# 5 Shares of the total water resource

## 5.1 Transition of existing entitlements under the new WRP

### **Issue No 6. Transition of all existing water allocations and licences from under the existing WRP to the new WRP**

The commencement of the next cycle of water resource planning for the Burnett Basin provides an opportunity for further improvement based on experiences, technical assessments and improved understanding of the issues relevant to both water entitlement holders and the environment. However, in doing this, the planning process needs to acknowledge existing water entitlements that have previously been established and recognize their predefined share of the resource. Existing water entitlements, established under the *Water Resource (Burnett Basin) Plan 2000* should be viewed as perpetual and open ended shares of the resource.

The draft WRP proposes that all entitlements are transitioned without amendment. BRIG **strongly supports** this provision in the draft Burnett WRP.

## 5.2 Water Allocation Security Objectives (WASOs) for the Bundaberg Water Supply Scheme

### **Issue No 7. Supplemented water sharing index for medium priority allocations in the Bundaberg WSS**

The *Water Resource (Burnett Basin) Plan 2000* specifies the following water allocation security objectives for medium priority users in the Bundaberg WSS:

- (a) The supplemented water sharing index must be at least 90%; and
- (b) The extent to which the supplemented water sharing index is less than 95% should be minimized.

The draft Burnett WRP has proposes replacing these objectives with a single minimum water sharing index of 90%.

The actual modelled performance against the WASOs for medium priority allocations in the Bundaberg WSS for existing and updated modelling periods against the WASOs is included in **Table 1**.

**Table 1 Comparison of actual modelled performance for the medium priority allocations in the Bundaberg WSS for existing and updated models**

Modelled performance	Existing ROP model (1890 – 1997)	Updated IQQM (1890-2008)
Existing ROP rules	95.9%	92.6%
Proposed WRP rules	Not available	93.3%
<b>WASOs</b>	<b>Existing WRP</b>	<b>Proposed WRP</b>
Minimum water sharing index	90%	90%
Target water sharing index	95%	Not included

BRIG acknowledges that the minimum requirement of 90% monthly WSI has been retained in the draft WRP which represents a real improvement under the drier extended modelling period. However, this minimum target is still lower, in real terms, than the higher target included in the current plan (95%), even accounting for the extended drier modelling period.

While climate change and the concept of a non-stationary hydrologic system are accepted as a necessary reality in managing water allocations, there is still an expectation that water allocations in the Bundaberg WSS will provide a relatively reliable water source and whether possible the Water Resource Planning process should aim to achieve a WASO of around 95% for existing medium priority allocation holders wherever possible. Additionally, this goal should become before the release of unallocated water in the Basin.

Considering the performance under the proposed WRP rules is at 93.3%, even with the extended recent dry period included in the model, an aspirational target of 95% is still reasonable. BRIG **requests** that the previous target WASO, ie. ‘for medium water allocations, the extent to which the supplemented water sharing index is less than 95% for the Bundaberg water project area’ be put back into the WRP.

Under the Water Act, the life of a water resource plan is now 10 years with a possible extension for a further 10 years. There is an envelope of 3.3% between the modelled performance of medium priority water allocations in the Bundaberg WSS under the proposed rules and the minimum WASO requirement of 90% proposed in the draft WRP. It is possible that this gap could be eroded under the stated amendments allowed under the draft WRP over the 20 years that the plan could exist. It is imperative that the WASOs associated with water allocations protect entitlement holders against this occurring. To address this, BRIG also **requests** that a higher minimum WASO of 93% monthly WSI be adopted.

## 5.3 Water Allocation Security Objectives (WASOs) for unsupplemented surface water

### Issue No 8. Change to water allocation groups for unsupplemented water

Water allocation groups have been changed from sub-area groups in the current plan to classes based on both subarea and entitlement conditions in the draft WRP. BRIG **supports** the changes to the water allocation groups to allow the performance for 'like' groups to be specified in the WRP.

### Issue No 9. Change to the definition of WASO for unsupplemented surface water

The current WRP utilises a suite of 3 WASOs for the unsupplemented water sharing groups, that includes the 30%, 50% and 70% unsupplemented water sharing index. These indices identify the diversions calculated to occur in 30, 50 and 70% of the years in the simulation period.

The draft WRP proposes replacing this with a single value WASO, the Annual Volume Probability (%) (AVP), that identifies the percentage of years in the simulation period when the diversions available will be at least the sum of the nominal volumes.

The impact of the change in WASO definition varies depending on the water allocation group that an irrigator belongs to. For example:

1. For irrigators in Classes 1D (Elliott), 1E (Gregory) and 1F (Isis), the change in WASO definition represents a loss of protection. For these classes, the draft WRP identifies their annual volume probability as either 48 to 53%. While they have maintained the protection of water available in approx. 50% of years, they have lost the protection of the higher volumes of water that would only occur in at least 30% of years, should further development occur in the catchment. This impact will be quite significant if their water allocations are granted with volumetric limits significantly higher than the nominal volumes. Conversely, they have also lost the protection of the lower volume of water (less than nominal allocation) that would be available in 70% of years of the simulation period.
2. For irrigators in Classes 1A and 2A (Kolan) and 3C, 4C and 5C (Burnett), the impact of the change in WASO is different because the annual volume probabilities in the draft WRP range from 71 to 85%. In this case, the draft WRP provides greater protection of the minimum volume of water that would be available in the majority of years (since the AVP is greater than 70%). However, any protection of access to the higher diversions that would occur in wetter years (eg. 30 and 50%ile wet years) is no longer afforded by the draft WRP. This is an issue when you consider that the total volumetric limit for these classes is 5244ML, significantly higher than the 2622ML of nominal volume held by these allocations.

The impact of these changes will vary for each irrigator depending on the circumstances of their individual enterprise, in particular the size of their offstream storages relative to their allocations and their reliance on the more opportunistic wet years. However, it is reasonable to assume that at least some, if not all of these irrigators will place some reliance on high diversions in the less frequent, wetter years. In both examples, the draft

WRP provides no protection of larger volumes of water that could be diverted by the unsupplemented entitlements during wetter periods.

BRIG **requests** that DNRM revisit the choice of WASOs for unsupplemented surface water entitlements and determine the optimal combination to afford protection of irrigators access to more frequent diversion volumes and less frequent high diversions, including the possibility of including both the Annual Volume Probability and at least the 30% unsupplemented water sharing index. At the very least, a suite of WASOs is required, a single value WASO is not able to provide the protection of access over the majority of the flow regime.

**Issue No 10. Values adopted for WASOs in the Lower Burnett and Kolan Water Management Area, and the Elliott, Gregory and Isis catchments**

DNRM was unable to provide BRIG, prior to the close of submissions, with modelled data for the new WASO proposed in the draft WRP for both the old and new IQQM modelling periods and existing and proposed WRP rules to allow a direct comparison of the adequacy of the WASOs proposed in the draft WRP for unsupplemented surface water entitlements in the Lower, Burnett, Kolan, Elliott, Gregory and Isis allocation groups. WASOs are an integral part of a water entitlement and it is **unacceptable** that a rigorous comparison between the current WRP and proposed draft WRP was not undertaken by DNRM prior to the release of the draft WRP, or that the information is not available to water users to assist in their submissions.

It is essential that the adequacy of the proposed WASOs is rigorously checked by DNRM. Once checked, BRIG **requests** that DNRM ensures that as a minimum, WASOs are defined in the WRP to an equivalent level for the extended modelling period, and where possible, a higher level is adopted equivalent to actual modelled performance where modelled diversions exceed the proposed WASOs.

**Issue No 11. Conversion of licences to water allocations in the Elliott, Gregory and Isis River catchments**

BRIG **supports** the conversion of existing unsupplemented licences to water allocations in the Elliott, Gregory and Isis River catchments.

**5.4 Water Allocation Security Objectives (WASOs) for the Coastal Burnett Groundwater Management Area (CBGMA)**

**Issue No 12. Groundwater annual volume probability for the CBGMA**

The draft WRP proposes adopting lower values for the WASOs in the Coastal Burnett Groundwater Management Area (CBGMA). A comparison between the current and draft WRP is included in Table 2.

**Table 2 Comparison of WASOs in the current and proposed draft WRP for the CBGMA**

Groundwater Sub-area	Current WRP: Simulated nominal volume probability (%)	Proposed draft WRP: annual volume probability (%)
Kolan-Burnett (CB-KBA-B)	55%	50%
Burnett-Elliott (CB-BEA-B)	52%	50%
Elliott-Gregory (CB-EGA-B)	56%	50%
Fairymead (CB-FMA-B)	61%	50%

The WASOs adopted in the draft WRP are significantly lower than currently attached to entitlements under the current WRP. There is no justification for the decrease in the WASOs in either the supporting documentation associated with the draft WRP or information provided to irrigators and the Community Reference Panel during the development of the draft WRP.

WASOs are a fundamental component of a water entitlement and any decision to reduce the minimum WASO requirement, particularly in a heavily committed groundwater area, should not be taken lightly. BRIG **strongly opposes** any reduction in the annual volume probability from those values specified in the current WRP.

If there are reasonable grounds for the proposed reductions in WASOs, BRIG **requests** that DNRM provide the supporting information to water users in the CBGMA identifying simulated diversions, associated reliabilities and identify the impacts of any management strategies, and that open and transparent consultation be undertaken to with the water users to determine any appropriate changes to WASOs included in the plan.

## 5.5 Converting licences to water allocations in the Coastal Burnett Groundwater Management Area (CBGMA)

### Issue No 13. Economic outcomes stated in the WRP

The development of groundwater provisions in the current WRP and the draft ROP amendments for the Coastal Burnett Groundwater Management Area has addressed a number of complex issues including developing accurate and relevant models, incorporating an existing declared area and a new extension to the area for a heavily committed resource and addressing complex management requirements such as saltwater intrusion and groundwater dependent ecosystems. BRIG remains concerned that the draft ROP does not aim to optimize the use of the groundwater resource amongst all groundwater users or aim to make each nominal unit of allocation equal throughout the CBGMA. The draft ROP clearly shows that a unit of nominal allocation close to the coast will on average supply less than a unit located further inland. There is the opportunity in the draft WRP to address this issue and set a clear direction for the ROP, prior to its completion.

BRIG **requests** that the draft WRP be amended to include the following outcome in the economic outcomes:

‘provision for equitable shares of the groundwater resource in the Coastal Burnett Groundwater Management Area to be established.’

#### **Issue No 14. Conversion of licences to water allocations in the CBGMA**

BRIG **supports** the proposal to convert licenced entitlements within the former Bundaberg Subartesian area to water allocations and to convert authorized groundwater extractions in the extension area to groundwater licences **subject to** a clear and equitable process being established for determining the nominal volumes for Area A allocations and Area B licences.

#### **Issue No 15. Determining nominal volumes for water allocations in the CBGMA**

The draft WRP (s 107) identifies a number of issues to consider in determining the nominal volume of a water allocation for Area A of the CBGMA, including:

- (a) The local availability of groundwater;
- (b) The conditions under which the groundwater may be taken under the water licence from which the allocation is being converted;
- (c) The nominal entitlement for the water licence from which the allocation is being converted; and
- (d) The simulated mean annual diversion for the water licence from which the allocation is converted.

BRIG **requests** that the following changes be made to the draft WRP:

- Criteria (a) be changed to remove the reference to ‘local’ ie. ‘The local availability of groundwater’. This will match the criteria for Area A in the WRP (s 102) and ensure the entire groundwater system is used in equitably determining the nominal volumes of entitlements.
- Criteria (d) be removed since the simulated mean annual diversions take into account announced allocation practices that apply after, not before, the establishment of shares or nominal entitlements of the resource.

It is unclear as to how Section 107 of the draft WRP would be implemented. DNRM have indicated (email dated 11 December 2013) that nominal volumes greater than the nominal entitlements stated on the licences would not be granted, so it appears that Section 107 would only result in a smaller nominal allocation being granted. BRIG does **not support** any water allocations being granted with nominal allocations less than the nominal entitlement currently stated on the licence. Rather, management provisions in the ROP eg. announced allocation processes, water allocation change rules etc should be used to sustainably manage the resource.

BRIG **requests** that further open and transparent consultation be held with the Bundaberg District Groundwater Area Advisory Committee on the process to establish nominal volumes for groundwater licences and allocations in the CBGMA.

## 5.6 Overland Flow in the Coastal Burnett Overland Flow Area

### **Issue No 16. Limitations on taking overland flow**

BRIG acknowledges the assessments undertaken to determine the risk posed by further overland flow development in the Coastal Burnett overland flow area and accepts the inclusion of 20ML as maximum storage capacity for new works to take overland flow water for any purpose in the draft WRP.

BRIG does **not support** any reduction below 20ML to the allowable storage capacity for new works if others deem changes necessary in finalising the WRP.

Similarly, BRIG does **not support** the minor or stated amendment to the plan that allows the Minister to amend the allowable storage capacity for new overland flow works without public notice. The draft WRP needs to be amended to only allow an **increase** in the allowable storage for new works to cater for any future risk assessment identifying provisions in the WRP as being overly conservative. Any decrease in the allowable capacity for new works to cater for increasing or unexpected overland flow development should be subject to public notice and consultation.

## 5.7 Unallocated Water

### **Issue No 17. Unallocated supplemented water in the Bundaberg WSS**

The volume of 15295 ML from Ned Churchward Weir (Stage 2) reserved in the Burnett ROP should be reviewed following the release of the draft WRP taking into account the extended simulation period and any amended performance objectives set in the draft WRP.

The volume of water reserved in the Burnett ROP should be set at such a level that the actual performance of existing water entitlements is not reduced, even if within the allowable limits set by the WRP.

### **Issue No 18. Unallocated water in the Coastal Burnett GMA**

Considering the high level of development in the CBGMA, BRIG **supports** that the WRP does not provide for any additional unallocated groundwater in the CBGMA.

# 6 Environmental flow objectives

## 6.1 Ecological Outcomes in the draft WRP

### **Issue No 19. Inclusion of basin specific ecological outcomes**

The draft WRP contains a larger number of ecological outcomes, more targeted than the current WRP. BRIG **supports** the inclusion of less general, more targeted outcomes that are specific to the Burnett Basin.

## 6.2 Environmental flow objectives

### **Issue No 20. Suite of proposed environmental flow objectives in draft WRP**

It is noted that the draft WRP includes less environmental flow objectives (EFOs), and at a smaller number of nodes, compared with the current WRP. It is also noted that the environmental flow objectives are more closely linked to specific ecological outcomes specified in the plan. BRIG **supports** this considered and basin specific approach that has been used by DNRM in developing the draft WRP.

### **Issue No 21. Mean Annual Flow**

It is noted that the draft WRP now only specifies EFOs for Mean Annual Flow at the river mouths in the Basin. This is appropriate, considering that Mean Annual Flow is an indicator of the total consumptive take only and does not specifically relate to an ecological outcome or process.

BRIG **supports** the inclusion of the Mean Annual Flow EFOs only at the river mouths.

### **Issue No 22. Median Annual Flow**

It is noted that EFOs for Median Annual Flow is a new objective that is not included in the current WRP. Median Annual Flow is not an objective that can be specifically linked to an ecological outcome or process in the draft WRP. Different parts of the flow regime are more adequately protected by other Environmental Flow Objectives eg. 1.5 year daily flow volume etc and it is not clear what role setting EFOs for Median Annual Flow plays.

The implications of including the EFOs for Median Annual Flow are not clear from the information that is included in the supporting documents for the draft WRP. While it is assumed that there are no issues associated with the proposed interim water sharing rules in meeting the EFOs for Median Annual Flow, it could unnecessarily limit options for improving water sharing rules as part of the ROP amendments, without necessarily adding to the achievement of ecological outcomes.

It is unnecessary to include both mean and median annual flow EFOs and the inclusion of Median Annual Flow EFOs in the WRP is **not supported** by BRIG.

#### **Issue No 23. 5 year daily flow volume and 20 year daily flow volume**

It is noted that the EFOs for the 5 year daily flow volume and 20 year daily flow volume are only set at the river mouths in the draft WRP. This is consistent with the environmental outcome to support estuarine ecosystem functions.

It is also noted that the EFOs for the 5 year daily flow volume and 20 year daily flow volume have been increased at the Burnett River mouth when compared with the current WRP. This has implications for the releases from Paradise Dam.

BRIG accepts that this is an appropriate objective based on the current scientific knowledge and **subject to** additional work being undertaken to finetune the release rules from Paradise Dam to ensure the that this objective is met while maximising scheme yield for the Bundaberg WSS. This is discussed further in Issue No 29.

#### **Issue No 24. Groundwater dependent ecosystems (GDEs): list of reporting nodes**

DNRM is to be commended for undertaking and documenting a thorough process in developing a rationalised list of GDEs and representative reporting nodes. BRIG **supports** the inclusion of a more targeted and considered list of GDEs and reporting nodes in the draft Burnett WRP.

#### **Issue No 25. Groundwater dependent ecosystems: Average ocean groundwater discharge**

There has been a change in the average ocean groundwater discharge in the draft WRP compared with the current plan, in particular a decreased requirement for Kolan-Burnett A, and increased requirements for Burnett Elliott A and Fairymead A. It is unclear what the basis for these changes are and whether it is as a result of improvements to the groundwater model or whether it may also be as result of changed management practices such as adopting slightly lower WASOs proposed in the draft WRP.

BRIG **supports** such changes that are a result solely of improved groundwater modelling knowledge but does **not support** any changes that are as a result of changed management practices without further consultation with groundwater users.

### **6.3 Release rules in the WRP to achieve environmental flow objectives**

#### **Issue No 26. Bucca Weir Releases**

The *Burnett Basin draft water resource plan – information report* (Queensland Government, 2010) identified the need to review the Bucca Weir release strategy and BRIG supported the need to both review and amend this rule immediately.

The current rule has resulted in significant volumes of open-ended releases occurring over several weeks once an event is triggered. The release rule was not developed to target specific ecological outcomes.

BRIG **supports** the removal of the current Bucca Weir release rule in the WRP and supports the adoption of a daily release of 5 ML/day to minimize fish kills.

#### **Issue No 27. Stable water levels in Ned Churchward Weir**

BRIG **supports** the removal of the requirement to maintain stable water levels in Ned Churchward Weir during July to October from the WRP due to the ineffectiveness of the rule to trigger lungfish spawning within the impounded area.

#### **Issue No 28. Nominal operating levels for storages in the Bundaberg WSS**

The draft WRP adopts new nominal operating levels in the Bundaberg WSS including:

- Amended nominal operating levels for Bucca Weir for September to March;
- A 0.5m increase in the nominal operating level in Ned Churchward Weir for the entire year to facilitate fishway operation; and
- Significant increases in the nominal operating levels for Ben Andersen Barrage.

The implications of the high nominal operating levels on scheme yield is unclear, particularly during dry periods. BRIG is concerned that while the proposed nominal operating levels may have only a small effect on the scheme yield over the entire modelled period, it may have a more significant effect on the announced allocations for medium priority allocation holders when announced allocations are less than 100%.

The greatest impact on the useable volume in the storages is at Ben Andersen Barrage (see Table 3) where the higher nominal operating levels of 2.2 and 3.0 M AHD reduce the available airspace by 5255 and 12 000 ML respectively. This reduces the potential of the storage to capture localized inflows during dry periods when announced allocations are likely to be low.

**Table 3 Air space for nominal operating levels in Ben Andersen Barrage**

Operating level	Volume (ML)	Air space (ML)
1.0 m AHD	11154	19146
2.2 m AHD	17901	12399
3.0 m AHD	23156	7144

This issue is further complicated by the removal from the draft WRP of the requirement for Critical Water Sharing Arrangements that would have previously overridden the requirements to maintain higher nominal operating levels during periods of low announced allocations.

BRIG **tentatively supports** the nominal operating levels in the draft WRP **subject to** this provision being further fine tuned as part of the next ROP amendment and that consideration being given to identifying an announced allocation threshold where either

lower nominal operating levels are adopted or the proportion of time that the levels must be maintained is less, particularly for Bucca Weir and Ben Andersen Barrage.

BRIG **supports** the allowance in the draft WRP for storages to drop below nominal operating levels up to 7 days per month.

#### Issue No 29. Releases from Paradise Dam

Discussions were held with DNRM in September 2011 regarding appropriate rules for Paradise Dam releases to reinstate brackish water in the estuary. DNRM at that time proposed the following rule:

Releases of 10 000ML/day for 5 days with the tail event continuing for 10 days trailing off to a zero release by the end. Total required over the barrage = 100 000 ML. The event to be triggered by:

- Paradise Dam volume > 60% of Full Supply Volume; and
- A flow of at least 20 000 ML/day into Paradise Dam.

Releases would only need to continue while the flow into Paradise Dam is at least 20000 ML/day.

The rule would only be triggered once per year, regardless of the actual outcome at the barrage.

This earlier version of the proposed rule identifies the most likely flow conditions required at Paradise Dam and minimises the likelihood of releases being made from Paradise Dam that would be ineffective in developing sufficiently brackish conditions in the estuary.

BRIG notes that the releases from Paradise Dam in the draft WRP have been amended to the following rule:

For each day from 1 September to 31 December, the ROL holder must release – from Paradise Dam – the lesser of the daily inflow of water to Paradise Dam and 14 000ML, if the storage level is above 63.45 m AHD.

The release rule proposed in the draft WRP requires all inflows up to 14 000 ML/day to be passed through the storage, regardless of the likelihood of the release reaching the estuary or being sufficiently large to achieve brackish conditions. The release rule also does not have an upper limit on releases (eg. release no longer required for that water year once a minimum number of days and streamflow volume has been released from storage or reached the estuary). In comparison, the proposed rule appears poorly considered and an inefficient use of the inflows into Paradise Dam.

BRIG **insists** that DNRM refine the release rule for Paradise Dam to ensure that:

1. The likely size of the event is considered by including a minimum inflow into Paradise Dam as a trigger to ensure there is a reasonable likelihood of brackish conditions being achieved in the estuary; and
2. A trigger is included that recognises once this requirement has been sufficiently met in a water year.

### Issue No 30. Releases from Ned Churchward Weir

BRIG questions the value of 200ML/day used as the optimal release for maintaining pools and riffles downstream of Ned Churchward Weir. Previous work undertaken by SunWater<sup>2</sup> included surveys and depth measurements of significant riffles downstream of Ned Churchward Weir identified 110ML/day as optimal to maintain these riffles at a depth of approximately 30cm, suitable for macroinvertebrate breeding and oxygenation of lungfish eggs.

BRIG **requests** that the WRP be amended to allow releases within the range of 85 to 200 ML/day for September to December be released by the storage operator, as determined by the storage operator, dependent on inflows being at least 85ML/day into Ned Churchward Weir and the nominal operating level being met. This would allow more flexibility in simultaneously meeting the requirements to maintain riffles, maintain nominal operating levels in Ned Churchward Weir and Ben Andersen Barrage and meet irrigator water supply demands.

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<sup>2</sup> Baillie J (2001) *Managing Walla Weir for Water Supply and Environmental Outcomes*. Central Engineering Conference, Bundaberg, 7-8 September 2001.

# 7 Implementation

## 7.1 Implementation schedule for the Resource Operations Plan

### **Issue No 31. Priority areas for implementation in the Resource Operations Plan (ROP)**

The draft WRP identifies a number of priority areas for the amending the current Burnett ROP including:

- Converting existing licences to water allocations to take groundwater in Area A of the CBGMA;
- Establish licences to take groundwater in Area B of the CBGMA;
- Specify water sharing rules, water allocation change rules and seasonal water assignments for the take of groundwater in the CBGMA;
- Provide environmental management rules, infrastructure operating rules, water sharing rules, water allocation change rules and seasonal water assignment rules for the Bundaberg WSS; and
- Conversion of licences to water allocations in the Gregory, Elliott and Isis catchments.

BRIG **supports** the inclusion of these priority areas in the draft WRP.

## 7.2 Amending the WRP

### **Issue No 32. Minor amendments only to be permitted**

The draft Burnett WRP includes a comprehensive list of stated amendments that can occur without public notification and consultation. BRIG believes that a number of these amendments represent significant changes to the WRP including:

- an amendment or addition of an environmental flow objective;
- an amendment or addition of a water allocation security objective; and
- an amendment of the capacity of works to take overland flow.

These amendments could lead to an erosion of entitlements in real terms, particularly where WASOs have been set at levels lower than the current modelled performance. This is the case in the draft WRP for all entitlements in the Bundaberg region. For example, the draft WRP has set the Monthly Water Sharing Index for medium priority allocations in the Bundaberg WSS at 90%, however the current modelled performance 93.3%. This creates a large envelope where permitted amendments to the WRP could result in an erosion of the entitlement without the need for public notification or consultation. This is unacceptable.

Previous amendments to the ROP and WRP that have occurred without public notice include amendments to water sharing rules following the completion of Paradise Dam. The rules adopted in the ROP were less than optimal and resulted in significantly lower announced allocations in the Bundaberg WSS than was necessary. These problems are only now being resolved through the interim water sharing rules in the draft WRP and could possibly have been avoided altogether if the rules had been subject to public review.

BRIG **strongly opposes** the inclusion of the current broad sweeping list of permitted amendments in the draft WRP and **insists** that only minor amendments to both the WRP and ROP be permitted and that the amendments only be permitted where the actual performance of existing water entitlements is not reduced, even within the allowable limits set by the WRP.

The proposed amendments need to be changed only to allow:

- a removal or reduction in an environmental flow objective;
- an increase or addition of a water allocation security objective; and
- an increase in the capacity of works to take overland flow.

Any amendments to the WRP that may be necessary due to a change in practice (eg. increased overland flow take) or improvements in scientific knowledge should be subject to a full public review.

### 7.3 Ministers Report on the Plan

#### **Issue No 33. Change to the reporting period for the Ministers Report on the plan**

BRIG **supports** the change to the reporting period from an annual report to a report on commencement and then every 5 years thereafter, **conditional** on that the 5 year report includes a more comprehensive analysis of the effectiveness of provisions to meet environmental objectives and a review of water sharing rules and trading provisions, than has been included in past reports.

### 7.4 Issues to be addressed in the Resource Operations Plan

#### **Issue No 34. Increased allowances for Carryovers and Forward Draws in the Bundaberg WSS**

Carryovers and forward draws provide flexibility to allocation holders in managing their enterprises and assist in ensuring water supplies at critical times and BRIG supports the inclusion of these customer products in the ROP.

Forward draws and carryovers provide a useful tool to allow irrigators to plan the use of their water allocation over a longer period. However, the current limits on the movement of water across water years included in the ROP are too limiting to provide significant help to irrigators in managing their allocations.

The Interim Water Sharing Rules in the draft WRP have adopted the same values currently in the ROP.

During the next ROP amendment, BRIG **requests** that consideration should be given to flexible rules that allow much greater volumes of carryovers or forward draws including options such as adjustment volumes to offset increased losses, rules that limit the period that carryovers would apply in response to storage spills etc., or other options as developed by DNRM.

Consideration should also be given to the implementation of continuous sharing or continuous accounting for the Bundaberg WSS, which would remove the requirement to provide for carryovers and forward draws.

#### **Issue No 35. Increased water trading flexibility**

A flexible water market within the Bundaberg WSS is essential to increase the efficiency, business flexibility and profitability of Bundaberg irrigators.

BRIG supports the concept of a streamlined process that classifies changes as either 'permitted' or 'prohibited' to allow applications to be dealt with quickly, as is currently included in the Burnett ROP. Unfortunately, the permitted distributions within zones in the Bundaberg Water Supply Scheme have proved too restrictive, particularly to meet the demand for seasonal water assignments between zones.

While water entitlement holders are able to apply to change the water allocation under s.130 of the *Water Act 2000*, it is beyond the scope of most irrigators to undertake the required assessments to demonstrate the trade will not have any impacts.

BRIG **requests** that rules with greater flexibility be developed as part of the ROP amendment, particularly to facilitate much greater volumes of temporary trades between zones. As part of this review, consideration should be given to:

- (a) Review the patterns of historical temporary trades within the scheme to ensure amended rules are as a minimum are able to facilitate similar levels of trade between zones;
- (b) Review the current water allocation limits for the Bundaberg WSS (as per Table 2, Attachment 4.1H of the Burnett ROP) and explore all options for increasing the volume of trades permitted; and
- (c) Develop a process to facilitate trades outside of these limits in a timely manner by predetermining volumetric adjustment factors (to account for an increase or decrease in transmission losses as appropriate) to allow water allocation changes to proceed without compromising WRP objectives or other alternative process as proposed by DNRM.

#### **Issue No 36. More flexible water sharing arrangements**

BRIG supports the proposal to undertake an investigation into more flexible water arrangements. In particular, BRIG **requests** that further investigation be undertaken by DNRM on the feasibility of continuous sharing for the Bundaberg WSS. Continuous sharing would provide the maximum control and flexibility to the individual allocation holder, within the constraints imposed by the Water Resource Plan.

## 7.5 Environmental Monitoring

### **Issue No 37. Environmental Monitoring to further the knowledge base on requirements to meet the environmental outcomes in the WRP**

BRIG acknowledges that reasonable attempts have been made to use the best available scientific knowledge in developing the draft Burnett WRP. However, it is clear that further monitoring and research is required to refine the environmental flow objectives and support the development of optimal rules to meet these objectives. In particular, further monitoring and research is required relating to:

- The requirements of groundwater dependent ecosystems (GDEs) in the Coastal Burnett GMA;
- Flow requirements for macroinvertebrates in the Lower Burnett River;
- Minimum required fishway operation for storages in the Bundaberg WSS; and
- Flow requirements for Burnett River estuary.

Research and monitoring targeted to these environmental requirements should be a priority following commencement of plan and the outcomes of this work and adequacy of the associated management rules should be addressed in Ministers report on plan within the first 5 years following commencement.

## 7.6 Avondale Water Board

### **Issue No 38. Conversion of existing licences to water allocations for the Avondale Water Board**

The draft Burnett WRP includes provisions to issue a Distribution Operations Licence to the Avondale Water Board and issue water allocations to the board's customers to replace the current interim water allocations.

Issuing water allocations to customers has the potential to create problems in relation to shared operational and maintenance costs within the board area if allocation holders are able to sell the allocation and transfer it to outside of the board area. While it may be possible to address this through future amendments to the Burnett Resource Operations Plan (ROP), there is currently no provision in the draft WRP to require its inclusion in the ROP.

It is acknowledged that the Avondale Water Board customers may well wish to hold their own allocation however it is important that the Avondale Water Board's commercial position is protected.

If the decision is made to proceed with issuing water allocations to Avondale Water Board customers, it is essential that the draft Burnett WRP is amended to include a provision

that requires the ROP to limit the transfer of Water Allocations within the Avondale Water Board Area only.

Alternatively, DNRM could consider including the rules to limit the transfer of water allocations outside of the Avondale Water Board within Schedule 9 of the draft Burnett WRP so that it is included in the interim rules that will apply to the Bundaberg Water Supply Scheme at the commencement of the WRP.

Both of these options ensure the Avondale Water Board's commercial position is protected and provides certainty that the issue will be addressed through the ROP.

## 7.7 Overland flow

### **Issue No 39. Notice of Works**

The importance of obtaining an accurate and honest representation of on-farm water use and associated infrastructure has been highlighted in recent processes to establish new entitlements in the Burnett WRP plan area, notably:

- During the survey of prior water harvesting entitlements in the Lower Burnett and Kolan Rivers Water Management Area where on-farm storages associated with waterharvesting were not identified and the estimations of Mean Annual Water Divisions were too low; and
- During the Notice of Works for the extension area in the CBGMA , where a significant number of irrigators significantly underestimated their groundwater take and proposed nominal allocations have had to be significantly inflated to compensate for this.

It is the best interests of irrigators to ensure their existing entitlements are captured accurately. Concerns about introducing management to a previously unregulated resource may skew the responses from irrigators and BRIG **requests** that DNRM accompany the Notice of Works process for overland flow with an education and awareness campaign to ensure irrigators understand the importance and benefits to themselves of providing accurate information.

## 7.8 Climate Change

### **Issue No 40. Cautious approach to further development in the Basin and protection of existing entitlements**

There is a need to build additional resilience into the management of existing entitlements to counteract any drying trends under future climate change. In the case of the Bundaberg WSS, any additional infrastructure that may be developed (eg. Ned Churchward Weir Stage 2) to provide for additional unallocated water, should also deliver an improvement in the performance of existing entitlements to assist in building additional resilience for existing entitlement holders.

**Issue No 41. Support use of climate change scenarios for sensitivity analysis to ensure robustness of water sharing rules**

The Burnett Basin draft water resource plan – information report (Queensland Government, 2010) identified that climate change scenarios would be included in assessments undertaken to develop the draft Burnett WRP. These were not undertaken to BRIG's knowledge.

As part of the process for amending the ROP, BRIG supports the use of a range of possible climate change scenarios for identifying vulnerabilities within the plan, including vulnerabilities contained within the water sharing rules and within the water allocations security objectives for supplemented, unsupplemented and groundwater entitlements in the Bundaberg region.