Warrego, Paroo, Bulloo and Nebine draft water resource plan and amended resource operations plan

Overview report

September 2014

This publication has been compiled by Water Planning South of Water Policy, Department of Natural Resources and Mines.

Foreword

Queensland's water resources are a critical natural resource input to advancing its economic development and productivity. Accessibility, certainty and security for water users is paramount and must be underpinned by a planning framework that strikes the appropriate balance between delivering economic, social and environmental values.

The review and renewal of the existing Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2003 and Resource Operations Plan (existing plans) ensures Queenslanders benefit from the most productive, responsible use of the state's natural water resources. In renewing the plans, the government is enabling more efficient, effective and modern water resource management to support regional communities and promote the development of a four pillar economy.

The new plans establish a water management framework which is simpler, provides for a more flexible water trading market and responsibly manages environmental risks.

As the Paroo, Warrego and Nebine catchments lie in the northern part of the Murray–Darling Basin, drafts of the new plans have been prepared to meet the requirements of the Basin Plan. They are the first of the Queensland Murray–Darling Basin plans to do so and represent a fit-for-purpose implementation of the Basin Plan as appropriate for the low level of water use in the plan area.

This overview report provides a guide to the development of the new draft Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2014 and Warrego, Paroo, Bulloo and Nebine Resource Operations Plan (the draft plans) and includes summaries of technical assessments and consultation.

The new draft plans build on the strengths and learnings of the existing plans. Any changes from the existing plans are clearly explained in this Overview Report including how community feedback was addressed, new scientific knowledge and streamlining existing provisions.

We would like to invite anyone with an interest in the water resources of the Warrego, Paroo, Bulloo and Nebine plan area i to review this document and the accompanying new draft plans, and contribute to the finalisation of the new draft plans by making a formal submission. All properly made submissions will be fully considered in finalising the plans.

Andrew Cripps MP
Minister for Natural Resources and Mines

Dr Brett Heyward
Director-General
Department of Natural Resources and Mines

How to make a submission

You are invited to make submissions on issues you believe should be considered in the draft plans' development. Anyone may contribute to the development of the new draft Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2014 and draft amended Warrego, Paroo, Bulloo and Nebine Resource Operations Plan 2014. Submissions must be made in writing and include the name, address and signature of the person or persons making the submission. An authorised officer (such as the executive officer or secretary of a committee) must sign submissions made by entities or interest groups. Respondents should clearly outline the issues that their submission concerns and include facts used to support the submission. Email and internet submissions will also be accepted and are considered to have been 'written and signed'.

A submission form must be completed and is provided in Appendix D. A form can also be downloaded from the department's website at www.dnrm.qld.gov.au.

Submissions may be made:
Online at Get Involved at www.getinvolved.qld.gov.au
Email: WRPWarregoParooBullooNebine@dnrm.qld.gov.au
Fax: 07 4529 1555

Mail:	**Deliver:**
The Chief Executive Department of Natural Resources and Mines (Attention: Warrego, Paroo, Bulloo and Nebine Water Resource Planning Coordinator)Water Services South Region PO Box 318 Toowoomba QLD 4350	The Chief Executive Department of Natural Resources and Mines (Attention: Warrego, Paroo, Bulloo and Nebine Water Resource Planning Coordinator) Water Services South Region 203 Tor St Toowoomba QLD 4350

For further information on lodging a submission contact the Department of Natural Resources and Mines on phone (07) 4529 1200.

Note: All submissions will be treated with sensitivity and wherever possible in confidence. However, submissions may be viewed by other parties under the provisions of the *Right to Information Act 2009* and the *Information Privacy Act 2009*.

Acknowledgement of the Traditional Owners of the Warrego, Paroo, Bulloo and Nebine catchments

The Department of Natural Resources and Mines (the department) acknowledges and pays respect to the Traditional Owners and their groups in the Warrego, Paroo, Bulloo and Nebine catchments. The contributions of earlier generations, including the Elders, who passed on their knowledge of natural resource management, are also valued and respected.

The department acknowledges that the Traditional Owners of these catchments have a deep cultural connection to their lands and waters and that there is a need to recognise Traditional Owner knowledge and cultural values in water planning.

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Summary

This overview report accompanies the release of a new draft water resource plan and draft amended resource operations plan for the Warrego, Paroo, Bulloo and Nebine catchments (the plan area) according to the requirements of the *Water Act 2000* (the Water Act). This report aims to explain how and why the draft plans were developed and provide a description of how water management is proposed to be undertaken for the next 10 years.

The existing water resource plan has been in place since 2003 and the outcomes and objectives of the plan have generally been successfully implemented. The factors which influence water management have evolved considerably since the release of this first plan. This 'second generation' water resource plan now being released for consultation seeks to maintain of the water security and sustainability provisions of the existing water resource plan while providing simplification and increased flexibility.

The Queensland Government is a signatory of the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin and the associated National Partnership Agreement. In accordance with these arrangements, the Warrego, Paroo, Bulloo and Nebine water resource plan and resource operations plan need to be updated to be consistent with the Murray Darling Basin Plan 2012 (Basin Plan) and the relevant sections accredited under the Commonwealth *Water Act 2007* by June 2016.

Although the on-ground management of water in the Warrego, Paroo, Bulloo and Nebine catchments is not changing significantly, a more detailed planning process consistent with the Basin Plan has been employed to develop the draft plans. These will be the first of the Queensland Murray–Darling Basin plans to do so.

Another key influence for the development of the draft plans is the Queensland Government's commitment to reduce regulatory burden and cut red tape. This has produced more streamlined documents that simplify processes and deliver direct benefits to key industries, businesses and the community.

This report discusses in detail the outcomes sought for water management and the strategies which will be put in place for the day-to-day management of water. The key issues the new draft water resource plan and draft amended resource operations plan address are:

- economic, social and environmental outcomes for the plan area
- the continued recognition of all existing water entitlements
- the expansion of the water to which the plan applies to include groundwater
- the continued reserve of small volumes of unallocated surface water for defined purposes
- a defined volume of unallocated groundwater available from specific aquifers
- a continued commitment to not allow an increase in the overall volume of surface water taken in the plan area (except where defined as unallocated water)
- simplified and rationalised environmental flow objectives and water allocation security objectives
- simplified monitoring and reporting requirements.

A key component of the water resource planning process is engaging the community and industry to provide input into the development and finalisation of the new draft water resource plan and draft amended resource operations plan.

Opportunities for community involvement will be provided through public information forums, stakeholder forums and through direct contact between the department and the community. The submission period allows the community to consider the information contained in the draft plans and accompanying overview report and provide their views and feedback through written submissions.

1 Introduction

1.1 Structure of the overview report

Preparation of an overview report is required under the Water Act. The report serves as a guide to the development of the new draft Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2014 and draft amended Warrego, Paroo, Bulloo and Nebine Resource Operations Plan 2014.

- Chapter 1 provides background information on the water planning process and the plan area.
- Chapter 2 describes the process for developing the draft plans including a summary of the preliminary consultation and technical assessments that were undertaken.
- Chapter 3 explains the provisions of the new draft water resource plan, using headings that correspond to its key chapters.
- Chapter 4 presents the main rules in the draft amended resource operations plan that will be used to achieve the outcomes of the new draft water resource plan.
- Chapter 5 outlines the process for the finalisation of the draft plans.
- Chapter 6 describes how the community can be involved in the finalisation of the draft plans, through the preparation of submissions.

Certain information contained in this report is provided to meet the requirements of Chapter 10 of the Basin Plan and this is highlighted at the appropriate places throughout the report.

1.2 Background to the water resource planning process

Under the Water Act, the Minister must plan for the allocation and sustainable management of water to meet the state's future needs. To meet these obligations, the Water Act provides for the Minister to prepare water resource plans for any part of the state. A water resource plan for a particular area specifies strategic water resource planning provisions to meet a variety of economic, social, cultural and environmental outcomes for water in the plan area.

Under the Water Act a water resource plan must be prepared:

- to define the availability of water in the plan area
- to provide a framework for sustainably managing water and the taking of water
- to identify priorities and mechanisms for dealing with future water requirements
- to provide a framework for establishing water allocations
- to provide a framework for reversing, where practicable, degradation that has occurred in natural ecosystems, including, for example, stressed rivers

- to regulate the taking of overland flow water and subartesian[1] water.

Surface water, including overland flow, has been managed under the provisions of the existing water resource plan since 2003. Appendix B provides a summary of water resource planning activities in the plan area to date.

The Water Act provides for the chief executive of the department to prepare a resource operations plan to implement the strategies of a water resource plan. A resource operations plan is a statutory instrument and does not expire; however, it may be amended or replaced to ensure consistency with the water resource plan.

The development of a new water resource plan and amended resource operations plan is strictly guided by a process specified in the Water Act. The review and renewal process enables development of a new plan that addresses water resource issues that have emerged over the previous 10 years, including any requirements for future growth.

The Water Act now provides for the concurrent development of a water resource plan and resource operations plan. This streamlines the water planning process by enabling both plans to be released together, which provides stakeholders with an opportunity to comment on both strategic and operational components of water planning at the same time.

For further information on the water planning process refer to department's website at www.dnrm.qld.gov.au.

[1] Subartesian water is referred to as groundwater in this document and the new draft water resource plan and draft amended resource operations plan. Groundwater is defined in the new draft water resource plan as underground water that is subartesian water not connected to artesian water.

1.3 A new water resource plan and amended resource operations plan for the Warrego, Paroo, Bulloo and Nebine catchments

1.3.1 Timeframe to renew the plans

Under section 52A of the Water Act, a water resource plan expires after 10 years and is replaced, unless it is repealed prior to this date or its expiry is postponed to a maximum life of 20 years.

The existing water resource plan was due to expire by 1 September 2014. However, the expiry of all Queensland Murray-Darling Basin plans was extended to 30 June 2019 under amendments to the Water Act in May 2013. This date was selected to align with the implementation timeframes of the Basin Plan and to enable the Commonwealth's water recovery program[2] to be completed before the plans were reviewed.

By 30 June 2019, all water resource plans in the Queensland Murray–Darling Basin area will be reviewed and updated to meet the requirements of the Basin Plan. Queensland nominated the existing water resource plan and its accompanying resource operations plan as the first plan to be prepared in line with the Basin Plan.

1.3.2 The plan area and the water to which it applies

The plan area (see Figure 1) comprises four catchments with the Warrego, Paroo and Nebine catchments draining to the Murray–Darling Basin system. The Bulloo catchment is a closed drainage system. The existing water resource plan applies to:

- all water in watercourses, lakes or springs
- all water collected by dams or weirs associated with a watercourse, lake or spring
- overland flow water.

The new draft water resource plan proposes to add subartesian groundwater not connected to the Great Artesian Basin (GAB).

The surface water in the plan area is separated into five water management areas and a water supply scheme. Unsupplemented water is managed within a water management area, where access to water relies on natural flows. Supplemented water is managed within the Cunnamulla Water Supply Scheme, where access to water depends upon supplies from Allan Tannock Weir. The plan area is separated in this way to facilitate the application of water sharing rules.

The Basin Plan requirements apply to the Warrego, Paroo and Nebine catchments (but not the Bulloo) and require management of surface water and groundwater in that part of the plan area.

[2] www.environment.gov.au/topics/water/rural-water/restoring-balance-murray-darling-basin/progress-water-recovery

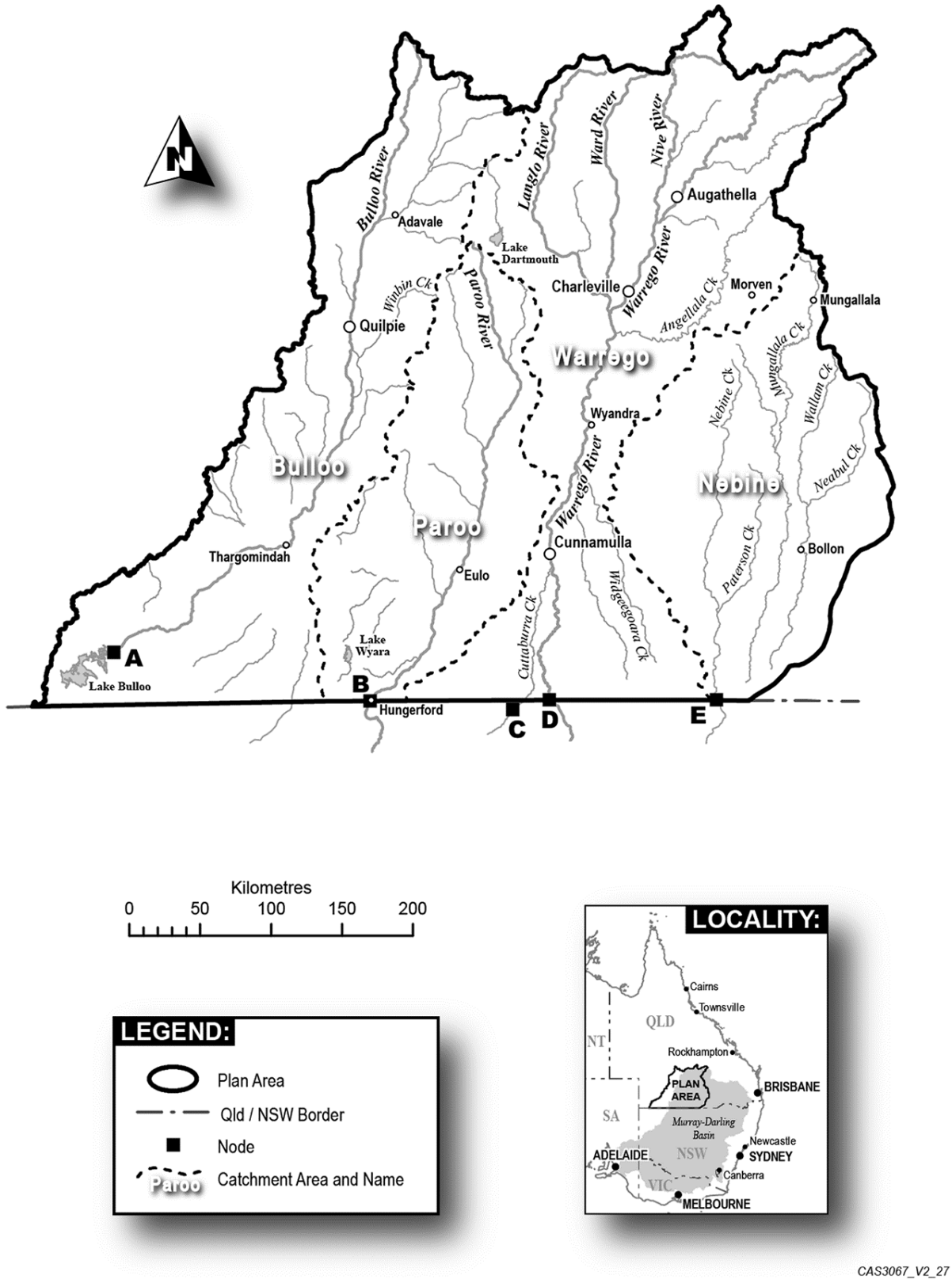

Figure 1 Warrego, Paroo, Bulloo and Nebine plan area

1.4 Description of the Warrego, Paroo, Bulloo and Nebine plan area

The Warrego, Paroo, Bulloo and Nebine catchments comprise a total area of approximately 253,000 km^2 within Queensland and New South Wales. The plan area for the new draft water resource plan is comprised of only the Queensland portions of the Warrego, Paroo, Bulloo and Nebine catchments which cover approximately 190,956 km^2. The plan area is bounded to the west by the Cooper Creek catchment and by the Condamine and Balonne catchment to the east.

The watercourses in the plan area include the Warrego River, Paroo River, Bulloo River, Nebine Creek, Wallam Creek, Mungallala Creek and Cuttaburra Creek. The plan area is considered to be an arid region, with rainfall varying both spatially and across time.

The urban centres located in the catchment are Charleville, Cunnamulla and Quilpie. Charleville is the largest of the three urban centres with a population of approximately 4 600 (ABS, 2011) and is located approximately 750 km west of Brisbane. Most town water supply is sourced from groundwater in the Great Artesian Basin, which is managed under the Water Resource (Great Artesian Basin) Plan 2007.

The plan area includes all or part of the following seven local government areas:

- Bulloo Shire Council
- Blackall-Tambo Regional Council
- Quilpie Shire Council
- Murweh Shire Council
- Paroo Shire Council
- Western Downs Regional Council
- Balonne Shire Council
- Maranoa Regional Council

The plan area is home to several iconic floodplain plant species including Coolibah and Lignum and eighteen species of native fish including Murray Cod - listed as vulnerable under the *Environment Protection Biodiversity and Conservation Act 1999 (Commonwealth).* In the plan area, 57 species of waterbirds have been recorded and the Bulloo Floodplain, Paroo Floodplain, Currawinya Lakes, Lake Numalla and Lake Bindegolly have been identified as nationally and internationally important bird habitats (DSITIA, 2013[4]).

1.4.1 People of the plan area

The population in the plan area was approximately 8230 in 2011 (DNRM, 2014[1]). Census data shows that between 2001 and 2011, the population of the plan area increased by approximately 0.47 per cent (DNRM, 2014[1]).

The Office of Economic and Statistical Research (2011) forecast that the population is not expected to grow significantly, projecting a population change of between -0.37 per cent and 0.35 per cent by 2031. It is therefore unlikely that water use in urban areas will increase considerably over the life of the new plan.

The census data indicates that approximately 15 per cent of the total population identifies as of Aboriginal or Torres Straight Island descent (DNRM, 2014[1]). There are six Aboriginal groups that are located in the plan area: Kooma, Bidjara, Kunja, Mardigan, Budjiti and Kullilli.

Unemployment in the plan area has been generally lower when compared to the whole of Queensland. From 2001 to 2011, the agriculture, forestry and fishing industry sector employed over 20 per cent of the labour force in the plan area (DNRM, 2014[1]).

1.4.2 Industry in the plan area

Grazing is the dominant land use in the plan area, with some broadacre cropping and small pockets of intensively irrigated agricultural production also present (DNRM, 2014[1]). The production and slaughter of livestock is a key contributor to the economy of the plan area. Beef cattle and wool production are the primary agricultural enterprises. Other industries in the plan area include opal mining in the Bulloo and Paroo catchments, and natural gas production in the Bulloo. There is some exploratory activity in the coal seam gas sector, with three exploration bores constructed in the plan area in 2010 (DNRM, 2014[1]). Tourism is also a component of the economy of the plan area, with visitors being attracted to the natural features of the plan area such as the Ramsar listed wetlands as discussed in Section 1.5.6 of this report.

Socioeconomic analysis indicates that there is some potential for future growth in the agricultural sector (DNRM, 2014[1]). Although significant demands for water are not expected, the ongoing sustainable management of water resources will be vital to support existing and emerging agricultural industries. The tourism industry, while only a minor part of the overall economy, is also undergoing growth in the plan area. The continued protection of the natural values that attract tourists to the plan area will remain an important feature of water resource management for the future. At this stage, there was no evidence in the socio-economic analysis to suggest that the mining sector will seek significantly higher quantities of water over the life of the new plan (DNRM, 2014[1]).

1.4.3 Water use in the plan area

The Cunnamulla Water Supply Scheme on the Warrego River is managed by SunWater and is the only water supply scheme in the plan area. The Cunnamulla Water Supply Scheme encompasses the Allan Tannock Weir which supplies water to the town of Cunnamulla and local irrigators. There are 28 water allocations (i.e. water entitlements that are separate from land) in the Cunnamulla Water Supply Scheme with a total nominal volume[3] of 2612 megalitres (ML) (DNRM, 2013[2]). These are all medium priority water allocations, as no high priority allocations are currently present in the Cunnamulla Weir Water Supply Scheme.

The plan area also contains unsupplemented water supplies. An unsupplemented supply is one that is not linked to releases of stored water and relies on natural flows of water. There are 52 unsupplemented surface water allocations within the plan area with a total nominal volume of 51,112 ML (DNRM, 2013[2]). This volume includes 9000 ML of water held by the Commonwealth Environmental Water Holder under three water allocations. Unsupplemented water is also managed through volume-based water licences (a licence attaches to land). There are 10 surface water licences with a total nominal entitlement[4] of 269.4 ML (DNRM, 2013[2]). There are a total of 5 surface water entitlements for various purposes such as stock and domestic, re-lift and irrigation with no volume or area specified (DNRM, 2013[2]).

[3] Nominal volume as per the *Water Act 2000*, means, (a) for a water allocation managed under a resource operations licence—the number used to calculate the allocation's share of the water available to be taken by holders of water allocations in the same priority group; and (b) for a water allocation not managed under a resource operations licence—the number used to calculate the allocation's share of the water available to be taken by holders of water allocations in all water allocation groups in a water resource plan area.

[4] Nominal entitlement as per the Water Regulation 2002 is the volume of water authorised to be taken during a water year under a water licence.

Both supplemented and unsupplemented water allocations are able to be traded separate to land in the plan area. The first trades were recorded in the plan area in 2008-09 (DNRM, 2013[2]). Water is also reserved in the plan area for future use.

Overall, there is little surface water resource development in the plan area with a remaining mean annual end-of-system flow of 99 per cent for the Bulloo and Paroo catchments, 89 per cent for the Warrego catchment and 87 per cent for the Nebine catchment. These percentages are calculated by comparing the current level of development in the plan area to a scenario where no development of water resources is present. A mean annual end-of-system flow close to 100% signifies that there has been little change to the flows in the catchment from water resource development.

Currently groundwater is not managed under the existing water resource plan but is managed under the Water Regulation 2002 as declared subartesian areas. The take of groundwater for non-stock and domestic purposes requires a licence. Currently, there are 16 groundwater licences with a total nominal entitlement of 449 ML (DNRM, 2013[2]). There are a total of 14 groundwater entitlements for stock and domestic purposes with no volume or area specified (DNRM, 2013[2]).

Similar to surface water resource development, there is little groundwater resource development in the plan area with more reliable sources of artesian water being accessed from the Great Artesian Basin. The take of artesian water is managed under the Water Resource (Great Artesian Basin) Plan 2006.

1.5 Links with other planning initiatives

In developing the new draft water resource plan, the Minister considered national, state and regional sustainable development goals and all sustainable management strategies and policies relevant the plan area. The major strategies and policies for the plan area are summarised below.

1.5.1 Murray–Darling Basin Plan

The Basin Plan commenced on 22 November 2012 under the *Water Act 2007* (Commonwealth). The Basin Plan aims to protect and restore the environmental health of the surface water and groundwater of the Murray–Darling Basin, while optimising the social and economic outcomes arising from the use of water resources from the system.

Many of the Basin Plan provisions will be implemented through existing state government statutory instruments and policy arrangements. A package of the required provisions is to be submitted to the Murray-Darling Basin Authority for accreditation under the *Water Act 2007 (Commonwealth).* For Queensland, these provisions will be contained in the following documents:

- state water resource plan and resource operations plan prepared by the Department of Natural Resources and Mines
- Healthy Waters Management Plan prepared by the Queensland Department of Environment and Heritage Protection and South West NRM Ltd
- technical assessments including risk assessments relating to water quantity, quality and the health of water-dependent ecosystems
- provisions in various State legislation and regulations
- metering policies and standards
- information e.g. types of water use and consultation processes.

The new draft water resource plan and draft amended resource operations plan are the first of the Queensland Murray–Darling Basin plans to have been prepared to meet the requirements of the Basin Plan.

As the Basin Plan requirements also address water quality, joint-consultation will be conducted in 2014 between the Department of Natural Resources and Mines and the Department of Environment and Heritage Protection across Warrego, Paroo and Nebine catchments to explain the process. The general public will be provided with the opportunity to provide comment on instruments that address the Basin Plan requirements at this time.

Under Chapter 10 of the Basin Plan, State Governments must demonstrate to the Murray-Darling Basin Authority that Basin Plan provisions have been considered in the development of new draft plans. Where required, this overview report explains how Basin Plan provisions have been met, as indicated by these grey text boxes.

1.5.2 Long-term average sustainable diversion limits

Section 10.03 *of the Basin Plan specifies that a water resource plan must identify each surface water and groundwater sustainable diversion limit (SDL) resource unit in the plan area and the water resources within each SDL resource unit.*
The SDL resource units and the water resources within each SDL resource unit must be selected from the lists provided in the Basin Plan. This section fulfils this requirement by specifying the SDL resource units that apply to the Warrego, Paroo and Nebine catchments, noting that the Bulloo catchment and the Queensland part of the Great Artesian Basin are not subject to the Basin Plan.

A key component of the Basin Plan is the establishment of long-term SDLs for surface water and groundwater resource units in each plan area. SDLs reflect a sustainable level of water use. The implementation of SDLs enables water to be taken for consumptive uses, such as town water supplies, stock and domestic, industry and agriculture, while ensuring there is enough left in the system to achieve healthy surface water and groundwater environments (MDBA, 2013[1]).

The Basin Plan sets an SDL for each catchment and aquifer in the Basin, as well as an overall limit for the Basin as a whole. The SDL is then compared to the Baseline Diversion Limit (BDL). The BDL is a representation of the current level of consumptive water use. If the BDL exceeds the SDL, this indicates that current water use is higher than a sustainable level of water use. Where this occurs, the Basin Plan requires that the volume of water taken for consumptive purposes needs to be reduced back to the SDL. The Australian Government aims to achieve this through a combination of investment in infrastructure efficiency, water buybacks from willing sellers and through water resource plans that manage use to the SDL.

There are three surface water SDL resource units identified in the plan area, as shown in Table 1. These match the plan area boundaries as shown in Figure 1. For all surface water SDL resource units in the plan area, the difference between the BDL and the SDL is zero. This means that the current level of consumptive water authorisations is considered to be sustainable over the long-term. As a result, there is no surface water volume earmarked for water recovery in the Warrego, Paroo or Nebine catchments under the Basin Plan. Nor can there be an increase in surface water allocations above what is currently accounted for in the existing water resource plan. The unallocated water reserves accounted for in the existing water resource plan are within the SDL. Surface water in the Warrego, Paroo and Nebine is therefore considered to be fully allocated taking unallocated water reserves into consideration.

Table 1 Surface water SDL resource units in the plan area and the water to which they apply

Surface water SDL resource unit (code) in the plan area	Water resources within the surface water SDL resource unit	Estimated BDL (GL/y)	Estimated long-term average SDL (GL/y)
Paroo (SS29)	All surface water resources within the resource unit as mapped by the MDBA.	9.9	9.9
Warrego (SS28)	All surface water resources within the resource unit as mapped by the MDBA.	120[5]	120
Nebine (SS27)	All surface water resources within the resource unit as mapped by the MDBA.	30[6]	30

There are three groundwater SDL resource units identified in the plan area under the Basin Plan. In addition, a portion of the St George Alluvium aquifer overlaps the Nebine catchment and is therefore captured for management for the plan area. These three groundwater SDL resource units are described in Table 2 and shown on the Groundwater Unit map in section 3.3.6.

Table 2 Groundwater SDL resource units in the plan area and the waters to which they apply

Groundwater SDL resource unit (code)	Water resources within the groundwater SDL resource unit	Estimated BDL (GL/y)	Estimated long-term average SDL (GL/y)
Sediments above the Great Artesian Basin: Warrego–Paroo–Nebine (GS60)	All groundwater in the Allaru Mudstone, Glendower formation, Winton formation and Griman creek formation aquifers.	1.21	99.2
St George Alluvium: Warrego–Paroo–Nebine (GS63)	All groundwater in the aquifers of the St George Alluvium (shallow)	0.12	24.6
Warrego Alluvium (GS66)	All groundwater in the aquifers of the Warrego Alluvium.	0.70	10.2

*Note: A portion of the St George Alluvium aquifer overlaps the Nebine catchment and is therefore considered under State Government water management for the plan area.

The groundwater SDL resource units are groundwater in aquifers above the Great Artesian Basin, meaning they are subartesian water aquifers. Subartesian water is water that occurs in an aquifer, which if tapped by a bore, would not naturally flow to the surface. For subartesian water in the plan area, the SDL exceeds the BDL in three of the four resource unit areas: (1) Sediments above the Great Artesian Basin, (2) Warrego Alluvium, and (3) the shallow portion of the St George Alluvium. This means that additional water can be released for consumptive use from these resource units without impacting on the sustainable use of the groundwater system.

[5] This figure omits the 8 GL/yr gifted to the Australian Government, referred to in the Basin Plan as the *local reduction amount*.
[6] This figure omits the 1 GL/yr gifted to the Australian Government, referred to as the *local reduction amount* in the Basin Plan.

In the St George Alluvium: Condamine-Balonne (deep) resource unit the difference between the BDL and the SDL is zero. As described above for the surface water SDL resource units, this means that the current level of consumptive water use in this resource unit is considered to be sustainable over the long-term. As a result, no groundwater is required to be surrendered to the Australian Government from the deep portion of the St George Alluvium. However, the deep portion of the St George Alluvium is considered to be fully allocated and therefore the draft plans will not include rules allowing an increase to the volume of water taken from this resource unit.

1.5.3 Other State planning initiatives and legislation

Water Resource (Great Artesian Basin) Plan 2006

Artesian groundwater in the plan area is managed under the *Water Resource (Great Artesian Basin) Plan 2006*. Most groundwater used in the plan area is sourced from the Great Artesian Basin as supplies are reliable and the quality is good. Artesian water is water that occurs in an aquifer, which if tapped by a bore, would flow naturally to the surface. Only subartesian groundwater not connected to the Great Artesian Basin will be managed under the draft plans.

Environmental Protection (Water) Policy 2009

The Environment Protection (Water) Policy 2009 (EPP Water) is subordinate legislation to the *Environmental Protection Act 1994* and aims to protect Queensland's waters while allowing for development that is ecologically sustainable.

The EPP Water establishes Healthy Waters Management Plans as a key planning mechanism to improve the quality of Queensland waters. The draft South West Healthy Waters Management Plan has been prepared for the plan area by the Department of Environment and Heritage Protection (EHP) and South West NRM Ltd.

Section 47 of the Water Act specifies that the Minister must consider water quality and environmental values established under the EPP Water when preparing a draft water resource plan. As a result, the department consulted EHP throughout the development of the draft plans. Environmental values identified in the draft South West Healthy Waters Management Plan were considered when reviewing the outcomes of the existing water resource plan. The results of water quality monitoring were also considered when reviewing the monitoring program undertaken by SunWater for the Cunnamulla Water Supply Scheme.

The alignment of the draft South West Healthy Waters Management Plan and the draft plans also ensures a coordinated approach to meeting the requirements of the Basin Plan. EHP and the department will conduct joint-consultation across the plan area for the finalisation of these key planning instruments. The draft South West Healthy Waters Management Plan will be a large component of the Water Quality Management Plan required for the Basin Plan water resource plan package. Refer to section 1.5.1 for further information on the requirements of the Basin Plan.

It is important to note that while water resource plans can support good water quality outcomes, there are many other pressures on water quality that are external to water resource planning provisions. Such pressures include point source pollution, poor land use management, and degradation of riparian vegetation and wetlands.

Sustainable Planning Act 2009

The *Sustainable Planning Act 2009* (SPA) seeks to achieve ecological sustainability by:

- managing the process by which development takes place including ensuring the process is accountable, effective and efficient and delivers sustainable outcomes

- managing the effects of development on the environment (including managing the use of premises)
- continuing to coordinate and integrate planning at local, regional and state levels.

The draft plans support sustainable water resource development within the Warrego, Paroo, Bulloo and Nebine catchments and are consistent with the coordinated SPA processes for approving new development.

Water Regulation 2002

The *Water Regulation 2002* (the Regulation) prescribes requirements for implementation and administration of particular sections of the Water Act. In relation to the plan area, the Regulation will provide the process for releasing unallocated surface water and groundwater from the reserve and provide for metered entitlements as specified in the draft amended resource operations plan.

Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) seeks to protect biological diversity by:

- promoting ecologically sustainable use of wildlife
- promoting ecologically sustainable development
- outlining criteria for establishing and managing protected areas.

The NC Act supports ecological sustainable development and the protection of wildlife in defined areas like national parks and conservation areas. The Currawinya National Park is a notable feature of the plan area, containing an array of lakes and wetlands that provide a refuge for local and international wildlife.

The new draft plans include outcomes, strategies and environmental management rules that provide for the sustainability of the natural environment within the Warrego, Paroo, Bulloo and Nebine catchments. Periodic monitoring programs are also conducted to collect information on the health of the environment.

1.5.4 New South Wales planning initiatives and legislation

Intergovernmental Agreement for the Paroo River

The Paroo River catchment contains ecological and environmental assets of national and international importance. It also contains areas of high economic, social, heritage and cultural value. On 18 July 2003, the Intergovernmental Agreement for the Paroo River between New South Wales and Queensland (the Agreement) was approved. Through the establishment of the Agreement, there was a joint recognition of the unique character of the Paroo River and the need for cooperative sustainable management of water resources between the States to maintain the values of the system. The draft plans are in line with the guiding principles of the Agreement.

1.5.5 National Water Initiative

The Queensland Government is a signatory of the Intergovernmental Agreement on Implementing Water Reform in the Murray-Darling Basin and the associated National Partnership Agreement, part of which is a commitment the Warrego, Paroo, Bulloo and Nebine water resource plan will seek accreditation to the Commonwealth *Water Act 2007* -Basin Plan 2012 (Basin Plan) by June 2016. The key objectives of the National Water Initiative aim to achieve the following (NWC, 2010):

- transparent, statutory-based water planning

- promote economically efficient and sustainable use of water resources, notably by introducing water trading, where practicable, to allow water to move to high-value or best benefit uses
- improve security and certainty for water users to support confident forward planning through clearly defined entitlements
- provide water to maintain healthy ecosystems
- engage with stakeholders in progressing the water reform program
- promote national accounting standards through the introduction of meters to support monitoring and reporting goals.

The National Water Initiative also recognises the need for connected surface water and groundwater systems to be managed as a single resource.

Queensland's commitments to the water reform agenda and the National Water Initiative are met principally through the Water Act.

1.5.6 International treaties and agreements

The Convention on Wetlands of International Importance (Ramsar Convention)

The Convention on Wetlands of International Importance (known as the Ramsar Convention) was adopted in 1971. The convention aims to halt the worldwide loss of wetlands and to conserve remaining wetlands through wise use and careful management. The Ramsar Convention encourages the designation of sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity. Australia was one of the first signatories.

Currawinya Lakes in the Paroo Catchment was listed as a Ramsar internationally important wetland in 1996. The Currawinya wetlands, including Lake Numalla and Lake Wyara, provide breeding habitat for thousands of waterbirds, including international migratory species. The wetlands provide a refuge in drought conditions not only for birds, but also amphibians, reptiles and fish. The draft plans have been prepared to achieve outcomes to preserve Currawinya Lakes. These include maintaining the near natural flow regime of the Paroo Rivers and sustaining the ecological values of Currawinya Lakes and other significant wetlands in the Paroo.

Migratory Birds

Australia is a party to the following treaties that protect birds which migrate between Australia and Japan, China or the Republic of Korea:

- Japan Australia Migratory Bird Agreement (JAMBA)
- China Australia Migratory Bird Agreement (CAMBA)
- Republic of Korea Migratory Bird Agreement (RoKAMBA)

The treaties provide for cooperation between Australia and these countries on measures for the management and protection of migratory birds and their environments, including the Currawinya wetlands Lake Numalla and Lake Wyara -and require each country to take appropriate measures to preserve and enhance the environment of the birds protected under the treaties.

2 Development of a new water resource plan and amended resource operations plan

The development of a new water resource plan and amended resource operations plan is specified in the Water Act. The preparation of the new draft water resource plan began with an initial data collection, preliminary consultation and assessment.

Section 10.49 of the Basin Plan states that a water resource plan must be based on the best available information. The sources of information on which the water resource plan is based must be identified and described. The following section fulfills this requirement by referencing and describing the sources of information used to develop the draft plans. The use of measures such as consultation, peer-review and literature from the Murray-Darling Basin Authority Knowledge and Information Directory ensures the draft plans were based on the best available information.

2.1 Implementation review report

An Implementation review report was prepared to examine and document the performance of the existing water resource plan and resource operations plan over the last 10 years (DNRM 2013[1]). Preliminary consultation was conducted with a number of stakeholders in the plan area to enhance understanding of the performance of the existing plans. Information was also gathered on suggested improvements for inclusion in the draft plans.

Public information sessions were held throughout the plan area, providing the general community with the opportunity to provide feedback on existing water planning arrangements and contribute to the development of the draft plans. Meetings were also held with the following key stakeholders:

- irrigators and water users, particularly in relation to Allan Tannock Weir in the Cunnamulla Water Supply Scheme
- local governments
- Peak Body (Water) Consultation Group—representatives from key industry and community stakeholder groups with urban or rural interests in Queensland waters
- SunWater (operators of the Cunnamulla Water Supply Scheme)
- South West NRM Ltd
- Aboriginal groups including the Northern Basin Aboriginal Nations (NBAN) and Far South West Aboriginal Natural Resource Management Group and Traditional Owners
- Murray–-Darling Basin Authority (MDBA).

The results of this consultation contributed to the preparation of the Implementation Review Report. The report includes the following:

- background information about the water planning process and catchment area
- an assessment of the effectiveness of the existing water resource plan and resource operations plan

- the identification of key water planning issues to be dealt with under the new draft water resource plan and draft amended resource operations plan

- information on the process to develop a new draft water resource plan and draft amended resource operations plan.

The Implementation Review Report indicated that the existing water resource plan and resource operations plan have been successful in achieving plan outcomes. Suggested areas of improvement included addressing Basin Plan requirements, including groundwater management, recognising Aboriginal values and uses, and reviewing the operation of Allan Tannock Weir.

To view the full report, refer to the Warrego, Paroo, Bulloo and Nebine catchments webpage at www.dnrm.qld.gov.au.

2.2 Technical assessments

Technical assessments were undertaken to inform the development of the draft plans and included hydrologic, social and economic, cultural, environmental and risk-based assessments. Technical assessments provide information on the effectiveness of the existing water resource plan strategies and resource operations plan rules as well as making recommendations for the development of the draft plans.

Section 10.50 of the Basin Plan states that a water resource plan must identify any significant method, model or tool that has been used to develop a water resource plan. The methods, models and tools used in the following technical assessments have been described in order to fulfill this requirement.

A detailed summary of the hydrologic, cultural, social and economic, environmental and risk assessments and how their recommendations have been addressed are contained in Appendix C.

3 New draft Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan

3.1 Outcomes for the sustainable management of water

Each water resource plan states proposed outcomes for the sustainable management of water. The outcomes have been reviewed and modernised to reflect issues raised in technical assessments and through consultation and to ensure they are measurable and specifically related to management of flows and extraction. The following are the main changes to the outcomes in the new draft plan:

- The overall outcomes for water in the plan area acknowledge that change has occurred due to water development and that ongoing management to balance a range of outcomes can maintain the sustainability of the system.

- The outcomes reflect a balance between the economic, social and ecological elements of sustainable development.

- The social outcomes in the new draft plan recognise Aboriginal values and uses of water in the plan area.

- Ecological outcomes better reflect flow requirements of the key ecological assets identified in the Environmental Assessment.

In considering the outcomes, it is important to note that the new draft water resource plan (and the existing water resource plan) only manages flow-related impacts. Other factors that affect the aquatic ecosystem, such as land management impacts on water quality, are addressed through other measures such as the draft Healthy Waters Management Plan for the South West NRM Region of Queensland.

The outcomes presented below have been used to guide the development of strategies detailed in Chapter 5 of the new draft water resource plan and rules in the draft amended resource operations plan.

3.1.1 Economic outcomes

The new draft water resource plan will manage water in a way which seeks to support specific economic outcomes. These outcomes have been drawn from the results of community consultation, technical reports and the existing water resource plan. Each of the following is an economic outcome for water in the plan area—

a) provision for the use of water entitlements and other authorisations in the plan area
b) protection of the following -
    i. the probability of being able to take water under a water entitlement
    ii. the productive base of groundwater
c) the support of an effective and efficient market in water allocations
d) availability of water for the following-
    iii. growth in industries dependent on water resources in the plan area;
    iv. traditional owners in the plan area dependent on water resources in the plan area to achieve their economic aspirations
    v. stock purposes in the plan area
    vi. tourism in the plan area
e) maintenance of flood flows to support grazing activities in the plan area.

3.1.2 Social outcomes

The new draft water resource plan will manage water in a way which seeks to support specific social and cultural outcomes. These outcomes have been drawn from the results of community consultation, technical reports and the existing water resource plan. Each of the following is a social outcome for water in the plan area—

a) availability of water for the following—
    i. population growth in towns and communities dependent on water resources in the plan area;
    ii. traditional owners in the plan area dependent on water resources in the plan area to achieve their social aspirations;
    iii. domestic purposes in the plan area;
b) maintenance of flows that support water-related aesthetic, cultural and recreational values in the plan area, including the cultural values of the traditional owners in the plan area.

3.1.3 Ecological outcomes

The new draft water resource plan will manage water in a way which seeks to support specific ecological outcomes. These outcomes have been drawn from the results of community consultation, technical reports and the existing water resource plan. The proposed ecological outcomes are more specifically linked to the ecological assets of the plan area while still representing all the attributes described in the outcomes of the existing water resource plan. These

outcomes will provide a basis for managing water resources to minimise the impacts of water resource development on flow patterns and the physical and natural values they support.

Each of the following is an ecological outcome for water in the plan area—

a) minimisation of changes to the natural variability of flows that support aquatic ecosystems;
b) maintenance of the near natural flow regime that supports the Paroo River and Bulloo River;
c) maintenance of flow regimes that support—
    iv. waterholes;
    v. river channels;
    vi. habitat for flow spawning fish.
    vii. floodplain vegetation and wetland systems in the plan area, including the following-
        A) Currawinya Lakes
        B) Paroo Overflow Lakes
        C) Bulloo Lakes.

3.2 Performance indicators and objectives

Chapter 4 of the new draft water resource plan describes the performance indicators and objectives for water allocation security and environmental flows. The objectives are assessed in terms of performance indicators, which are defined in the Water Act as 'a measure that can be calculated and is stated in a water resource plan to assess the impact of an allocation and management decision or proposal on water entitlements and natural ecosystems'.

Section 10.50 of the Basin Plan states that a water resource plan must identify any significant method, model or tool that has been used to develop a water resource plan. The methods used to develop the environmental flow objectives and water allocation security objectives have been described in the sections below to fulfill this requirement.

Performance indicators and objectives work together to define a particular level of performance for water allocations or for environmental assets. The performance indicator defines the measure to be calculated; the objective defines the specific level which must be achieved. For example, one of the performance indicators used in the new draft water resource plan is the mean annual flow—which is the average amount of water flowing past a particular location each year. If the environmental flow objective (for mean annual flow at a given location) is given as 89 per cent, the two parts work together to ensure that the mean annual flow must not be less than 89 per cent of what it was predicted to have occurred under natural conditions.

Future decisions that could potentially affect the allocation and management of water in the plan would only be approved if it is demonstrated that they are consistent with the objectives defined in Chapter 4 of the new draft water resource plan. Examples of such future activities include new water resource development, water trades or proposed changes to operational rules. Compliance with the performance indicators and objectives is separate to any other approvals that may be required - for example, approvals for works under the *Sustainable Planning Act 2009*.

Generally, the impact and consistency of decisions with the new draft water resource plan's objectives will be assessed using the Department of Science, Information Technology, Innovation and the Arts Integrated Quantity and Quality Model computer program (hydrologic model), as described in Appendix C of this report. This program simulates stream flows in the plan area over the new extended period from 1889 to 2011 (122 years).

3.2.1 Performance indicators for environmental flow objectives

Section 10.28 of the Basin Plan specifies that a water resource plan must ensure there is no net reduction in the protection of planned environmental water than previously provided for under State water management law before the commencement of the Basin Plan.

Under the existing water resource plan there are a suite of performance indicators, those being:

- End of system flow
- Low flow
- Summer flow
- Beneficial flooding flow
- 1 in 2 year flood

The suitability of these existing performance indicators have been reassessed against the new draft plan outcomes. A new set of performance indicators have been identified which work more effectively and are clearly linked to the ecological assets identified in the environmental assessment reports. The ecological assets for the plan area are:

- waterholes as refugia
- river channel maintenance and scouring of waterholes
- floodplain vegetation and wetlands
- flow spawning fish.

A new set of appropriate flow based performance indicators were developed for these ecological assets. These are shown in Table 3. These indicators were tested against the 'worst case' trading of water up and down the system and because of the low level of extraction associated with the entitlements, none of the indicators was found to provide a constraint.

Table 3 Ecological assets, flows and performance indicators developed for the new draft water resource plan.

Ecological asset	Flow	Performance indicator
Waterholes as refugia	Cease to flow	The total number of days in no-flow spell periods exceeding 1.5 years expressed as the percentage of the period of simulation.
River channel maintenance and scouring of waterholes	Medium/high flow	The total number of days of flow above bankfull discharge expressed as the percentage of the period of simulation.
Floodplain vegetation and wetlands	High flow	The total number of days in spells of more than four years between floodplain inundation events expressed as the percentage of the period of the simulation.
Flow spawning fish	Medium flow	The total number of days in spells lasting more than four years between fish spawning events expressed as the percentage of the simulation.
Flow dependent ecosystems	End of system mean annual flow	Mean annual flow

Hydrologic modelling has shown that the new draft water resource plan will achieve all its ecological outcomes with the new rationalised set of performance indicators. This is because of the low to very low level of water resource development in the plan area and also that the plan ensures no additional water is allowed to be taken beyond that already specified (i.e. water allocation is 'capped'). Even in 'worst case' trading trials that were tested in the hydrologic model, there is no change to the level of risk posed to any of the ecological assets.

Consequently, mean annual flow will be the only performance indicator for environmental flow objectives in the new draft water resource plan and will be assessed at the end of each river system and at the New South Wales and Queensland border for the Warrego River.

3.2.2 Node locations

As part of the assessment of the existing and new performance indicators the locations for the new performance indicators were assessed by examining the distribution of the ecological assets and the pattern of water resource development.

Under the existing water resource plan there are 10 node locations that are located at the Queensland and New South Wales border and within the catchments. Overall, it was determined that node locations within the catchments are not necessary due to the low level of water resource development and/or ecological assets being protected by operational rules for infrastructure.

The end of system node locations for the Paroo, Bulloo and Nebine has remained unchanged from the existing water resource plan. The assessment of the mean annual flow performance indicator

at the end of the relatively undeveloped Paroo and Bulloo system would ensure the protection of downstream ecological assets such as Lake Bulloo and prevent future changes from increasing water extraction from the catchments. For the Nebine, the end of system node location allows for assessment of any potential impacts by existing water allocations, ensuring protection of waterholes and floodplains.

For the relatively more developed Warrego catchment, the end-of-system flow in the existing water resource plan is an estimation of the combined flows from the Warrego River, Cuttaburra Creek and the ungauged Widgeegoara and Noorama breakout flows into a single node. In the new water resource plan mean annual flow for flows in the Warrego catchment leaving Queensland are assessed more accurately at two separate nodes—the Warrego River at Barringun and the Cuttaburra Creek at Turra. Cuttuburra Creek at Turra has been included as a node location to ensure there is no reduction in mean annual flows entering New South Wales and to provide flows to significant wetlands such as Yantabulla Swamp.

The end of system node location is also essential in controlling long term growth in water extraction and protection of environmental processes that are not currently at risk and not identified explicitly.

The new node locations are shown in table 4.

3.2.1 Environmental flow objectives

The environmental flow objectives for mean annual flow in the new draft water resource plan are the same as those in the existing water resource plan for the Bulloo, Paroo and Nebine catchments end of system nodes.

The environmental flow objective for the Warrego River at the border of Queensland and New South Wales in the existing water resource plan is 89 per cent. For the new draft water resource plan, two new environmental flow objectives are now required for the two new node locations (which have replaced the single assessment point in the existing water resource plan). The proposed environmental flow objectives are 87 per cent for the Warrego River at Barringun and 93 per cent for Cuttaburra Creek at Turra.

This change in values does not represent any change to the volume or pattern of water flowing across the state border as the locations and conditions modelled for water entitlements is the same in both instances.

Table 4 Environmental flow objectives and node locations

Performance indicator	Node	Environmental flow objective
Mean annual flow	Bulloo River at the inflow to Lake Bulloo	99
	Paroo River at the border of Queensland and New South Wales	99
	Cuttaburra Creek at Turra	93
	Warrego @ Barringun (referred to as Warrego River at the border of Queensland and New South Wales in the draft plans)	87
	Nebine Creek at the border of Queensland and New South Wales	87

Meeting the set of environmental flow objectives will ensure that future decisions made under the water resource plan will protect flow regimes that contribute to the health of natural ecosystems, and will enable the plan's ecological outcomes to be achieved.

3.2.2 Performance indicators for water allocation security objectives

In assessing the performance of the existing water resource plan in protecting security of entitlements, the performance indicators were reviewed. The existing performance indicators for supplemented and unsupplemented water allocations are:

- The annual volume probability, and
- The 45 per cent annual volume probability.

The review found that the annual volume probability provides adequate protection for water allocations across a range of trading situations. Added protection is provided in combination with other water resource plan requirements such as the chief executive ensuring that a decision must not be made that increases the take of water in the plan area.

However, the review found that 45 per cent annual volume probability was unnecessarily restrictive in assessing potential trading of water allocations because it is highly sensitive to small or incremental change in flow.

As a result of the assessments, the performance indicators for the water allocation security objectives in the new draft water resource plan have changed from those in the existing water resource plan. The 45 per cent annual volume probability no longer applies to either supplemented or unsupplemented water and the annual volume probability no longer applies to supplemented water.

The new performance indicators are as follows:

For supplemented water:

- The annual supplemented water sharing index—for water allocations to take supplemented water, means the percentage of years in the Integrated Quantity and Quality Model simulation period in which the allocations are fully supplied. The annual supplemented water sharing index is considered to be a more representative measure for water managed under announced allocation water sharing rules.

For unsupplemented water:

- The annual volume probability—for a water allocation group, means the average annual volume that may be taken by the group in the Integrated Quantity and Quality Model simulation period as a percentage of the total of the nominal volumes for the allocations in the group.

Overall, these performance indicators have been chosen as they give a better indication of how water allocations are likely to perform during hydrologic testing of trading scenarios.

3.2.3 Water allocation security objectives

A water allocation security objective represents how a water allocation would perform over the modelled simulation period of 1889 to 2011, assuming reserves such as unallocated water are fully developed and existing water entitlements are being fully utilised.

Water allocation security objectives do not represent a prediction or guarantee of future performance of water allocations in any particular year. Actual performance under the new draft water resource plan will depend on prevailing climatic factors, water demand distribution patterns and water users' decisions about using their entitlements.

As the performance indicators have changed from the existing water resource plan new water allocation security objectives have been specified for the new draft water resource plan. The new water allocation security objectives are:

For supplemented water:

- The annual supplemented water sharing index for a water allocation group be not less than the annual supplemented water sharing index for the group at the commencement of this plan; and

For unsupplemented water:

- The annual volume probability for a water allocation group be not less than 99 per cent of what the annual volume probability for the group was immediately before the decision is made. This water allocation security objective provides for increased flexibility in the trading of water allocations with very minor impact on the performance of existing water allocations when tested in the hydrologic model.

A ‘decision’ referred to in this definition is any decision made under chapter 2 of the Water Act, such as a water trade or a decision about the operation of water infrastructure.

The performance indicators and water allocation security objectives are specified in sections 16 and 17 of the new draft water resource plan, respectively.

While groundwater has been included in the new draft water resource plan, it is to be managed through a water licensing process and as such water allocation security objectives do not apply.

3.3 Strategies for achieving outcomes

The economic, environmental and social outcomes described in section 3.1 of this report are achieved by having a range of strategies in the water resource plan and resource operations plan which deliver the outcomes. This section outlines the strategies in Chapter 5 of the new draft water resource plan, highlighting the key changes between the existing water resource plan strategies and the new draft water resource plan.

The strategies build on those contained in the existing water resource plan and incorporate consideration of the recommendations from the full set of technical assessments. These strategies will be implemented through the draft amended resource operations plan, discussed in more detail in section 4 of this report.

3.3.1 Use of existing entitlements and authorisations

The new draft plans provide for the use of all existing water entitlements, including sleeper licences. Riparian stock and domestic water use and other low risk uses will continue to be authorised under the Chapter 2 Part 2 provisions of the Water Act without a requirement for a water entitlement. Additionally, the taking of water in an emergency situation, for example to fight a fire, is authorised under the Water Act. Existing water licences and allocations will continue to be permitted to take water up to any nominal entitlement or volume currently stated on the water licence and allocations. Groundwater development for stock and domestic water use will also continue to be authorised without the requirement for a water entitlement.

3.3.2 No increase in the overall amount of water to be taken

The new draft water resource plan will retain the provision to protect existing entitlements and water for the environment from incremental increases in the amount of water taken from the plan area. The chief executive will not make a decision about water that would increase the average volume of water available to be taken. This does not apply to the reserves of unallocated water specified in the new draft water resource plan as these reserves are considered to be 'already granted' in planning terms—water security and environmental outcomes are still met when this water becomes part of the consumptive pool.

This decision ensuring there is no uncontrolled growth in the take of water is a key aspect of ensuring the ecological outcomes and water security outcomes are met while complying with Basin Plan SDLs.

3.3.3 Water trading

Some stakeholders in the plan area have indicated that more flexible water trading would be a desirable outcome of the new draft water resource plan. As there is no new surface water set aside for general irrigation in the Warrego, Paroo and Nebine catchments the ability to trade existing volumes of water is a key component of providing flexibility for landholders in managing their water businesses and providing opportunities for expansion and increased economic activity.

During the life of the existing water resource plan there has been a significant volume of water traded to different locations in the plan area. There have also been instances where applications for water trading have been refused because hydrologic modelling of the proposed trade has indicated the potential for impact on other water users. The new draft water resource plan maintains protection of security of access to water under water entitlements and proposes to enable more flexibility for water trading through the specification of more appropriate water allocation security objectives as discussed in section 3.2.3.

3.3.4 Decisions about water management must be consistent with water security and environmental objectives

In line with the Water Act, any decisions about water management such as a change to the location of an allocation (trading), changes to the way infrastructure in managed or a change to water access conditions can only be made if the decision is consistent with the water resource plan for the area which includes water security and environmental objectives (see section 3.2). In other words, changes can only be made if there are no unacceptable impacts on other water users or the environment. The environmental flow objectives and water allocation security objectives have been reviewed and rationalised in the new draft water resource plan as described in section 3.2.1.

3.3.5 Meeting future water needs through unallocated water reserves

Unallocated water refers to the volumes of water which the plan reserves for future consumptive use. The new draft water resource plan includes small amounts of surface water that are currently available under the existing water resource plan and new volumes of groundwater set aside for future allocation as shown in Table 5.

Table 5 Volumes of unallocated water available in the plan area

	Catchment/groundwater unit	Volume	Purpose
Surface water	Warrego	100 ML	Community purpose
	Paroo	100 ML	Community purpose
	Nebine	100 ML	Community purpose

	Bulloo	100 ML	Community purpose
		500 ML	Any
Groundwater	St George alluvium (shallow)	0 ML	n/a
	St George alluvium (deep)	0 ML	n/a
	Sediments above the Great Artesian Basin	8 000 ML	Any
	Warrego alluvium	2 000 ML	Any

The new draft water resource plan defines 'Community purpose' as:

(a) The purpose of helping traditional owners in the plan area achieve their economic and social aspirations; or
(b) for the purpose of town water supply; or
(c) for the purpose of supporting ecotourism.

This definition of community purpose is based on the definition of 'use' in the existing water resource plan which is 'town water supply, ecotourism or similar use'. The new definition has been broadened to specifically include the ability for traditional owners to access these reserves of water.

The process for releasing unallocated water is outlined in Division 1C of the Regulation.

3.3.6 Groundwater management

There are significant reserves of subartesian groundwater within the plan area but much of this water has high salinity levels and variable reliability which has limited its use. The current management arrangements for groundwater within the plan area are specified in the Regulation and require users who wish to take groundwater for a use other than stock and domestic to apply for a water licence. These provisions in the Regulation are being replaced by provisions in the new draft water resource plan. Inclusion of groundwater in the new draft water resource plan also aligns with the Basin Plan requirement to identify each SDL resource unit and the water resources of each SDL unit.

For the first time, groundwater will be managed under the new draft water resource plan. The take of groundwater for non-stock or domestic purposes within a groundwater unit will require a water licence or water permit. Other defined (as per the Regulation) low risk activities such as firefighting do not require a water licence to access groundwater from a groundwater unit. A water licence or water permit to take groundwater will also not be required in the aquifers outside of the groundwater units.

There are four groundwater units in the plan area that align with the Basin Plan groundwater SDL unit areas. There is unallocated water available in two of these groundwater units, the Sediments above the Great Artesian Basin and the Warrego Alluvium. The St George Alluvium (deep) is considered fully allocated therefore there is no additional water being made available for use. Figure 2 shows the location of the groundwater units and Table 5 describes the aquifers which make up each unit and the volumes of water available.

The volumes of unallocated groundwater identified for future release are expected to exceed the demand for groundwater for the life of the new water resource plan although they are significantly smaller than the volumes indicated by the Basin Plan to be possibly available. The smaller volumes identified in the new draft water resource plan represent a stepped approach to developing the resource allowing the release of ample water to meet demand while recognising

some uncertainty about the relatively low extraction densities these shallow alluvial aquifers are capable of supporting.

It should be noted that all Basin Plan groundwater resource units and non Basin Plan groundwater units (even those that are hydrologically connected) are proposed to be managed under the new draft water resource plan. For example, the St George Alluvium (deep) groundwater unit in the Nebine catchment and the Sediments above the Great Artesian Basin in the Bulloo catchment (non Basin Plan) are hydrologically connected to the groundwater resource identified in the Basin Plan, but are managed consistently with the Basin Plan. Groundwater entitlement levels are managed within the same SDLs specified in the Basin Plan.

All water bores in Queensland deeper than six metres (including monitoring bores) must be constructed by, or under the supervision of, a licensed water bore driller. The driller is required to forward a copy of the drill log form to the department after the bore is complete this way the department is aware of where the water bore is located. A development permit is required to authorise the construction of most bores other than exempt bores as defined in the Sustainable Planning Regulation 2009. A proposed bore in a regulated groundwater area needs a development permit issued by the department before any drilling (even test holes) can commence. Contact your local department office for more information.

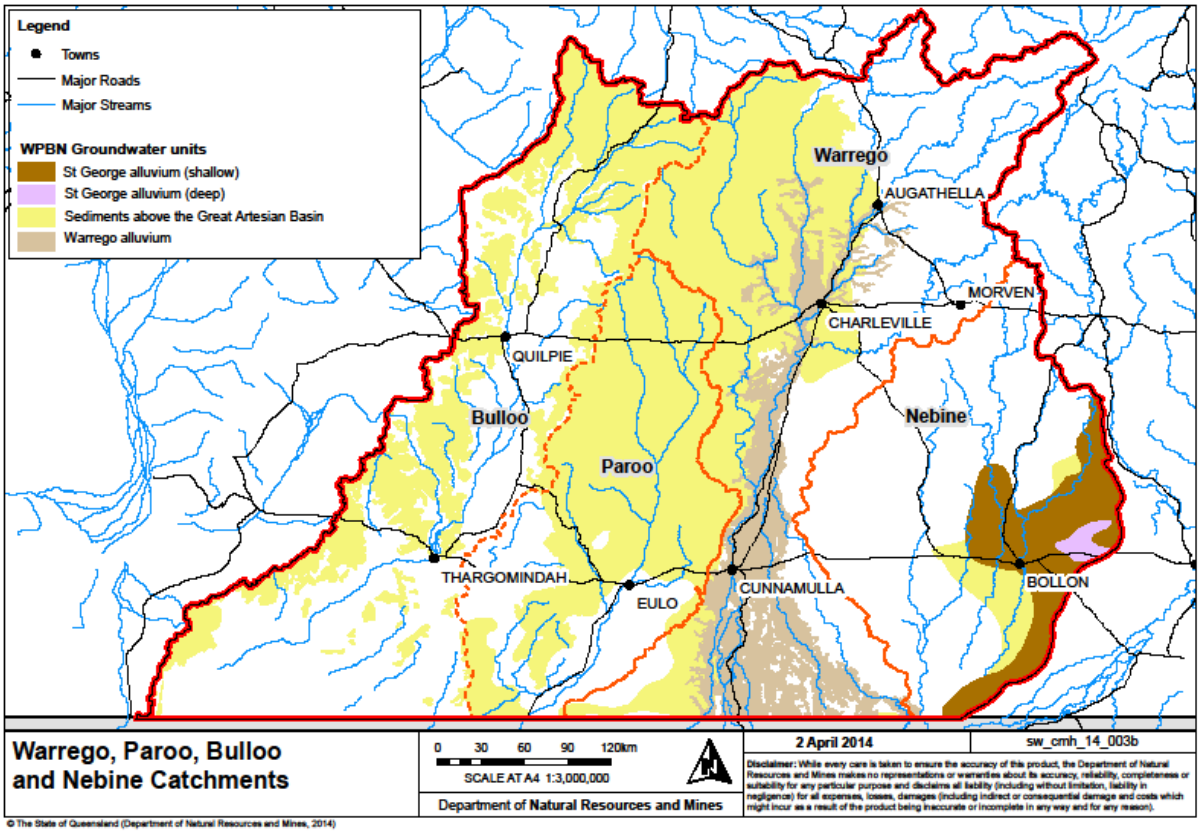

Figure 2 Groundwater units within the plan area

3.3.7 Interference with the overland flow of water

The new draft water resource plan will provide for the continued use of existing overland flow works which have been notified to the department in accordance with section 34 of the existing water resource plan. When the new water resource plan is finalised—possibly in late 2014—the ability to notify the department of existing overland flow works will no longer exist, meaning that any works not notified, would only be able to take water for stock and domestic purposes. The

provisions of the current water resource plan which enable notification (section 34) are able to be utilised until the date the new water resource plan is finalised.

Under Chapter 5, Division 3 of the new draft water resource plan, any new applications to interfere with the overland flow of water can only be authorised:

- for stock or domestic purposes
- under an authority to take overland flow water using existing works that are acknowledged by the department (as described above)
- under an authorisation
- to satisfy the requirements of an environmental authority issued under the *Environmental Protection Act 1994*, or
- if the captured water is contaminated agricultural runoff water (as defined by the 'Code for Assessable Development for Operational Works for Taking Overland Flow Water').

In cases where a water user wishes to make changes to their overland flow storage works a process is retained in the new water resource plan which provides for the granting of water licences to replace authorities that take overland flow water using existing works. If approved, the chief executive will replace the existing authority with a licence limiting the volume of water able to be taken to ensure that there is no net increase in the overall amount of water taken.

3.3.8 Providing for traditional owner values

A number of specific changes to the way water is managed have been made to implement recommendations made by traditional owners in the plan area and throughout Queensland.

In 2013 there were changes made to section 20B of the Water Act to enable an Aboriginal party[7] or Torres Strait Islander party[8] to take or interfere with water for traditional activities or cultural purposes without the need for an entitlement. This applies throughout Queensland to simplify water access and recognise the importance of traditional activities.

A key change between the existing water resource plan and the new draft water resource plan is that traditional owners proposing to develop an economic venture can now access the 100 ML of unallocated surface water set aside for 'community purpose' in each catchment. This will assist small scale projects such as irrigation or aquaculture to be developed by traditional owner communities.

Traditional owners in the plan area can also apply for water entitlements from the reserves which are available to all members of the community—the groundwater reserves and the 500 ML volume of unallocated surface water in the Bulloo catchment. Water from these reserves will be able to be used for any purpose.

3.4 Monitoring and reporting requirements

Monitoring and reporting are essential elements of water resource plan implementation, because they will:

- provide a sound basis for measuring compliance with objectives and requirements of the water resource plan

- trigger any review of the water resource plan that may be necessary

[7] Aboriginal party see the *Aboriginal Cultural Heritage Act 2003*, section 35.
[8] Torres Strait Islander party see the *Torres Strait Islander Cultural Heritage Act 2003*, section 35.

- identify the degree to which the ecological outcomes of the plan are being achieved
- help identify further research needs.

The monitoring and regular reporting on the water resource plan will ensure that any emerging issues are addressed promptly through water resource plan amendment, rather than waiting for the 10-year expiry of the plan.

The monitoring and reporting requirements in the new draft water resource plan have been streamlined to reduce duplication between the water resource plan and the resource operations plan. The new draft water resource plan states the requirements for monitoring and reporting, but refers to the draft amended resource operations plan for detail on how the requirements are to be achieved. Refer to section 4.3 of this report for an explanation of the monitoring and reporting provisions for water infrastructure operators and the chief executive in the draft amended resource operations plan.

The new draft water resource plan features improvements to the requirements for the Minister's report on the plan. The provisions have been updated to enable the Minister to report on the plan at a frequency of up to every five years. This change is expected to improve performance reporting in line with the recommendations of the National Water Commission Water Planning Report Card 2011 and 2014 and the Review of Minister's Water Resource Plan Reporting undertaken in 2012. The new provisions will enable the report to provide a better analysis of trends over time in the plan area. This will also support assessments and decisions relating to potential water resource plan amendments, extensions and renewals.

3.4.1 Metering

All surface water will continue to be metered where required as specified in the Regulation. It is not proposed to meter groundwater entitlements.

4 Draft amended resource operations plan

The draft amended resource operations plan identifies the strategies and management arrangements for water resources to achieve the economic, environmental, social and cultural outcomes for the plan area. Measures to reduce regulatory burden and cut red tape were implemented in the preparation of the draft amended resource operations plan, resulting in a streamlined document that improves processes and delivers direct benefits to key industries, business and the community. Existing strategies and management arrangements that proved successful in the past 10 years of implementation were retained in the draft amended resource operations plan. The key aspects of the draft amended resource operations plan are described in the following sections.

4.1 Cunnamulla Water Supply Scheme

The Cunnamulla Water Supply Scheme encompasses the Allan Tannock Weir on the Warrego River and supplies local water users with 2 216 ML of water for primarily agricultural purposes. The scheme is managed by SunWater under the rules of the existing resource operations plan.

4.1.1 Water sharing rules

In preparing the draft amended resource operations plan the department and SunWater discussed a range of options relating to how the scheme could be managed. One option considered was to replace the current water sharing rules, which use an announced allocation formula (chapter 3, division 2 of the existing resource operations plan); with a simple rule stating that water allocation holders must not take more than their nominal volume within a water year. The advantages of

such a change are that it's simpler and allocation holders have more flexibility in when they take water. The key disadvantage is that in times of limited supply the ability of some allocation holders to take water could be impacted by other allocation holders getting in first.

Due to this risk of inequitable access to water allocations, the existing water sharing rules (announced allocation) have been retained in the draft amended resource operations plan and the department will discuss the issue with stakeholders in the plan area during the consultation period.

A proposed change to the water sharing rules in the draft amended resource operations plan is the removal of the provisions which relate to high priority water allocations. There are currently no high priority water allocations in the scheme and it is proposed to remove the rules which provide for the conversion of medium priority to high priority water allocations. This will ensure that all water allocations continue to be subject to a single set of water sharing rules and it simplifies the provisions of the resource operations plan. The announced allocation rules for high priority water allocations and the related critical water sharing arrangements are also proposed to be removed.

Aside from the removal of these rules relating to high priority groups, the water allocation change rules and seasonal water assignment rules for the scheme remain the same. The draft amended resource operations plan has retained the current water year from 1 July to 30 June to align with the financial year. Maintaining this timeline also assists the coordination of the Minister's report on the performance of water resource plans.

4.1.2 Operating rules

The proposed operating rules in the draft amended resource operations plan will not retain the requirement to release water from Allan Tannock Weir for water allocations as there are no water allocation holders downstream of the weir. It is also prohibited to change the location of the water allocation.

The resource operations licence holder (SunWater) will only be required to release water for stock and domestic purposes which is intended to mimic inflow patterns. This is retained from the existing resource operations plan however the rules have been amended to reflect the critical water sharing arrangements that are currently in place. The new arrangements allow for water to be retained in the weir for irrigation and community benefits during extended dry periods. These arrangements have support from Council and some downstream landholders who would normally benefit from releases from the weir.

4.2 Water licences

Water licence provisions have been retained in the draft amended resource operations plan under chapter 4. The chief executive will not accept a water licence application unless it is for:

- interference with water in a watercourse, lake or spring by impounding flow, within certain limitations, for:
    - providing a pumping pool to enable take under an entitlement
    - to store water for stock and domestic uses
    - to store water for town water supply; or
- a water licence to replace an overland flow authority.

The following provisions have been removed from the draft amended resource operations plan as they are already addressed either through the Regulation or the Water Act:

- the grant of unallocated water under the rules of the water resource plan and the process stated in the Regulation;
- reinstating an expired water licence;
- amalgamating or subdividing a water licence; and
- licences affected by disposal of part of land to which the licence attaches

4.3 Rules for monitoring and reporting

4.3.1 Monitoring by the chief executive

Chapter 5 of the draft amended resource operations plan lists the types of monitoring and assessment required by the chief executive. The monitoring that the chief executive must measure, or collect and keep publicly available include records of water quantity, water taken and information on permanent trades and seasonal assignments. Duplicate monitoring provisions that are referred to in other legislative instruments, such as the Water Act, were removed from the draft amended resource operations plan.

In relation to natural ecosystem monitoring, the draft amended resource operations plan retains the requirement for the chief executive to collect and record information on ecological assets in the plan area and their associated critical water requirements. Any data collected by the chief executive will be used to assess the effectiveness of the water resource plan through the Minister's reporting requirements, referred to in section 3.4 of this report.

4.3.2 Monitoring by the water infrastructure operator

The draft amended resource operations plan features improvements and simplifications to the reporting requirements of the water infrastructure operator. Chapter 6 of the draft amended resource operations plan sets out the monitoring and reporting provisions that apply to SunWater—the resource operations licence holder for the Cunnamulla Water Supply Scheme. SunWater has developed and implemented a water monitoring program over the last 10 years in line with the existing resource operations plan specifications. SunWater subsequently reports the results of this monitoring to the chief executive of the department. The monitoring results were used to inform the review of the existing resource operations plan.

Monitoring provisions were assessed in terms of their relevancy in continuing to inform the management of the Cunnamulla Water Supply Scheme into the future, in line with a fit-for-purpose approach. As a result, the requirement for water quality monitoring was removed from the draft amended resource operations plan. The environmental assessment identified that there has been no evidence of water quality impacts as a result of the storage in the last 10 years. In addition, risk assessments conducted for the review of the plans identified a low risk of water quality impacts occurring in the storage in future.

The monitoring requirements for SunWater in the draft amended resource operations plan include measuring and/or recording:

- streamflow and storage height data
- releases from Allan Tannock Weir
- announced allocations

- water use
- seasonal water assignments.

Under the draft amended resource operations plan, SunWater will continue to provide reports to the chief executive of the department about details of the information obtained through water monitoring programs. Water monitoring programs are used for assessing compliance, as well as to assist in ongoing assessments of the effectiveness of the resource operations plan's management rules.

Quarterly reporting provisions have been removed from the draft amended resource operations plan as annual reporting is sufficient to meet departmental requirements. If required, monitoring data can also be requested by the chief executive under the resource operations plan. The requirements to record and report critical water supply sharing rules were removed as the draft amended resource operations plan no longer includes provisions for high priority water.

The draft amended resource operations plan requires the resource operations licence holder to report to the chief executive the following types of information on an annual basis:

- summary of announced allocation determinations
- summary of operational and emergency reporting
- streamflow and infrastructure water levels
- total annual volume of water taken
- records of stock and domestic releases from Allan Tannock Weir
- seasonal water assignment arrangements
- all details of changes to infrastructure or the operation of the infrastructure that may impact on compliance with rules in this plan
- details of any new monitoring devices used, such as equipment to measure stream flow
- details and status of any implemented interim programs.

In addition, SunWater must also advise the chief executive of operational and emergency incidents as they occur. This includes incidents that affect the aquatic ecosystem, such as fish stranding, blue-green algae growth or bank slumping.

Fish kill reporting has been removed from the new plan, as SunWater is already required to report this information to the Department of Environment and Heritage Protection under the general environmental duty provisions of the *Environmental Protection Act 1994*.

Information submitted by the resource operations licence holder to the chief executive is used to prepare the Minister's report on the plan referred to in section 3.4 of this report.

5 Finalisation of the draft plans

5.1 Consultation and submission process

A key component of the water resource planning process is engaging the community and industry to provide input into the development and finalisation of the new draft water resource plan and draft amended resource operations plan.

This overview report provides an explanation of the provisions in the new draft plans to facilitate public comment. The public notice states how to inspect or obtain copies of the draft plans and calls for submissions on the draft plans. Informal opportunities for community involvement will arise at public information forums, stakeholder forums and through contact between the department and the community.

The submission period allows the community to consider the information contained in the draft plans and accompanying overview report and provide their views and feedback through written submissions. The Minister will consider all properly made submissions in finalising the water resource plan and the chief executive will consider all properly made submissions in finalising the amended resource operations plan.

5.1.1 How to make a submission

The department is now seeking community views on the issues that should be considered in finalising the new water resource plan and amended resource operations plan.

Details of how to make a submission and a submission form can be found in the ‘how to make a submission’ section at the start of this report. Submissions must be received by 5 pm Friday 31 October 2014.

5.1.2 Review of submissions

The department will collate and review all information provided by stakeholders via the submission process or by informal means into developing the final water resource plan and amended resource operations plan.

Submissions on the draft amended resource operations plan requesting particular changes to environmental management rules or water sharing rules for example, may be referred by the chief executive to an independent panel. Any recommendations made by the panel would then be considered in finalising the draft amended resource operations plan.

5.2 Approval of the new final water resource plan and final amended resource operations plan

After any necessary changes are made, the plans will be finalised and submitted to the Governor-in-Council for approval.

Once approved, the new water resource plan will replace the expiring Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2003 and become subordinate legislation to the Water Act. The amended resource operations plan will replace the existing resource operations plan and will maintain its status as a statutory rule. The approval of the plans will be published in the Queensland Government Gazette.

A consultation report which summarises the issues raised during the consultation process, and how they were addressed, will be released when the new final plans are approved by the Governor-in-Council.

5.3 Amending, extending or replacing final plans

Water resource plans have a statutory life of up to 20 years under the recent amendments to the Water Act which allow the Minister to postpone the expiry of a water resource plan for up to 10 years, so that the effect of the plan is in force for up to 20 years. If required, the plan can also be amended prior to its expiry.

In particular circumstances, the Water Act allows for more significant amendments or the replacement of a water resource plan prior to its expiry if the plan is not meeting its intended outcomes. The new draft water resource plan states that a report must be prepared for the water resource plan within five years of its commencement. Any outcomes of this report may trigger an amendment or a replacement of the water resource plan.

Resource operations plans as statutory rules under the *Statutory Instruments Act 1992*, do not expire, however they may be amended or replaced to ensure they remain consistent with the relevant water resource plan. Chapter 7 of the draft amended resource operations plan states that minor amendments to be made to the resource operations plan. These changes are to ensure consistency with any requirements of the water resource plan, amend the monitoring requirements for the resource operations licence holder or to correct minor errors.

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7 Appendices

Appendix A: Water resource planning activities in the plan area

Table B1 Water resource planning activities in the plan area

Plan	Date	Details
Warrego, Paroo, Bulloo, Nebine WRP 2003	December 2003	The water resource plan was released and applied to water in a watercourse, lake or spring and overland flow water.
Warrego, Paroo, Bulloo, Nebine ROP	January 2006	The resource operations plan was released to implement the strategies of the water resource plan.
Warrego, Paroo, Bulloo, Nebine WRP 2003—Minor amendment under s57 of the Water Act	March 2006	A minor amendment was conducted to alter the section of the water resource plan corresponding to the 'water to which plan applies' as a result of the commencement of the Water Resource (Great Artesian Basin) Plan 2006.
Warrego, Paroo, Bulloo, Nebine WRP 2003—Minor amendment under s57 of the Water Act	November 2008	A minor amendment was made to the water resource plan to insert a provision for the gifting of unallocated water to the Commonwealth Environmental Water Holder under the *Water (Commonwealth Powers) Act 2008*.
Warrego, Paroo, Bulloo, Nebine WRP 2003—Minor amendment under s57 of the Water Act	November 2009	A minor amendment was made to reflect the relationship between the water resource plan and the *Sustainable Planning Act 2009* (replaced the Integrated Planning Act) under the *Sustainable Planning Regulation 2009*.
Warrego, Paroo, Bulloo, Nebine WRP 2003—Minor amendment under s57 of the Water Act	November 2011	A minor amendment was made to the water resource plan to continue the effect of a moratorium notice implemented under section 46(3) of the Water Act.
Water Act — Amendment under the *Land, Water and Other Legislation Amendment Act 2013*	May 2013	Amendment to postpone the expiry date of Queensland Murray–Darling Basin water resource plans until 30 June 2019, amongst other matters.
Warrego, Paroo, Bulloo, Nebine WRP 2003—Minor amendment under s57 of the Water Act	September 2013	Amendment to reflect renumbering of the relevant sections of the Water Act following approval of the *Land, Water and Other Legislation Amendment Act 2013*.
Basin Plan	June 2016	June 2016 is the timeframe agreed between the

accreditation of Warrego, Paroo, Bulloo, Nebine WRP and ROP	(anticipated)	Queensland and Australian Governments for accreditation in line with the Basin Plan pilot process.

Appendix B: Technical assessments

1. Hydrologic assessment

Hydrology is the study of water as it moves through the water cycle. It is fundamental to learning about the relationship between flows and the environment. For the water resource planning process, the hydrologic assessment relies substantially on the modelling of stream flows.

The department utilised experts in the Queensland Hydrology unit of DSITIA to update IQQM developed for the original water resource plan and resource operations plan for the Warrego, Paroo, Bulloo and Nebine catchments. Version 6.75.34 of the IQQM program, developed by the Department of Land and Water Conservation in New South Wales, was used for the development of the models.

The IQQM is a computerised daily time-step hydrologic model, developed to simulate stream flows in each catchment in the plan area. The catchments are separated into a series of reaches, based on morphology and the locations of major gauging stations. A full description of the IQQM model can be found in the manual (DLWC, 1997).

The IQQM simulates all the major surface water processes that occur within large catchments. The model also captures historical climatic and seasonal variability in surface water flows. The IQQM can be considered as a daily water budget tool. It calculates inputs such as rainfall and inflows, and outputs such as losses from evaporation and seepage. The model also considers daily water demands over the simulation period, including for urban, agricultural and industrial use.

The IQQM generates a wide range of surface water statistics, including size of flood events, frequency of events, and information on low, medium and high-flow events. The model is used to compare the flow statistics of three development scenarios—(1) pre-development, (2) existing levels of water development and (3) future development. The pre-development scenario calculates stream flows over the simulation period as if there were no weirs or other water infrastructure and no water taken out of the system for consumptive use. This provides a baseline to enable the department to assess the impacts of current and future water allocation and management rules on the hydrology of the plan area.

An important component of running the IQQM is to test performance indicators for Water Allocation Security Objectives and Environmental Flow Objectives (see section 3.2 for details of these objectives). This enables an assessment of the effectiveness and limitations of current and proposed objectives from a hydrologic modelling perspective. The results of the model can then be used to establish appropriate Water Allocation Security Objectives and Environmental Flow Objectives in the new draft water resource plan.

The original IQQM for the Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan 2003 simulated stream flows over a historic 110 year period from 1889 to 1999. The starting date is based on the year rainfall records began. For the new draft plans, the IQQM has been updated to include data collected from gauging stations in the last 12 years since the water resource plan was first developed. The simulation period for the new draft plans now extends over a historical period from 1889 to 2011 (122 years).

For the development of the next generation of plans, a comprehensive review of the current IQQM was undertaken (DSITIA, 2013[1]). As a result of the review, a number of enhancements were built into the models, such as the inclusion of data from new gauging stations. Two gauging stations have been constructed in the Nebine catchment where previously there were none. This improvement enables better approximation of the water availability in the Nebine and the level of extractions. An additional four gauging stations are now operational in the Warrego catchment. The

additional data has led to an improved understanding of how flows are distributed between Cuttaburra Creek and the Warrego River. There is also better representation of the high flows and losses to floodplains in the Warrego model and a more detailed representation of flows between Wyandra and Cunnamulla, and in the Ward River. For the Bulloo and Paroo catchments, the review resulted in no change in the conceptualisation of the catchment. However, a significant flood event across the region was included in the calibrated model period which will provide a better representation of the high flows and losses to floodplains where gauges are available.

The original IQQM for the plan area was subjected to internal review by Queensland Hydrology and external audit by the Murray-Darling Basin Authority to ensure that the models were appropriately calibrated spatially and that water users were correctly represented. The reviewed and updated version of the IQQM has been internally audited and quality assured.

A copy of the hydrologic assessment report for the plan area is available from the department on request. The updated IQQM assisted in the review and development of the performance indicators and objectives described in section 3.2 of this report.

Estimates relating to groundwater hydrology within the plan area are based on the Murray Darling Basins Environmentally Sustainable Level of Take (ESLT) project which determined sustainable diversion limits for a range of aquifers in the plan area (MDBA, 2012[2]).

2. Social and economic assessment

The socioeconomic assessment (DNRM, 2014[1]) provides a basic overview of the current and future economic and social trends across the plan area. Any potential social and economic risks from water resource development and management identified in the assessment have been analysed and considered in developing the new draft plans.

Key social and economic characteristics of the plan area identified through the assessment include:

- low unemployment
- strong agricultural sector, predominately grazing
- small mining and petroleum sector
- small but emerging tourism sector
- a stable population with Aboriginal people comprising approximately 15 per cent of the total local population

The social and economic performance of the existing water resource plan and resource operations plan was also assessed. Together with the provisions in the Water Act, the current plans have implemented the following measures to ensure consistency with both the outcomes of the plan and National Water Initiative objectives:

- Improving the security, certainty, transparency and understanding of the terms of access for consumptive and non-consumptive water users by way of an evidence-based, participatory and transparent process.

- The trade of water entitlements providing water users with additional flexibility to manage their water portfolio. The first trades were recorded in the plan area in 2008-09.

- Improving the security of urban water supplies by establishing supplemented and unsupplemented water allocations and providing for a reserve of unallocated water to support growth in urban areas should it have emerged.

The review of the performance of the existing water resource plan also highlighted how water resource management in the plan area could be improved to optimise social and economic outcomes. The findings of the assessment recommended that the development of the new draft plans considers the following:

- Groundwater management arrangements should be developed in the new plan and groundwater availability should be further investigated.
- While only a minor part of the overall economy, the tourism industry is undergoing growth in the plan area and consideration should be given to providing water to support the development of this industry.
- Aboriginal values and uses of water in the plan area need to be considered in the review of outcomes and strategies for the new plan.

Section 6 in Appendix C of this report describes how these findings were considered in the new draft plans. To view the full report, refer to the Warrego, Paroo, Bulloo and Nebine catchments webpage at www.dnrm.qld.gov.au.

3. Cultural assessment

Water resource planning includes a process to recognise Aboriginal and Torres Strait Islander interests and connection with water in the landscape. The Aboriginal groups recognised in the plan area are the Kooma, Bidjara, Kunja, Mardigan, Budjiti and Kullilli people. The Northern Basin Aboriginal Nations (NBAN) and Far South West Aboriginal Natural Resource Management organisations represent these Aboriginal groups—in conjunction with the Elders from each group.

The current water resource plan and resource operations plan provides for the interests of the Aboriginal community principally through management arrangements to protect the natural ecosystem and sites of cultural significance. The low level of water resource development in the plan area ensures periodic flooding cycles are maintained for the health of the stream environment. This provides water to support waterholes and wetlands, which are intrinsically valued by local Aboriginal people. Where water is granted for use, conditions are put in place to ensure the take of water minimises the impact on other water users or on social, cultural or ecological values.

A cultural assessment (DNRM, 2014[2]) has been prepared which utilised consultation already conducted for the Murray-Darling Basin Plan and the draft South West Healthy Waters Management Plan, which captures the views of representatives from Aboriginal groups in regards to how water is currently managed in the plan area. The Department of Natural Resources and Mines met further with representatives from the Kooma, Bidjara, Kunja, Mardigan, Budjiti and Kullilli groups in May 2013 in Charleville to provide opportunity to specifically comment on the development of the new draft plans. Some of the flow related values identified by local traditional owners throughout various consultation processes and assessments include:

- Maintenance of flows especially those flows interrupted by weirs such as Allan Tannock Weir at Cunnamulla. Fish passage past these weirs is also of significant value;
- Availability of good quality groundwater and protection of springs;
- Protection of wetlands, waterholes and rivers as places of significance; and
- Protection of culturally significant plants and animals such as the Murray River Cod, Yabbies and Mulga.

It is recognised that some of the values identified by local traditional owners cannot be managed by a water resource plan as they are not directly linked to the protection of flow. However, these values were included in the cultural assessment to recognise the full range of water related values

in the catchments and section 6 in Appendix C of this report provides a description of how these recommendations were considered in the draft plans.

To view the full report, refer to the Warrego, Paroo, Bulloo and Nebine catchments webpage at www.dnrm.qld.gov.au.

4. Environmental assessments

The environmental assessments to inform the development of the new draft plans were carried out in two stages. To view the full reports, refer to the Warrego, Paroo, Bulloo and Nebine catchments webpage at www.dnrm.qld.gov.au. The environmental assessments were conducted by the Department of Natural Resources and Mines and the Department of Science, Information Technology, Innovation and the Arts.

Environmental Assessment Report—Stage 1

The aims of the Environmental Assessment Report—Stage 1 (DSITIA, 2013[2]) are to:

1. identify surface water and groundwater dependent ecological assets in the plan area that are potentially vulnerable to water resource development
2. summarise results of monitoring relevant to the plan
3. assess the effectiveness of the current plan, and
4. provide recommendations for further investigation in the Environmental Assessment Report—Stage 2.

Ecological asset selection

Water resource plans manage the flow, capture and take of water. Environmental assessments need to be focussed on the impact of these factors on the ecosystem in order to assess the effectiveness of water resource plans. This requires a form of assessment that can focus on the availability and provision of water, rather than other factors that influence the ecosystem, such as land use. This is achieved through the study of ecological assets in the environmental assessment.

An ecological asset is an ecosystem component that occurs naturally in the water resource plan area, is critically linked to flow and dependent on the conditions provided by flow to support its long-term integrity. An ecological asset may be a species, a group of species, a biological function, an ecosystem or a place of natural value. The first step of the Environmental Assessment Report—Stage 1 was to select ecological assets in the plan area which are indicators of the ecosystem response to surface water or groundwater flows.

Ecological assets that depend on surface water were identified through a rigorous review of the scientific literature, technical reports, guidelines, action plans, regional ecosystem mapping and government databases. Local experts and stakeholders were also consulted. The asset selection process considered the location/distribution, status under State and Commonwealth legislation, and critical links to surface water of potential ecological assets. An initial list of 2,937 potential ecological assets was compiled for the plan area, including waterhole habitats, wetlands, river forming processes, and species of fish, amphibians, reptiles, mammals, birds, invertebrates and plants with a potential link to flow. This broad list was filtered according to the asset's links to flow, resulting in a subset of 95 'critically-linked' ecological assets. This list was further reduced to a set of nine ecological assets based on the robustness of the information about their flow-ecology requirements, supporting habitat data and potentially vulnerability to water resource development.

These nine assets represent all of the current water resource plan ecological outcomes, require a broad range of flow conditions and are all critically-linked to the flow regime. The list of assets also addresses the environmental asset and ecosystem function criteria set out in the Basin Plan. The nine ecological assets are:

- active river forming processes including sediment transport
- flow spawning fish species
- floodplain terrestrial vegetation species
- *Chelodina longicollis* (eastern snake necked turtle)
- wetlands (both permanent and temporary)
- absence of exotic fish species
- genetic diversity for aquatic biota in the Bulloo
- migratory fish species
- permanent waterholes

These assets were then used in the Environmental Assessment Report—Stage 2 to review the ecological performance of the current plan and assess the potential ecological impacts of the flow management strategies and rules proposed in the new draft plans.

Ecological assets that depend on groundwater were also considered in the asset selection process. These include groundwater fauna (stygofauna), springs, wetlands and vegetation communities which access groundwater through their roots. The asset selection process was based on information from both the plan area and comparable sites in Queensland Murray-Darling catchments. Information on stygofauna was based on results from Queensland Government sampling in similar aquifers outside the plan area in the Condamine-Balonne and Border Rivers region (DERM, 2011; Schulz, Steward and Prior, 2013). Springs were identified through maps of groundwater dependent ecosystems by the Queensland Wetlands Program. Groundwater depth was mapped throughout the plan area using data from Queensland Government monitoring bores. This was intersected with the location and depth of wetlands to identify those that may be linked to groundwater. Vegetation communities were identified through Regional Ecosystem mapping based on the method developed by the Queensland Herbarium. The vegetation communities were also intersected with data from Queensland Government monitoring bores to identify which communities may be dependent on groundwater through their roots. An assessment of the risk to these vegetation communities is discussed in section 5 of Appendix C.

The results of the groundwater dependent asset selection process indicated that further research is required to determine the extent to which stygofauna is present in the plan area. The investigation indicated that stygofauna may occur in the plan area as they have widely varying water quality and structural requirements. The asset selection process identified that none of the non-riverine wetlands across the plan area are potentially dependent on groundwater because they are too shallow to intersect with the aquifers in the region. Although springs were identified in the plan area, these were found to be connected to the Great Artesian Basin and are therefore managed under a separate water resource plan. All four catchments contained vegetation communities with either possible or likely dependence on groundwater, however further research is required to better characterise this relationship.

Ecological monitoring and plan performance

In addition to the ecological asset selection, the Environmental Assessment Report—Stage 1 also summarised the results of monitoring relevant to the plan area. The monitoring programs and organisations conducting the monitoring are listed below and summarised in Appendix F.

- Environmental Flows Assessment Program (Queensland Government)
- Surface Water and Groundwater Ambient Monitoring Networks (Queensland Government)
- Sustainable Rivers Audit (Murray–Darling Basin Authority in association with the Queensland Government)
- Q-Catchments (Previously the Stream and Estuary Assessment Program)(Queensland Government)
- Resource Operations Licence Holder Monitoring (SunWater)
- Aerial Surveys of Waterbirds in Eastern Australia (The University of New South Wales)

The results of monitoring suggest that the plan has been successful in meeting its ecological outcomes and objectives. Where monitoring programs identified impacts to the aquatic ecosystem, the causes were not considered to be a result of the strategies in the water resource plan.

It should be noted that the existing suite of monitoring programs have not focussed on whether the current water resource plan ecological outcome relating to the maintenance of the unique genetic diversity of the Bulloo Basin (9)(f)(vi) has been achieved. Because the plan does not allow for interbasin transfers of water, this outcome is not influenced by water resource management activities.

A monitoring program is currently being developed for the Northern Basin which will meet requirements for both the Basin plan and state Water Resource Plans. Information collected on environmental water requirements of ecological assets in neighbouring catchments will be directly transferable to the Warrego Paroo Bulloo and Nebine catchments.

Environmental Assessment Report—Stage 2

The purpose of the Environmental Assessment Report—Stage 2 was to summarise the potential risks to the nine ecological assets as identified in the Stage 1 report and assessed in the report 'Environmental risk assessment for selected ecological assets' in order to provide recommendations for the new draft plans. For further information on the process, refer to the Warrego, Paroo, Bulloo and Nebine catchments webpage at www.dnrm.qld.gov.au.

The Stage 2 report presents the risk to the nine assets under a full entitlement use scenario where every water entitlement is used to its maximum extent. This full entitlement use pattern of water use is a 'worst case' scenario and not representative of how the take of water is actually managed by many users—particularly in relation to waterholes. The 'full use' scenario assumes that if a water entitlement with no drawdown restrictions exists on a waterhole (which is reasonably common throughout the plan area) then the waterhole would be pumped dry whenever the demand for water exceeded the supply. This is generally not how the take of water is managed, with landholder's often preserving water in waterholes to maintain stock and domestic supplies and for ecological and aesthetic values. Assumptions such as this mean that the Stage 2 report highlights risks which could occur but are very unlikely.

Thresholds of Concern (ToC) were defined to represent the frequency of opportunities required to protect asset viability. ToC represent failure points for the ecological asset and as such can be considered minimum water requirements (DSITIA, 2013[4]) Low risk events were defined as periods in the time series of opportunities where the ToC was met by the flow scenario; whereas high risk events were represented by periods when the ToC was not met (otherwise referred to as a node failure). Where appropriate, for assets with multiple ToCs, node failures were refined into moderate or high risk events depending on which of the ToCs were not met. For ecological assets where no ToC could be derived, because insufficient knowledge was available to do so, hazard rather than risk posed by the development scenarios was identified and discussed in relation to the proportional change in opportunities from the pre-development scenario

Through the risk assessment and modelling, the Environmental Assessment Report—Stage 2 concluded that there is an overall low risk to surface water ecological assets from water resource management activities in the plan area, see summary below.

Warrego

The risk to eight ecological assets was assessed at seven assessment nodes. All ecological assets were at low risk.

River forming processes - There was no change in the number or total duration of bankfull events under the full entitlement scenario for three assessment nodes–Warrego River at Augathella, Warrego River at Charleville, Warrego River at Charleville, and Warrego River at Wyandra, and a 0.6% decrease in total duration at Warrego River at Wallen. The three nodes south of Charleville experienced a decrease in total duration of between 2.9% and 7.9% compared to pre-development, and there was also a very small decrease at Warrego River at Wallen. This may mean some waterholes are scoured less often and waterhole depth is reduced in some instances.

Flow spawning fish species - There were no instances in the simulation where the modelled abundance of the Warrego catchment Yellowbelly population fell below the ToC, indicating there is a low risk to population viability under both pre-development and full entitlement scenarios.

Eastern snake neck turtle - Although there were long periods of the simulation where the four year flood inundation return frequency ToC was exceeded at all assessment nodes under both flow scenarios, there was no increase in risk due to the full entitlement scenario compared with pre-development. This highlights that risk can be naturally high for this species in the absence of water resource development due to variability in climate and rainfall.

Floodplain vegetation and wetlands - Floodplain vegetation and wetland inundation frequencies under the full entitlement scenario were unchanged from pre-development for floodplain areas associated with five of the six assessment nodes. At the Warrego River at Barringun spells between inundation events of floodplain vegetation patches and wetlands at the small flood threshold (5000 ML/day) have been shortened under the full entitlement scenario. Spells between inundation events of floodplain vegetation patches and wetlands at medium-flood thresholds (5431,7970 and 8470 ML/day) have been lengthened under full entitlement. However the duration of spells between floods under full entitlement is still within the range experienced under pre-development. There is no difference between pre-development and full entitlement in the frequency of flooding at the large-flood threshold (19140 ML/day).

Absence of exotic fish - There was no difference between the scenarios in the percentage of years where strong recruitment was modelled to occur at three of the five environmental assessment nodes, and a reduction in recruitment opportunities for European carp at the other two nodes compared to predevelopment.

Migratory fish species - there was no increase in the number of high risk years at any of the assessment nodes as a consequence of the full entitlement scenario.

Waterholes as refugia - The number of no-flow spells over the simulation period was similar between scenarios at most environmental assessment nodes. Exceptions were Warrego River at Barringun where there were over 800 additional spells under full entitlement, and Warrego River at Turra where there were over 100 additional spells under full entitlement. Cumulative frequency plots show that this is due to more short-duration spells (typically lasting two to four months) at these two sites under the full entitlement scenario, but there are no other changes to the frequency distributions of spells between the scenarios at these or other Warrego environmental assessment nodes. These results suggest that there is no increased hazard to the function of waterholes as drought refuges for biota as most waterholes are likely to persist for longer than two to four months without flow.

Although potential groundwater dependent ecosystems were identified in the plan area in the ecological asset selection process, the risk to these features was not assessed by the Environmental Assessment Report—Stage 2 due to insufficient information. An improved understanding of groundwater hydrology and responses to management is required before assessments of risk to groundwater dependent ecosystems could be undertaken in future.

Paroo

All ecological assets were at low risk. No increase in risk was identified between the pre-development and full entitlement IQQM scenarios for the two assets modelled in the Paroo catchment. Six ecological indicators were not modelled as there was no difference between the flow regimes under the pre-development and full entitlement IQQM scenarios in the Paroo catchment, thus reflecting no increased risk to these assets from the current water resource plan. Because there is no change in the occurrence of flood events, this also means that the full entitlement scenario meets outcome 9f(v) in the WRP, relating to the provision of bird-breeding events in the Paroo Overflow Lakes.

Bulloo

All ecological assets were at low risk. No increase in risk was identified between the pre-development and full entitlement IQQM scenarios for the two assets modelled in the Bulloo catchment. Six ecological indicators were not modelled as there was no difference between the flow regimes under the pre-development and full entitlement IQQM scenarios in the Bulloo catchment, thus reflecting no increased risk to these assets from the current water resource plan. Because there is no change in the occurrence of flood events, this also means that the full entitlement scenario meets outcome 9f(v) in the WRP, relating to the provision of bird-breeding events in the Bulloo Lakes.

Nebine

The risk to six ecological asset indicators was modelled at one environmental assessment node in the Nebine catchment, and the risk to all assets was assessed as low.
Flow spawning fish - At the catchment-scale, the full entitlement scenario reduced yellowbelly abundance by 22% in comparison to the pre-development scenario, however the annual population abundance of Yellowbelly did not fall below the ToC under either the full entitlement or pre-development scenarios.

Migratory fish species - There was no change in the number and duration of connection events for migratory fish under the full entitlement scenario compared to pre-development

Eastern snake neck turtle - There was no change in either the number or the duration of high stress periods due to the full entitlement scenario. Although there were long periods of the simulation where the four year flood inundation return frequency ToC was exceeded at all assessment nodes under both flow scenarios, there was no increase in risk due to the full entitlement scenario compared with predevelopment. This highlights that risk can be naturally high for this species in the absence of water resource development due to variability in climate and rainfall.

Absence of exotic fish - There was no change in the percentage of years in the simulation period where strong recruitment was modelled to occur due to the full entitlement scenario

Floodplain vegetation and wetlands - Floodplain vegetation and wetland inundation frequencies under the full entitlement scenario were unchanged from pre-development.

Waterholes as refugia - waterholes were assessed at one node in the Nebine catchment, Nebine Creek at Roseleigh Crossing, and there was no difference in the total number of spells, spell duration frequency distributions or the maximum spell duration between the the full entitlement or pre-development scenarios.

Recommendations

The Environmental Assessment Report—Stage 2 provides recommendations to consider in the development of the new draft plans to prevent an increase in risk to ecological assets if the full take

of entitlements occurs in future. The recommendations of the Environmental Assessment Report—Stage 2 are summarised for each catchment below:

Warrego

1. For new and traded entitlements develop and apply cease to pump waterhole depth thresholds. Such thresholds are intended to protect the persistence of waterholes and thus the availability of habitat for fish and other biota, during prolonged periods without flow.

2. Monitor the occurrence of flow events that provide fish migration opportunities at gauging stations, and if the time since the previous suitable event is > 3 years, protect the next event to enable fish dispersal. Additional hydrological analysis would be required to derive a rule that achieves this protection and maximises the likelihood of a migration event occurring. Such a rule could form an additional criterion under the announced period water sharing rules in the current s.97(2) of the ROP.

3. Ensure that stock and domestic water releases from Allan Tannock Weir are not only of equivalent volume to inflows, but are also of at least equivalent duration and with equivalent rates of rise and fall to the pre-development scenario, to prevent fish responding to flow cues and being stranded by artificially shortened events.

4. Knowledge improvement activities could be conducted over the life of the plan to improve the understanding of interactions between riverine flooding, local rainfall and groundwater in supporting the watering requirements of floodplain vegetation, and the wetting regime required to support the ecological values and processes of wetlands.

5. Knowledge improvement activities, including waterhole mapping and persistence modelling, around the Cunnamulla node over the life of the plan could be undertaken to establish Thresholds of Concern and thus enable an assessment of the risk posed by the full entitlement scenario to waterholes as refugia.

6. Knowledge improvement activities, such as waterhole sediment depth profiling and core analysis, may be implemented over the life of the plan to establish accumulation and scouring rates and determine the frequency with which river-forming flows are required to enable an assessment of risk.

Paroo

No recommendations proposed

Bulloo

No recommendations proposed

Nebine

1. For new and traded entitlements develop and apply cease to pump waterhole depth thresholds. Such thresholds are intended to protect the persistence of waterholes and thus the availability of habitat for fish and other biota, during prolonged periods without flow.

2. Monitor the occurrence of flow events that provide fish migration opportunities at gauging stations, and if the time since the previous suitable event is > 3 years, protect the next event to enable fish dispersal. Additional hydrological analysis would be required to derive a rule that achieves this protection and maximises the likelihood of a migration event occurring.

Refer to section 6 of Appendix C for a description of how the recommendations of the Environmental Assessment Reports were considered in the new draft plans.

5. Risk assessments

IN addition to the risk assessments completed above for ecological assets as part of the environmental assessment, four seperate risk assessments were carried out for the plan area as part of the development of the new draft plans. These assessments not only met the requirements of a water resource plan review, but also suited the provisions for determining risks to water resources specified in the Basin Plan. The risk assessments conducted were:

1. **Risk assessment of insufficient water available for surface water and groundwater users (DNRM, 2013[5])**
   Facilitated by the Department of Natural Resources and Mines.

2. **Risk assessment of water being of a quality unsuitable for use (South West NRM Ltd, 2014)**
   Facilitated by the Department of Environment and Heritage Protection and South West NRM Ltd. for inclusion in the Healthy Waters Management Plan for the South West NRM Region of Queensland.

3. **Risk assessment of poor health of water-dependent ecosystems (DSITIA, 2013[4])**
   Facilitated by the Department of Natural Resources and Mines and the Department of Science, Information Technology, Innovation and the Arts through the environmental assessments outlined in section 4 of Appendix C.

4. **Risk assessment of insufficient water available for the environment (DNRM, 2013[4])**
   Facilitated by the Department of Natural Resources and Mines. Note this risk assessment was informed by the results of the Stage 1 and Stage 2 Environmental Assessment reports.

Each risk assessment is available on the department's website and was conducted in accordance with AS/NZS ISO 31000:2009 Risk Management—Principles and Guidelines. A full description of the methodology is contained in each of the risk assessment reports referred to above. The risk assessments were also consistent with the risk management process described in the National Water Initiative Policy Guidelines for Water Planning and Management—Risk Assessment Module (COAG, 2010[2]).

The risk management process that was implemented follows six steps in a cycle, as described in the Department of Natural Resources and Mines policy 'DERM Risk Management Policy and Procedure Review: June 2012 Version: 2.0':

1. Communicate and consult—The perspectives of different stakeholders are considered throughout the process to provide information on risks.

2. Establish the context—The environment and its boundaries that should be applied when considering risks are defined.

3. Identify risks—The risks are described in terms of what can happen and the impact that can result.

4. Analyse risks—Each risk is rated in terms of its likelihood of occurring and the consequence that would result if the risk occurred. This enables the level of risk to be established.

5. Evaluate and treat risks—The risks which require treatment are separated from the risks that can be tolerated without treatment. Options to treat intolerable risks are then identified. The most appropriate treatment/s that can be undertaken to reduce the intolerable risks are implemented.

6. Monitor and review—Reporting is conducted periodically to review risks, their risk level and the progress of treatments based on any new information.

The risk assessments considered current and future risks to water resources over the life of a water resource plan (10 years). The level of risk was determined quantitatively using information available from relevant documents and datasets, along with expert advice provided by representatives from the department, EHP and DSITIA. Key reports that informed the risk assessment were the water availability reports from the Sustainable Yields Project (CSIRO, 2007/8) and the NWC farm dams report (SKM, 2012)—as referred to on the Basin Plan Knowledge and Information Directory.

The Basin Plan requires that any risks that are assessed as medium or above must have management strategies developed to treat these risks. Tables C1 and C2 outline the results of the four risk assessments that were undertaken for surface water and groundwater and details to how each risk was treated.

Surface water risk assessments

Table C1 Surface water risk assessment results

Risk Assessment	Summary of results	Treatment
Risk assessment of insufficient water available for surface water [and groundwater users]	A low risk to Warrego, Paroo, Bulloo and Nebine surface water resources was identified in all cases. The socioeconomic report indicated that it is not likely that there will be significant future demands for water in the plan area (DNRM, 2014[1]). There is currently only limited coal seam gas activity within the plan area. At the time the socioeconomic report was prepared, there were three coal seam gas wells within the plan area (DNRM, 2014[1]). Each of these wells is an exploration bore constructed in early 2010 (DNRM, 2012). There is currently no coal seam gas produced within the plan area (DEEDI, 2012).	Maintain current level of water resource management in order to maintain the low risk. The new draft water resource plan also contains monitoring and reporting provisions. As part of the assessment and reporting requirements the chief executive must make ongoing assessments of whether trends in the data that is measured, collected and recorded would indicate that the outcomes in the water resource plan are being achieved. If the water resource plan outcomes are not being achieved then the water resource plan may be amended or replaced as per the Water Act. Such programs to inform the assessments of the plans effectiveness include the Environmental Flows Assessment Program, hydrologic monitoring at gauging stations as well as the monitoring bore network to measure groundwater levels and quality.

Risk assessment of water being of a quality unsuitable for use	There was a low risk in all catchments in the plan area of degradation from the majority of water quality issues (South West NRM Ltd, 2014). The risk assessment identified that there is a very high risk of elevated levels of suspended matter, including deposited sediment, in the Paroo and Bulloo, due to the soils and geology of these catchments. The risk of this type of water quality degradation decreased slightly in the Warrego and Nebine catchments due to a relatively flatter landscape, however the risk still remained high. All four catchments are at a high risk of water quality impacts resulting from land and aquatic pest fauna and aquatic pest flora. There is a medium risk of water quality and riparian impacts from land based pest flora across all four catchments. There is a high risk that the aquatic habitat, riparian extent / connectivity and riparian condition in all four catchments will degrade if not managed appropriately.	These water quality risks will be managed through the Draft Healthy Waters Management Plan for the South West NRM Region of Queensland (South West NRM Ltd, 2014).
Risk assessment of poor health of water-dependent ecosystems	Overall the risk to ecological assets from water resource development across the plan area was assessed as low. At some locations and times ecological assets experience increased stress from climatic variability under both full entitlement and pre development flow scenarios, however in each case the Threshold of Concern (ToC) was not exceeded. (DSITIA, 2013[4]). Note: ToC represent failure points for the ecological asset and as such can be considered minimum water requirements (DSITIA, 2013[4])	No treatment recommended as ecological assets are not considered to be at risk over the life of the plan under current water management arrangements.

Risk assessment of insufficient water available for the environment	A low risk to Warrego, Paroo, Bulloo and Nebine surface water resources was identified in all cases. The assessment included expert opinion on current water use patterns. The plan area has minimal water resource development with an end-of-system mean annual flow of 99 per cent for the Bulloo and Paroo catchments, 89 per cent for the Warrego catchment and 87 per cent for the Nebine catchment. The conceptual understanding of the aquatic ecosystem in the plan area does not indicate that water management poses a current significant threat (Negus et al. 2012). The socioeconomic report indicated that significant development of water resources over the next ten years is not expected (DNRM, 2014[1]).	Maintain current level of water resource management in order to maintain the low risk. The new draft water resource plan also contains monitoring and reporting provisions. As part of the assessment and reporting requirements the chief executive must make ongoing assessments of whether trends in the data that is measured, collected and recorded would indicate that the outcomes in the water resource plan are being achieved. If the water resource plan outcomes are not being achieved then the water resource plan may be amended or replaced as per the Water Act.

Groundwater risk assessments

The groundwater risk assessments were based on the groundwater SDL resource units set by the Murray-Darling Basin Authority (MDBA, 2013[1]). There are three groundwater SDL resource units identified in the plan area under the Basin Plan. In addition, a portion of the St George Alluvium: Condamine-Balonne (deep) aquifer overlaps the Nebine catchment and is therefore considered under State Government water resource management for the plan area. The groundwater risk assessment applied only to the subartesian water in the plan area, meaning the groundwater in aquifers above the Great Artesian Basin.

Table C2 Groundwater risk assessment results

Risk Assessment	Results	Treatment
Risk assessment of insufficient water available for [surface water and] groundwater users	The risk of insufficient groundwater available to support water users in the plan area was assessed as low in all cases, except for a high risk of growth in the take of groundwater for irrigation and other non-mining purposes in the St George Alluvium: Condamine-Balonne (deep) (GS61). This may result in a localised impact on water reliability and access, potentially requiring water users to move their bore location or increase the depth of their bores to continue to access groundwater.	This risk will be managed through the new draft water resource plan and resource operations plan by ensuring no increase in the take of water from this aquifer. Refer to section 6 in Appendix C of this report for a description of how the results of the risk assessment have been addressed in the new draft plans.

Risk assessment of water being of a quality unsuitable for use	Water quality risks to groundwater were assessed as low in all cases except for a medium risk of increased salinity in future in the St George Alluvium: Condamine-Balonne (deep) (GS61). The risk assessment determined that an increase in groundwater use from current levels in the St George Alluvium: Condamine-Balonne (deep) aquifer could result in higher salinity in this aquifer as saline groundwater can potentially be drawn-in from surrounding aquifers, including from the Great Artesian Basin (South West NRM Ltd, 2014).	This water quality risk is directly linked to the take of groundwater from the St George Alluvium: Condamine-Balonne (deep) aquifer. The risk will be managed through the new draft water resource plan and resource operations plan by ensuring no increase in the take of water from this aquifer. This will help to avoid higher salinity water being drawn in from surrounding aquifers.
Risk assessment of poor health of water-dependent ecosystems	An improved understanding of groundwater hydrology and responses to management is required before the risk to groundwater dependent ecosystems can be assessed.	Groundwater within the plan area is generally of poor quality and is largely undeveloped and is therefore considered a low risk to the plan area. Monitoring across the State is prioritised on the level of risk to the plan area. The moderate level of risk for lowering of groundwater levels in the St George Alluvium (deep) if there is a growth in extraction, which may impact on groundwater dependent ecosystems, is addressed by the management strategies in the new draft plans. No new water entitlements will be available in this aquifer under the new draft plans.
Risk assessment of insufficient water available for the environment	The risk of insufficient groundwater available to support the environment in the plan area was assessed as low in all cases, except for a medium risk of reducing the size and/or number of groundwater dependent ecosystems in future if groundwater extraction is not managed in the St George Alluvium: Condamine-Balonne (deep) (GS61).	This risk will be managed through the new draft water resource plan and resource operations plan by ensuring no increase in the take of water from this aquifer. Refer to section 6 in Appendix C of this report for a description of how the results of the risk assessment have been addressed in the new draft plans.

6. Addressing the recommendations of technical assessments in the draft plans

Section 10.22 (b) of the Basin Plan specifies that if the risk assessment identifies a risk to the water resources in the plan area, the water resource plan must explain why rules addressing the risk have or have not been included in the plan. The following section explains how the draft plans address the results of the technical assessments, of which the risk-assessment is one component. This section will therefore provide clarification as to how the risks identified through the four risk assessments were addressed in the new draft plans.

The results of the technical assessments described in section 2.2 indicated that the existing water resource plan and resource operations plan have mostly been successful in meeting the economic, social, cultural and environmental outcomes of the plan area. A key focus of the new draft plans will be retaining the existing provisions which are effective to ensure there is no reduction in the current level of water resource management.

Recommendations to improve the current level of water resource management in the plan area were identified in each of the technical assessments. Table C3 describes how the recommendations from the technical assessments are addressed where applicable by the new draft plans. Consideration of which recommendations were incorporated into the new draft plans was based on achieving a balance between the economic, social and environmental needs of the plan area.

Table C3 Addressing the recommendations of technical assessments in the new draft plans

	How the recommendations were addressed by the new draft plans
Social and economic assessment recommendations	
Develop groundwater management arrangements	The new draft water resource plan now applies to subartesian water not connected to the Great Artesian Basin. The new draft water resource plan specifies reserves of unallocated groundwater in two subartesian aquifers available to be applied for under the Water Regulation 2002. Groundwater will not be released where the aquifer is already fully allocated in the St George Alluvium: Condamine-Balonne (deep) (GS61) which underlies a portion of the Nebine catchment.
Support growth in the tourism industry	The new draft water resource plan sets aside unallocated water resources to support future growth in the plan area. Applications for unallocated groundwater reserves can be granted for any purpose. Applications for unallocated surface water reserves can only be granted for community purposes, except in the Bulloo which can be for any use. Community purpose includes the use of water for ecotourism or similar.

Consider Aboriginal values and uses of water (further expanded upon in the cultural assessment issues)	Consultation with traditional owners and development of a cultural assessment has been undertaken. The new draft water resource plan contains outcomes including: • *Availability of water for traditional owner communities dependent on water resources in the plan area to achieve their economic aspirations;* • *Availability of water for traditional owner communities dependent on water resources in the plan area to achieve their social aspirations;* • *Maintenance of flows that support water related aesthetic, cultural and recreational values in the plan area, including the cultural values of the traditional owners.* Additionally, recent amendments to the Water Act now enable an Aboriginal party or Torres Strait Islander party to take or interfere with water for traditional activities or cultural purposes, in the area of the State for which the person is an Aboriginal or Torres Strait Islander party without the need for an entitlement (See section 20B of the Water Act for further details).
Cultural assessment issues and values	
Reserves of water for traditional owners	As a result of numerous consultation processes and assessments, Commonwealth and state-wide water policy regarding the setting aside of reserves of water for traditional owners for social and economic purposes is recognised through recent changes to the Water Act and water resource plan provisions. The new draft water resource plan includes the following outcomes: • *Economic outcome—availability of water for traditional owners in the plan area dependent on water resources in the plan area to achieve their economic aspirations; and* • *Social outcomes—availability of water for traditional owners in the plan area dependent on water resources in the plan area to achieve their social aspirations.*
Maintenance of flows	More broadly, the maintenance of flows is an issue that has been raised throughout many consultation processes including that of the Basin Plan as well as being related to the specific issues raised by traditional owners in developing the new draft water resource plan (i.e. access to water and fish movement through Allan Tannock Weir). As a key social outcome for the sustainable management of water, the new draft plan includes the following outcome: • *Maintenance of flows that support water-related aesthetic, cultural and recreational values in the plan area, including the cultural values of the traditional owners of the plan area.*
Culturally significant plants and animals	The protection of culturally significant plants and animals has also been raised as an important issue throughout consultation processes. Many of the ecological assets studied for the Stage 1 Environmental Assessment Report include species among those important to traditional owners in the plan area such as Murray River cod, yabbies and freshwater mussels. In selecting ecological outcomes to protect a wide range of significant plants and animals, broad flow related outcomes are proposed in the new draft water resource plan, those being: • *Minimisation of changes to the natural variability of flows that support aquatic ecosystems;*

	• *Maintenance of near natural flow regime that supports the Paroo River and Bullo River;* • *Maintenance of flow regimes that support-* o *Waterholes, and;* o *River channels; and* o *Habitat for flow-spawning fish;* o *Floodplain vegetation and wetland systems in the plan area such as Currawinya Lakes, Paroo Overflow Lakes and Bullo Lakes.*
Rivers and waterholes	An important issue also raised throughout consultation processes has been the maintenance of rivers and waterholes for places for recreation, storytelling and fishing as well as having significance to singing, birthing sites and ceremonies. The new draft water resource plan proposes the following social outcome to protect the significance of rivers and waterholes to traditional owners in the plan area: • *Maintenance of flows that support water-related aesthetic, cultural and recreational values in the plan area, including the cultural values of the traditional owners in the plan area.*
Inclusion of a preamble acknowledging traditional owners	Aboriginal representatives from the plan area would like to see a preamble included in the new draft water resource plan similar to that in the 'Acknowledgement of the Traditional Owners of the Murray-Darling Basin' text from the Basin Plan. A preamble acknowledging Traditional Owners has been included in this overview report.
Tradable groundwater entitlements for use by the Aboriginal community	Groundwater entitlements will not be made tradable at this point in time as significant volumes of groundwater will be able to be applied for from a range of aquifers in the plan area.
Fees for the purchase, trading and use of water by traditional owners waived	Provisions relating to the specification of fees and how they should be applied are provided in other pieces of legislation. Water resource plans or resource operations plans deal with the sustainable management and allocation of water. However, purchase costs will be dealt with as part of the release of unallocated water under the process in the Water Regulation 2002. Recently, the Water Act was amended to allow an Aboriginal party to take or interfere with water for traditional activities or cultural purposes. There are no fees charged for the take and use of this water. Also it is within the powers of the Minister for Natural Resources and Mines to waive fees if a person is suffering hardship because of the effects of drought, flood, fire or other natural disaster; or economic recession.
Provide traditional owners with the ability to make decisions on the extraction of sand and gravel from watercourses	Provisions relating to the extraction of sand or gravel are specified in other pieces of legislation such as the Water Act. The water resource plan and resource operations plan can only deal with water. However, a native title assessment is required as part of the quarry application process. Either: - a quarry operator may address native title through negotiating with the registered native title party/ies about the impact the future act will have on their native title - an Indigenous land use agreement may be negotiated; or - if an environmental impact statement is required, the quarry

	proponent needs to develop and register a cultural heritage management plan.
Assign unallocated water for Aboriginal use for economic and cultural purposes	Small volumes (100 ML) of unallocated surface water are available in each catchment in the plan area for community purposes. The definition of community purpose has been expanded to include the purpose of helping traditional owners in the plan area achieve their economic and social aspirations. This means that traditional owners can now apply for unallocated water in line with the process set out in the Regulation to take water for these purposes. Further detail is contained in section 3.3.
Install fish ladders on weirs	The water resource plan or resource operations plan cannot direct the owner of infrastructure to install a fish ladder; however the department is investigating possible solutions for fish stranding downstream of Allan Tannock Weir. The Department of Agriculture, Forestry and Fisheries (DAFF), Sunwater and the local government are aware of this issue. Department of Agriculture, Fisheries and Forestry and Sunwater are responsible for installing fish ladders on weirs.
Fees paid to Traditional Owners for road construction water and cultural heritage assessments on access roads.	The water resource plan and resource operations plan can only deal with the sustainable management and allocation of water. Constructing authorities are authorised under section 20 (c) of the Water Act to access water without an entitlement. There are no fees charged to constructing authorities for taking water for road construction. Queensland legislation (such as the *Aboriginal Cultural Heritage Act 2003* and *Torres Strait Islander Cultural Heritage Act 2003*) requires that anyone who carries out a land-use activity is to exercise a duty of care where Aboriginal cultural heritage is located regardless of whether or not it has been identified or recorded in a database. Consultation with traditional owners may be necessary if there is a high risk that the activity may harm cultural heritage.
Environmental assessment recommendations	
Develop and apply cease to pump waterhole depth thresholds for new and traded entitlements in the Warrego catchment.	The new draft water resource plan has changed the provision to protect waterholes when considering new and traded entitlements. If a change in the location (or trade) from which water may be taken under an existing water allocation with a nil pass flow condition would allow the taking of water from a waterhole, a condition will be imposed on the allocation by the chief executive to ensure water can only be taken when there is a visible flow passing downstream of the waterhole control or weir. This provision doesn't apply to existing entitlements and the new draft plan doesn't seek to apply it to existing entitlements unless they are traded. This approach is deemed appropriate for the low level of water resource development predicted over the next ten years. Entitlement holders value and conserve the water in waterholes and thus do not use entitlements to their full permitted extent.
Monitor the occurrence of flow events that provide fish migration opportunities in the Warrego and Nebine catchments,	Due to the low level of water resource development in the Warrego and Nebine catchments, water sharing rules that provide specifically for fish migration are considered unnecessary. Any new in-stream structures that would interfere with the flow of water would need to comply with DAFF requirements for fish ladders and lifts. Passing flow conditions may also be imposed on water allocations seeking a change in location. Gauging stations in the Warrego and Nebine

and if the time since the previous suitable event is more than three years, protect the next event to enable fish dispersal.	catchments monitor the occurrence of flow events. Establishing water sharing rules to manage flows for fish migration is considered unnecessary due to the current low risk of impacts to migratory fish.
Adjust the duration of stock and domestic water releases from Allan Tannock Weir to prevent fish stranding.	ROL holder monitoring over the life of the current plan suggested that water release rates have been managed appropriately at Allan Tannock Weir. However, in response to an extreme dry period the draft resource operations plan includes proposed operational rules for Allan Tannock Weir that reflects existing interim arrangements to maintain the water level in the weir. Fish strandings below the weir are understood to be related not to the water release rate but to the height of the culvert under the road immediately downstream of the weir. The local council is aware of this issue.
Improve the understanding of interactions between riverine flooding, local rainfall and groundwater in supporting floodplain vegetation and wetlands in the Warrego catchment.	These recommendations will be taken into account when prioritising future monitoring. However, it is considered to be a low risk plan area as there is little water resource development and the population is stable. Monitoring across the State is prioritised on the level of risk to the plan area. The Minister can also consider new scientific information gathered from sources other than the department to improve the understanding of floodplain vegetation and wetlands in the Warrego catchment and aquatic ecosystems around Cunnamulla. Any sediment depth profiling and core analysis in the Warrego catchment undertaken by other agencies and organisations can also be used by the Minister.
Conduct waterhole mapping and persistence modeling to improve the understanding of the aquatic ecosystem around Cunnamulla.	
Conduct sediment depth profiling and core analysis in the Warrego catchment.	
Risk assessment outcomes	
Medium risk of reducing the size and/or number of groundwater dependent ecosystems in future in the St George Alluvium: Condamine-Balonne (deep) (GS61).	These risks arise if the level of extraction from the St George Alluvium: Condamine-Balonne (deep) (GS61) increases. As described in section 1.5.2 of this report, the difference between the BDL and SDL in the St George Alluvium: Condamine-Balonne (deep) is zero. This means that this aquifer is considered to be fully allocated. The only risk factor identified relates to the lowering of the groundwater level. Existing development in the St George Alluvium is not recent (generally development occurred between 1990 and 2002). Ensuring no new entitlement is released in either the deep or shallow alluvium will maintain the current balance. Maintaining the current level of consumptive water use from this aquifer is considered to be

High risk of growth in the take of groundwater for irrigation and other non-mining purposes in the St George Alluvium: Condamine-Balonne (deep) (GS61).	sustainable over the long-term.
Medium risk of increased salinity in future in the St George Alluvium: Condamine-Balonne (deep) (GS61).	
Improving the understanding of groundwater hydrology and responses to management in the plan area to better characterise risks to groundwater dependent ecosystems.	This recommendation will be taken into account when prioritising future monitoring.

Appendix C: Summary of monitoring programs

Program: Environmental Flows Assessment Program
Organisation: Queensland Government

The Queensland Government prioritises ecological monitoring under the Environmental Flows Assessment Program based on the risks present in a region. As the existing water resource plan results in minor changes to flow regimes, it is considered to pose a relatively small risk to aquatic ecosystems in comparison to other plan areas. As a result, ecological monitoring under the Environmental Flows Assessment Program has not been specifically conducted in the plan area. However, similarities between ecological assets in the plan area and adjacent catchments means ecological monitoring information collected in other plan areas is directly transferrable and can be used to inform the assessment of the existing plan, for example migratory fish species, flow spawning fish species, floodplain terrestrial vegetation species and permanent waterholes. The following studies were used to inform the flow requirements of ecological assets in the plan area:

- the reproduction and recruitment of golden perch (*Macquaria ambigua*) (DERM, 2010[1])
- the movement behaviour of fish between waterholes when flow events pass down dryland rivers (DERM, 2010[2])
- waterhole persistence during spells without flow and the function of waterholes as drought refuges (DERM, 2010[2])
- the responses of populations of floodplain vegetation communities, fish and aquatic food-webs to floods (Woods et al. 2012).

Program: Surface Water and Groundwater Ambient Monitoring Networks
Organisation: Queensland Government

The Surface Water and Groundwater Ambient Monitoring Networks are statewide programs that collect water quality monitoring data. Additional monitoring data relevant to the plan area is also collected through similar New South Wales Government programs. An analysis of the water quality data in the plan area indicated that surface water physical and chemical properties were found to be broadly within the Queensland Water Quality Guideline (DERM, 2009[1]) values throughout the region, indicating good water quality. Groundwater quality monitoring in bores accessing subartesian supplies identified salinities up to 60 000 µS/cm, but mostly in the range 1000–2000 µS/cm. Local groundwater quality guidelines are currently being developed through the draft South West Healthy Waters Management Plan, to improve the coordinated management of this resource into the future.

Program: Sustainable Rivers Audit
Organisation: Murray–Darling Basin Authority in association with the Queensland Government

The Sustainable Rivers Audit (SRA) provides a comprehensive assessment of river health in the Murray–Darling Basin and is overseen by an independent group of river ecologists. The SRA assesses the overall ecological health of river valleys based on the combination of results from five themes: fish, macroinvertebrates, vegetation, physical form and hydrology. The Queensland Government conducted sampling for the SRA in the Warrego and Paroo catchments. The most recent results are presented in the SRA Report 2, which covers the period from 2008 to 2010 (Davies et al. 2012). Prior to this, the SRA Report 1 was released which spanned 2004 to 2007.

The SRA 2 report concluded that the overall ecosystem health of the Paroo valley is good and the Warrego valley is moderate. These were the best ecosystem health ratings of any valley in the Murray-Darling Basin assessed by the SRA. In looking at each of the five SRA themes, both the Warrego and Paroo catchments are in good condition based on their physical form and riparian vegetation. Since 2004, the condition of fish communities has been consistently poor to very poor in the Warrego, and consistently good in the Paroo. The condition of aquatic macroinvertebrate communities was good in both catchments during 2008–10, but poor in the Warrego and moderate in the Paroo during 2004–2007. The SRA study design does not allow the source of impacts to be identified, so the influence of flow management on the results of the fish and macroinvertebrate themes is unknown. However, in terms of hydrology, the SRA Report 2 indicated that the main stem river and headwater streams in the Warrego and Paroo are considered to be in good condition. The SRA indicates that the Paroo has not changed significantly from its natural flow regime and the Warrego has only experienced a slight change from its natural flow regime.

Program: Q-Catchments (Previously the Stream and Estuary Assessment Program)
Organisation: Queensland Government

The Q-Catchments program reports on the condition of aquatic ecosystems across Queensland through a risk assessment framework (Marshall et al. 2006; Negus et al. 2009, 2012). Through the program, a risk assessment and threat prioritisation was conducted for the Warrego, Paroo, Bulloo and Nebine catchments (Negus et al. 2012). The results indicated that altered flow regimes do not pose a significant threat to the aquatic ecosystem. Rather, threats unrelated to water management such as pest fauna and sediment deposition in the plan area posed the greatest risks to the aquatic ecosystem. These threats have resulted in moderate impacts to the condition of the Warrego, Paroo and Nebine catchments and slight impacts in the Bulloo catchment (Negus et al. 2012).

Program: Resource Operations Licence Holder Monitoring
Organisation: SunWater

Monitoring of the Cunnamulla Weir is conducted by SunWater in accordance with the requirements and standards set out in the water resource plan and resource operations plan. In a review of the results, the water quality of the storage consistently fell within Queensland Water Quality Guideline (DERM, 2009[1]) values for electrical conductivity, dissolved oxygen, pH, nitrogen and phosphorus, but occasionally nitrogen and phosphorus concentrations were above guideline values during no-flow periods. Nitrogen and phosphorus represent nutrient inputs, which are commonly derived from land use rather than flow management.

Fish and turtle strandings have occurred as a result of water ponding against road infrastructure downstream of Allan Tannock Weir and installation of a fishway on the weir is being considered to prevent recurrence of these incidents. The Department of Agriculture, Fisheries and Forestry and SunWater, are responsible for the maintenance of infrastructure and fish passage at Cunnamulla Weir including mitigation of the fish and turtle stranding.

Program: Aerial Surveys of Waterbirds in Eastern Australia
Organisation: The University of New South Wales

The Aerial Surveys of Waterbirds in Eastern Australia provides long-term objective data on waterbird populations in approximately 2000 wetlands (Porter & Kingsford, 2011 and references there-in). Results have indicated that reproduction and recruitment of waterbirds coincides with widespread river flooding and large flood events. Typically, very large-scale rainfall systems that propagate from the tropics to the interior are a key influence on the total waterbird abundance in Australia (Padgham, 2011). This indicates that water resource planning can influence local wetland conditions for waterbirds, but the overall viability of waterbird populations is dictated by large-scale climatic factors.

Appendix D: Submission form

The department is seeking submissions from interested individuals, groups or entities, about the Overview Report and its new Draft Water Resource (name) Plan and draft amended Warrego, Paroo, Bulloo and Nebine resource operations plan.

How to make a submission

Please use the following checklist to ensure that you have made a proper submission—

- ☐ the name and address of each person making the submission has been specified on the submission form
- ☐ each person or authorised representative making the submission has signed the submission form
- ☐ the grounds of the submission and the facts and circumstances relied on to support those grounds have been stated and all the questions on the submission form have been answered
- ☐ any additional information has been attached and the submission form states the number of additional pages attached
- ☐ the submission form will be lodged by 5pm on 14 November 2014 (Allow enough time for receipt before the closing date for submissions)

The submission form and any attachments can be delivered to:

Postal Address:	**Street Address:**
The Chief Executive	The Chief Executive
Department of Natural Resources and Mines	Department of Natural Resources and Mines
Attention: Warrego, Paroo, Bulloo and Nebine Water Resource Planning Coordinator	Attention: Warrego, Paroo, Bulloo and Nebine Water Resource Planning Coordinator
Water Services South Region PO Box 318 Toowoomba QLD 4350	Water Services South Region 203 Tor St Toowoomba QLD 4350

Online: Get Involved www.qld.gov.au

Email: WRPWarregoParooBullooNebinewrp@dnrm.qld.gov.au

Fax: (07) 4529 1555

Inquiries: (07) 4529 1200

Any person may make a submission, including a representative of an interest group. All properly made submissions received will be acknowledged and information gathered will be taken into consideration in the development of the draft plan. Properly made submissions must be made

either in writing, as a fax, email or via the internet. In order for it to be considered a properly made submission it must: state the name and address of the person(s) making the submission, be signed by that/those person(s) and state the grounds of the submission and facts and circumstances relied on in support of the grounds. Email and online submissions will be regarded as written and signed.

Note: All submissions will be treated with sensitivity and wherever possible in confidence. However, submissions may be viewed by other parties under the provisions of the *Freedom of Information Act 1992*.

If you wish to use this form as your submission please complete the following pages. If you wish to make a more detailed submission, please attach additional pages to the back of this form.

Submission form

We appreciate your interest in the planning process and value your input. This submission form will help you to identify concerns you would like addressed. We ask that you identify yourself so that we may respond to your submission and contact you for further consultation, if you so desire.

Please note that it is not compulsory to answer all questions listed here.

Surname (Mr/Mrs/Ms/Dr/Other)

First Name	
Address	
Postcode	Fax No.
Organisation	
Position	
Phone No.	Mobile
Email	
Signature 1	Date
Signature 2*	Date

*if necessary, e.g. for an organisation

Which interest group do you primarily represent? (You may tick more than one box)

☐ Irrigator (surface water)	☐ Riparian landholder	☐ Research/academic
☐ Irrigator (groundwater)	☐ Horticultural interests	☐ Tourism industry
☐ Dryland farmer	☐ Local government	☐ Commercial fisher
☐ Grazier	☐ Stock and domestic water user	☐ Recreational fisher

☐ Mining industry

☐ Environmental interests

☐ Small business

☐ Water service provider

☐ Commerce/development

☐ NRM Board/Catchment

☐ Community group (please specify)
.....
.....

☐ Aboriginal community
……
……
……

☐ Industry group

(please specify)
……
……

☐ Other (please specify)…….....

Which part of the plan area do you represent? (You may tick more than one box - please refer to the subcatchment/catchment map in Schedule ? of the new draft water resource plan)

☐ Warrego River catchment

☐ Nebine Creek catchment

☐ Paroo River catchment

☐ Bullo River catchment

☐ Other. Please specify …….

a) New draft water resource plan. What features of the new draft plan do you think are worthwhile? What issues concern you? How do you think the new draft plan could be improved to address these or other issues?

b) **Draft amended resource operations plan.** What features of the draft amended resource operations plan do you think are worthwhile? What issues concern you? How do you think the draft amended resource operations plan could be improved to address these or other issues?

c) Do you have any other matters you wish to comment on in relation to information contained in this report? Please refer to specific section(s) of this Overview Report.

Number of additional pages attached to this submission form _____

Thank you for your time

Call: 13 QGOV (13 74 68)

Visit: www.dnrm.qld.gov.au

Queensland Government