

Burnett Basin Resource Operations Plan

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Foreword

The initial Burnett Basin Resource Operations Plan (ROP) was prepared following the release of the draft plan for comment in December 2002. After taking into account comments received following consultation and evaluation, the Burnett Basin ROP was implemented in May 2003. There have been a number of amendments to the original plan with changes in April 2005 to allow for the operation of Kirar (formally Eidsvold) Weir, in November 2005 to incorporate the Barker Barambah Creeks catchment and the operation of Paradise Dam within the Bundaberg Water Supply Scheme and another in December 2006 to include the Boyne River and Tarong Water Supply Scheme and the Boyne and Stuart River catchments.

This ROP is the main implementation tool for the basin's water resource plan, which was released in December 2000 as the *Water Resource (Burnett Basin) Plan 2000* (WRP). Amendments were made to the WRP in December 2001 and November 2005 to update water supply scheme boundaries and terminology and in November 2007 to incorporate the groundwater resources in the Coastal Burnett Groundwater Management Area.

The WRP and the ROP are complementary parts of a water planning process that will ensure that the basin's rivers are sustainably managed. The WRP strives to strike a balance between human needs and those of the environment. The resource operations plan is concerned with the practical business of sharing and managing the basin's water resources from day to day in a way that meets the water resource plan objectives.

The ROP must ensure that strategies established in the water resource plan for progressing the sustainable water allocation and management in the basin are met. To ensure that this is achieved, monitoring arrangements will be implemented and refined under the resource operations plan. They will be crucial in giving an indication of whether the water resource plan's environmental flow and water security outcomes are being met.

The resource operations plan contains arrangements for:

- converting existing water entitlements to tradeable water allocations;
- making new entitlements available;
- operation of infrastructure and management of water;
- trading of water allocations; and
- water and ecosystem monitoring.

The ROP will be progressively amended on a priority basis to extend its application throughout the WRP area. The ROP covers entitlements within the Lower Burnett and Kolan Rivers, the Upper Burnett and Nogo Rivers and the Barker Barambah Creeks project areas and the Boyne and Stuart Rivers project area which includes the Boyne River and Tarong Water Supply Scheme.

In conjunction with the water resource plan, the resource operations plan will provide for both the needs of a growing community and the natural environment that is so important for its lifestyle.

Debbie Best
Deputy Director-General
Department of Environment and Resource Management

TABLE OF CONTENTS

	PAGE
1 INTRODUCTION	1
2 SCOPE OF THE ROP	7
2.1 WRP under which the ROP is made	
2.2 Name of the ROP	
2.3 Commencement of the ROP	
2.4 ROP area	
2.5 Water to which the ROP applies	
2.6 Water infrastructure to which the ROP applies	
2.7 How water to which the ROP applies will be sustainably managed	
2.8 Water and natural ecosystem monitoring practices that will apply in the ROP area	
2.9 ROP area zones	
3 MONITORING.....	10
3.1 Monitoring Linkages to WRP Outcomes	
3.2 Queensland Government monitoring requirements	
3.3 ROL holder monitoring requirements	
3.4 Standard of data collection	
3.5 Standard of data reporting	
4 SUPPLEMENTED WATER SUPPLY SCHEMES	16
4.1 Bundaberg Water Supply Scheme	
4.1.1 Extent of the water supply scheme	
4.1.2 Water allocations associated with the water supply scheme	
4.1.3 Reserved for future amendments	
4.1.4 Infrastructure associated with the water supply scheme	
4.1.5 Infrastructure operating rules	
4.1.6 Water sharing rules	
4.1.7 Water allocation change rules	
4.1.8 Monitoring and reporting requirements for the ROL holder	
4.2 Upper Burnett Water Supply Scheme	
4.2.1 Extent of the water supply scheme	
4.2.2 Water allocations associated with the water supply scheme	
4.2.3 IWAs associated with the water supply scheme to be to be converted	
4.2.4 Infrastructure associated with the water supply scheme	
4.2.5 Infrastructure operating rules	
4.2.6 Water sharing rules	
4.2.7 Water allocation change rules	
4.2.8 Monitoring and reporting requirements for the ROL holder	
4.3 Reserved for future amendments	

4.4 Barker Barambah Water Supply Scheme

- 4.4.1 Extent of the water supply scheme
- 4.4.2 Water allocations associated with the water supply scheme
- 4.4.3 Reserved for future amendments
- 4.4.4 Infrastructure associated with the water supply scheme
- 4.4.5 Infrastructure operating rules
- 4.4.6 Water sharing rules
- 4.4.7 Water allocation change rules
- 4.4.8 Monitoring and reporting requirements for the ROL holder

4.5 Boyne River and Tarong Water Supply Scheme

- 4.5.1 Extent of the water supply scheme
- 4.5.2 Water allocations associated with the water supply scheme
- 4.5.3 Reserved for future amendments
- 4.5.4 Infrastructure associated with the water supply scheme
- 4.5.5 Infrastructure operating rules
- 4.5.6 Water sharing rules
- 4.5.7 Water allocation change rules
- 4.5.8 Monitoring and reporting requirements for the ROL holder

4.6 to 4.9 Reserved for future amendments**4.10 Water allocation change rules****5 UNSUPPLEMENTED WATER MANAGEMENT 29****5.1 Lower Burnett and Kolan Rivers Water Management Area**

- 5.1.1 Extent of the Lower Burnett and Kolan Rivers Water Management Area
- 5.1.2 Subcatchment areas
- 5.1.3 Reserved for future amendments
- 5.1.4 Operating rules
- 5.1.5 Water allocation change rules
- 5.1.6 Water allocation zones
- 5.1.7 Water allocation groups

5.2 Upper Burnett and Nogo Rivers Water Management Area

- 5.2.1 Extent of the Upper Burnett and Nogo Rivers Water Management Area
- 5.2.2 Subcatchment areas
- 5.2.3 Reserved for future amendments
- 5.2.4 Operating rules
- 5.2.5 Water allocation change rules
- 5.2.6 Water allocation zones
- 5.2.7 Water allocation groups

5.3 Barker Barambah Creeks Water Management Area

- 5.3.1 Extent of the Barker Barambah Creeks Water Management Area
- 5.3.2 Subcatchment areas
- 5.3.3 Reserved for future amendments
- 5.3.4 Operating rules
- 5.3.5 Water allocation change rules
- 5.3.6 Water allocation zones
- 5.3.7 Water allocation groups

5.4	Boyne and Stuart Rivers Water Management Area	
5.4.1	Extent of the Boyne and Stuart Rivers Water Management Area	
5.4.2	Subcatchment areas	
5.4.3	Reserved for future amendments	
5.4.4	Operating rules	
5.4.5	Water allocation change rules	
5.4.6	Water allocation zones	
5.4.7	Water allocation groups	
6	GRANTING AND AMENDING WATER ALLOCATIONS, LICENCES AND RESOURCE OPERATIONS LICENCES	40
6.1	Water licence applications under s.206 of the Water Act	
6.1.1	All other applications	
6.1.2	Mining tenure	
6.1.3	Local governments	
6.1.4	Significant projects	
6.2	Reserved for future amendments	
6.3	Process for dealing with existing applications for water licences	
6.4	Process for granting or amending a ROL for the proposed Barlil Weir	
6.4.1	Granting a ROL	
6.4.2	Amending a ROL by the chief executive	
6.4.3	Amending a ROL on application of the ROL holder	
7	MEETING FUTURE WATER REQUIREMENTS	45
7.1	Water reserved under the ROP	
8	AMENDING THE ROP	48
8.1	Amending the ROP to allow approved infrastructure	
8.2	Other amendments that can be made to the ROP	
8.3	Future amendments contemplated under s.105 of the Water Act	
8.3.1	Boyne River catchment	
9	IMPLEMENTATION.....	51
9.1	Implementation schedule for the ROP	
9.2	Amendments to the ROP	
	GLOSSARY.....	279

LIST OF ATTACHMENTS

SCOPE OF THE ROP	56
2.1 Scope of the plan: Zones for Water Supply Schemes in the ROP area	
2.2 Scope of the plan: Zones for Water Management Areas in the ROP area	
MONITORING.....	83
3.1 Monitoring linkages to WRP outcomes	
3.2 Monitoring: Water quality and quantity	
3.3 Monitoring: Natural ecosystems	
SUPPLEMENTED WATER SUPPLY SCHEMES	
<i>Bundaberg Water Supply Scheme.....</i>	101
4.1A Reserved for future amendments	
4.1B Reserved for future amendments	
4.1C Reserved for future amendments	
4.1D Infrastructure details	
4.1E Rules for operation of infrastructure	
4.1F Water sharing rules	
4.1G Monitoring program	
4.1H Water allocation change rules	
<i>Upper Burnett Water Supply Scheme.....</i>	145
4.2A Details of conversions to water allocations	
4.2B Reserved for future amendments	
4.2C Reserved for future amendments	
4.2D Infrastructure details	
4.2E Rules for operation of infrastructure	
4.2F Water sharing rules	
4.2G Monitoring program	
4.2H Water allocation change rules	
<i>Barker Barambah Water Supply Scheme</i>	180
4.3A Reserved for future amendments	
4.3B Reserved for future amendments	
4.3C Reserved for future amendments	
4.3D Infrastructure details	
4.3E Rules for operation of infrastructure	
4.3F Water sharing rules	
4.3G Monitoring program	
4.3H Water allocation change rules	

Boyne River and Tarong Water Supply Scheme 212

- 4.4A Reserved for future amendments
- 4.4B Reserved for future amendments
- 4.4C Reserved for future amendments
- 4.4D Infrastructure details
- 4.4E Rules for operation of infrastructure
- 4.4F Water sharing rules
- 4.4G Monitoring program
- 4.4H Water allocation change rules

UNSUPPLEMENTED WATER MANAGEMENT**Lower Burnett and Kolan Rivers Water Management Area 238**

- 5.1A Reserved for future amendments
- 5.1B Reserved for future amendments
- 5.1C Operating rules for water allocations taken by water harvesting
- 5.1D Water allocation change rules

Upper Burnett and Nogo Rivers Water Management Area 247

- 5.2A Reserved for future amendments
- 5.2B Reserved for future amendments
- 5.2C Operating rules for water allocations taken by water harvesting
- 5.2D Water allocation change rules

Barker Barambah Creeks Water Management Area 257

- 5.3A Reserved for future amendments
- 5.3B Reserved for future amendments
- 5.3C Operating rules for water allocations taken by water harvesting
- 5.3D Water allocation change rules

Boyne and Stuart Rivers Water Management Area 265

- 5.4A Reserved for future amendments
- 5.4B Reserved for future amendments
- 5.4C Operating rules
- 5.4D Water allocation change rules

IMPLEMENTATION 274

- 9.1 Implementation schedule
- 9.2 Amendment history

LIST OF TABLES

Ch. 5: UNSUPPLEMENTED WATER MANAGEMENT	33
Lower Burnett and Kolan Rivers Water Management Area	
Water allocation groups	
Upper Burnett and Nogo Rivers Water Management Area	
Water allocation groups	
Barker Barambah Creeks Water Management Area	
Water allocation groups	
Boyne and Stuart Rivers Water Management Area	
Water allocation groups	
Ch. 7: MEETING FUTURE WATER REQUIREMENTS	47
Water reserved under the ROP	
Att. 2.1: SCOPE OF THE PLAN: ZONES FOR WATER SUPPLY SCHEMES IN THE ROP AREA	56
Att. 2.2: SCOPE OF THE PLAN: ZONES FOR WATER MANAGEMENT AREAS IN THE ROP AREA.....	59
Att. 3.2: MONITORING: WATER QUALITY AND QUANTITY.....	91
Queensland Government gauging station locations	
Att. 3.3: MONITORING: NATURAL ECOSYSTEMS	94
Summary table of natural ecosystem monitoring	
Monitoring sites	
Att. 4.1D: BUNDABERG WATER SUPPLY SCHEME: INFRASTRUCTURE DETAILS	104
Fred Haigh Dam – Kolan River – AMTD 76.4	
Bucca Weir – Kolan River – AMTD 38	
Kolan Barrage – Kolan River – AMTD 14.7	
Ned Churchward Weir – Burnett River – AMTD 74.5	
Ben Anderson Barrage – Burnett River – AMTD 25.9	
Paradise Dam – Burnett River – AMTD 131.4	
Att. 4.1E: BUNDABERG WATER SUPPLY SCHEME: RULES FOR OPERATION OF INFRASTRUCTURE.....	110
Nominal operating levels for storages	
Minimum operating levels for storages	
Bucca Weir minimum passing flows	
Paradise Dam minimum releases	
Fred Haigh Dam strategy	
Bucca Weir strategy	
Paradise Dam strategies	

Att. 4.1F: BUNDABERG WATER SUPPLY SCHEME: WATER SHARING RULES.....	120
Storage loss depth – Fred Haigh Dam, Bucca Weir, Kolan Barrage, Ned Churchward Weir and Ben Anderson Barrage	
Storage loss depth – Paradise Dam	
Inflow allowances	
Reserve volumes	
Transmission and operational losses	
Reserved volumes for Burnett and Kolan Subschemes	
Transmission and operation loss allowances for Burnett Subscheme	
Transmission and operation loss allowances for Kolan Subscheme	
Att. 4.1G: BUNDABERG WATER SUPPLY SCHEME: MONITORING PROGRAM.....	134
Locations where data is required	
Att. 4.1H: BUNDABERG WATER SUPPLY SCHEME: WATER ALLOCATION CHANGE RULES.....	141
Permitted distributions of high priority water allocations in the Bundaberg Water Supply Scheme by zone	
Permitted distributions of medium priority water allocations in the Bundaberg Water Supply Scheme by zone	
Permitted use of high priority water allocations in the Bundaberg Water Supply Scheme by zone	
Permitted use of medium priority water allocations in the Bundaberg Water Supply Scheme by zone	
Att. 4.2A: UPPER BURNETT WATER SUPPLY SCHEME: DETAILS OF CONVERSIONS TO WATER ALLOCATIONS.....	145
Details of conversions to water allocations	
Att. 4.2D: UPPER BURNETT WATER SUPPLY SCHEME: INFRASTRUCTURE DETAILS.....	148
Wuruma Dam (including Saddle Dam) – Nogo River – AMTD 23	
John Goleby Weir – Burnett River – AMTD 324.8	
Jones Weir – Burnett River – AMTD 240.1	
Claude Wharton Weir – Burnett River – AMTD 202.4	
Kirar Weir – Burnett River – AMTD 300.4	
Att. 4.2E: UPPER BURNETT WATER SUPPLY SCHEME: RULES FOR OPERATION OF INFRASTRUCTURE.....	153
Nominal operating levels for storages	
Minimum operating levels for storages	
Claude Wharton Weir minimum releases	
Att. 4.2F: UPPER BURNETT WATER SUPPLY SCHEME: WATER SHARING RULES.....	159
Storage loss depth	
Inflow allowances	
Reserve volumes	
Transmission and operational losses	
Desired volume for Jones and Claude Wharton Subschemes	
Att. 4.2G: UPPER BURNETT WATER SUPPLY SCHEME: MONITORING PROGRAM.....	170
Locations where data is required	

Att. 4.2H: UPPER BURNETT WATER SUPPLY SCHEME: WATER ALLOCATION CHANGE RULES.....	176
Permitted distributions of high priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone	
Permitted distributions of medium priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone	
Permitted use of high priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone	
Permitted use of medium priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone	
Att. 4.3D: BARKER BARAMBAH WATER SUPPLY SCHEME: INFRASTRUCTURE DETAILS.....	183
Bjelke-Petersen Dam – Barker Creek – AMTD 1.3	
Joe Sippel Weir – Barambah Creek – AMTD 171.8	
Silverleaf Weir – Barambah Creek – AMTD 120.4	
Att. 4.3E: BARKER BARAMBAH WATER SUPPLY SCHEME: RULES FOR OPERATION OF INFRASTRUCTURE.....	186
Nominal operating levels for storages	
Minimum operating levels for storages	
Att. 4.3F: BARKER BARAMBAH WATER SUPPLY SCHEME: WATER SHARING RULES	195
Storage loss depth	
Reserve volumes	
Transmission and operational losses	
Att. 4.3G: BARKER BARAMBAH WATER SUPPLY SCHEME: MONITORING PROGRAM.....	202
Locations where data is required	
Att. 4.3H: BARKER BARAMBAH WATER SUPPLY SCHEME: WATER ALLOCATION CHANGE RULES.....	208
Permitted distributions of high priority water allocations in the Barker Barambah Water Supply Scheme by zone	
Permitted distributions of medium priority water allocations in the Barker Barambah Water Supply Scheme by zone	
Permitted use of high priority water allocations in the Barker Barambah Water Supply Scheme by zone	
Permitted use of medium priority water allocations in the Barker Barambah Water Supply Scheme by zone	
Att. 4.4D: BOYNE RIVER AND TARONG WATER SUPPLY SCHEME: INFRASTRUCTURE DETAILS.....	215
Boondooma Dam – Boyne River – AMTD 86.7	
Att. 4.4E: BOYNE RIVER AND TARONG WATER SUPPLY SCHEME: RULES FOR OPERATION OF INFRASTRUCTURE	216
Minimum operating levels for storages	
Att. 4.4F: BOYNE RIVER AND TARONG WATER SUPPLY SCHEME: WATER SHARING RULES	222
Storage loss depth	
Transmission and operational losses	

Att. 4.4G: BOYNE RIVER AND TARONG WATER SUPPLY SCHEME: MONITORING PROGRAM.....	229
Locations where data is required	
Att. 4.4H: BOYNE RIVER AND TARONG WATER SUPPLY SCHEME: WATER ALLOCATION CHANGE RULES.....	234
Permitted use of high priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone	
Permitted use of medium priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone	
Permitted distributions of high priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone	
Permitted distributions of medium priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone	
Att. 5.1C: LOWER BURNETT AND KOLAN RIVERS WATER MANAGEMENT AREA: OPERATING RULES FOR WATER ALLOCATIONS TAKEN BY WATER HARVESTING	240
Seasonal water assignment use limits	
Att. 5.1D: LOWER BURNETT AND KOLAN RIVERS WATER MANAGEMENT AREA: WATER ALLOCATION CHANGE RULES	244
Change limits: maximum and minimum nominal volumes by zone	
Att. 5.2C: UPPER BURNETT AND NOGO RIVERS WATER MANAGEMENT AREA: OPERATING RULES FOR WATER ALLOCATIONS TAKEN BY WATER HARVESTING	249
Seasonal water assignment use limits	
Att. 5.2D: UPPER BURNETT AND NOGO RIVERS WATER MANAGEMENT AREA: WATER ALLOCATION CHANGE RULES	254
Change limits: maximum and minimum nominal volumes by zone	
Att. 5.3C: BARKER BARAMBAH CREEKS WATER MANAGEMENT AREA: OPERATING RULES FOR WATER ALLOCATIONS TAKEN BY WATER HARVESTING	259
Seasonal water assignment use limits	
Att. 5.3D: BARKER BARAMBAH CREEKS WATER MANAGEMENT AREA: WATER ALLOCATION CHANGE RULES.....	262
Change limits: maximum and minimum nominal volumes by zone	

LIST OF FIGURES

Ch. 1: INTRODUCTION	2
Relationship between WRPs and ROPs	
Ch. 3: MONITORING.....	13
Monitoring framework	
Att. 2.1 AND Att. 2.2: SCOPE OF THE PLAN.....	62
Kolan Zone AA	
Kolan Zones AB & AC	
Kolan Zone AD	
Lower Burnett Zone CA	
Lower Burnett Zone CB	
Upper Burnett Zones GA & GB	
Upper Burnett Zone GY & Lower Burnett Zone GZ	
Upper Burnett Zones NA, NB & NC	
Upper Burnett Zones OA, OB & MA	
Upper Burnett Zones OC, OD & PA	
Upper Burnett Zones SA & SB	
Barker Barambah Zone HB & HZ	
Barker Barambah Zones HC & HD	
Barker Barambah Zones HE & JA	
Barker Barambah Zone JC	
Barker Barambah Zones HJ, HK, HL & JD	
Boyne Zone LA	
Boyne Stuart Zone KA	
Boyne Zone KB	
Stuart Zones KC & KD	
Stuart Zone KE	
Att. 3.2: MONITORING: WATER QUALITY AND QUANTITY.....	93
Gauging Stations covered by this ROP	
Att. 3.3: MONITORING: NATURAL ECOSYSTEMS	100
Natural ecosystem monitoring sites covered by this ROP	

LIST OF MAPS

Map A – Map of Plan Area	52
Map B – Supplemented water supply schemes covered by this ROP	53
Map C – Unsupplemented water management areas covered by this ROP	54
Map D – Subcatchment Areas.....	55

Chapter**1****Introduction****Overview**

This chapter summarises the evolution of the Water Resource (Burnett Basin) Plan 2000 (WRP) from its foundation as subordinate legislation under the Water Act 2000 to its implementation through a Resource Operations Plan (ROP).

The proposed scope of the ROP in implementing the WRP and how it may be amended to provide for future infrastructure are described in this chapter.

Background

The passing of the Water Act 2000 by the Queensland Parliament began a new era of water resource planning and management in the state. The Act requires the Minister to plan for the allocation and sustainable management of water to meet Queensland's future water requirements, including consideration of the protection of natural ecosystems and security of supply to water users.

To achieve this objective, the Water Act prescribes the process for preparing WRPs for specific catchments within Queensland. Under this process WRPs are prepared to identify a balance between waterway health and community needs, and to set allocation and management objectives. The ROP provides the operational details on how this balance can be achieved. The process is outlined in Figure 1.1.

In December 2000, the Burnett Basin took an important step towards sustainability with the release of the WRP.

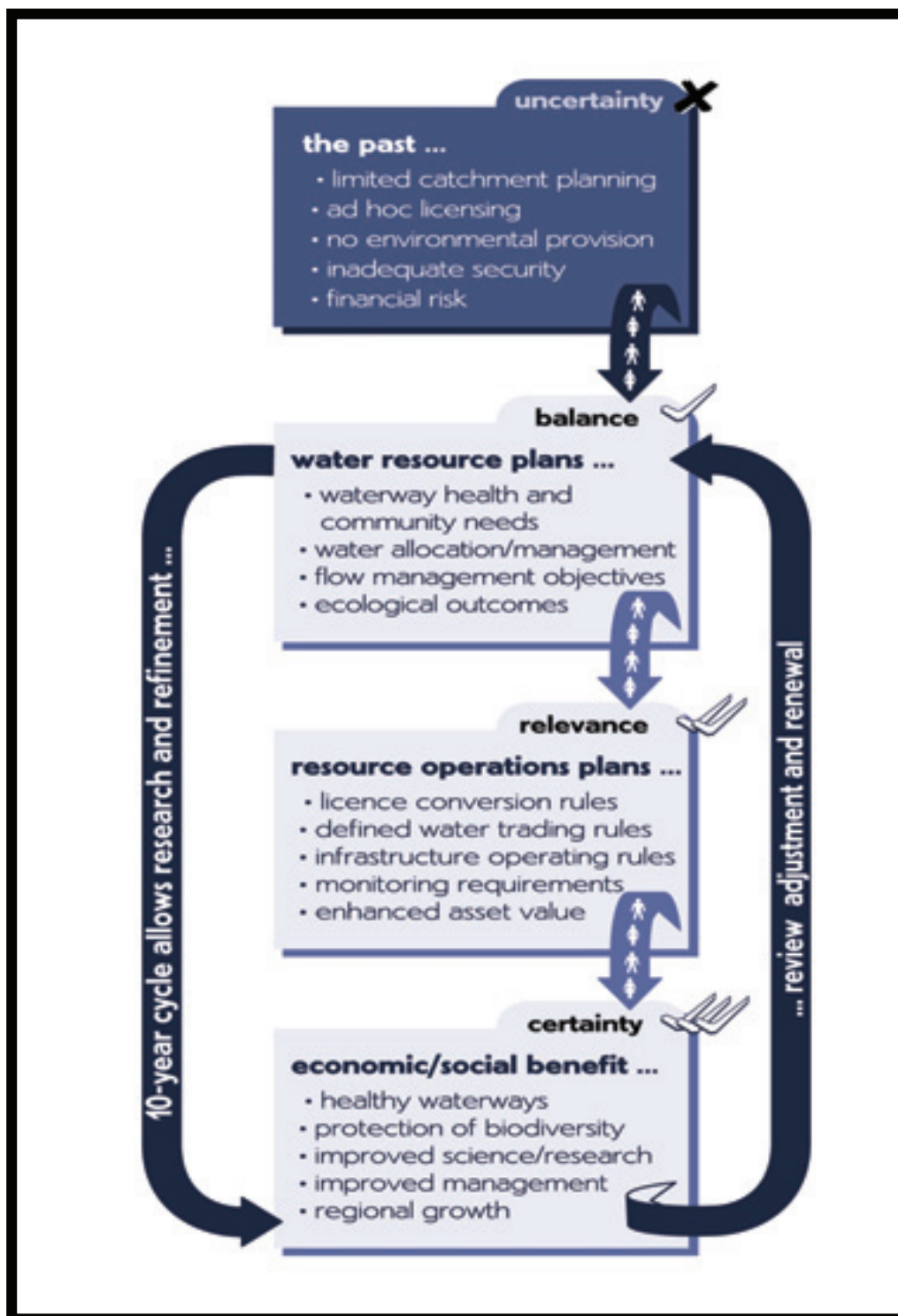
The Burnett Basin is one of the largest in south-east Queensland. Its contribution to the Queensland economy is derived from dryland and irrigated agriculture, grazing, mining, fisheries and power generation. Equally important is the basin's diverse natural environment.

Covering approximately 38 370 square kilometres, including the catchments of the Burnett, Kolan, Isis, Gregory and Elliott Rivers, the plan area stretches from the western ranges to the coastal plains. The basin's rivers and their ecosystems have evolved in response to highly variable and irregular flow patterns.

The purpose of the WRP is to provide a strategic framework for the allocation and management of water within the Burnett Basin to meet defined outcomes. These outcomes are listed in Section 2.7 of the ROP.

The ROP is the primary tool for implementing the WRP. It defines the rules that will guide the day-to-day management of stream flows and water infrastructure to achieve the objectives of the WRP.

Figure 1.1: Relationship between WRPs and ROPs



WRP amendments

The WRP has been amended since its release to correct a minor drafting error prior to the release of the ROP. A minor amendment was released in November 2005 to update scheme boundaries and terminology for consistency with the ROP.

The WRP was amended under Part 3A of the Water Infrastructure Development (Burnett Basin) Act 2001. This Act provided for the amendment of the WRP and facilitated investigations into the feasibility of developing water infrastructure in the Burnett Basin. Burnett Water Pty Ltd, a subsidiary company of SunWater, carried out these investigations.

The Environmental Impact Statement (EIS) process carried out as part of the infrastructure investigations provided extensive opportunities for consultation. On the basis of this process the Government amended the WRP by legislation rather than using the processes contained in the Water Act. The Water Infrastructure Development (Burnett Basin) Act 2001 amended s.11(2) and Schedule 5 of the WRP.

A Burnett Basin Water Resource Plan amendment was approved in November 2007 to deal with the groundwater resources in the Coastal Burnett Groundwater Management Area in line with the requirements of the Water Act 2000. It was developed to provide a sustainable management framework for the coastal groundwater resources of the Elliott Formation and Fairymead Beds alluvial aquifers.

Implementation of the WRP

Only one ROP can be in effect to implement each WRP. This ROP implements the WRP in the Lower Burnett and Kolan Rivers project area, the Upper Burnett and Nogo Rivers project area, the Barker Barambah Creeks catchment project area and the Boyne and Stuart River catchments project area.

Implementation includes:

- *conversion of existing authorisations to water allocations;*
- *granting of Resource Operations Licences (ROLs) to existing water service providers (such as SunWater);*
- *infrastructure operating rules to ensure that Water Allocation Security Objectives (WASOs) and Environmental Flow Objectives (EFOs) are met; and*
- *water allocation change rules.*

Preparation of the ROP

Preparation of the draft ROP

On 20 February 2002, the chief executive of the Department of Natural Resources and Mines (NR&M) published a notice inviting interested individuals and groups to make submissions on the Department's intention to prepare a ROP.

Release of the draft ROP

The draft ROP was released on 2 December 2002. A Public Notice was published to advise of the release and advertise a series of public meetings held throughout the ROP project areas.

Finalisation of the ROP

A total of 242 submissions were received on the draft ROP. These submissions were referred to the independent Referral Panel who made recommendations to the chief executive. A report on issues raised in the submissions has been prepared by the Department and is available on request. The ROP was approved by the Governor in Council on 29 May 2003 and came into effect on 2 June 2003.

Amendment to include Kirar Weir

The ROP reserved allocations of water to be made available through approved proposed infrastructure developments. In 2005 the plan was amended to include Kirar (formally Eidsvold) Weir in the Upper Burnett Water Supply Scheme.

Amendment to include Paradise Dam and the Barker Barambah Creeks catchment, including the Barker Barambah Water Supply Scheme

Preparation of the draft amendment for the Barker Barambah Creeks Catchment

On 22 September 2003, the chief executive of NR&M published a notice inviting interested individuals and groups to make submissions on the Department's intention to amend the ROP to include the Barker Barambah Creeks catchment, including the Barker Barambah Water Supply Scheme.

Release of the draft amendment for the Barker Barambah Creeks Catchment

The draft amending ROP was released on 30 May 2005. A Public Notice was published to advise of the release and advertise a public meeting held in Murgon.

Finalisation of the amendment to include Paradise Dam and the Barker Barambah Creeks Catchment

A total of 5 submissions were received on the draft amending ROP for the Barker Barambah Creeks Catchment. These submissions were referred to the independent Referral Panel who made recommendations to the chief executive. A report on issues raised in the submissions has been prepared by the Department and is available on request.

This amendment also included provision for the operation of Paradise (formally Burnett River) Dam in the Bundaberg Water Supply Scheme in accordance with Section 8.1 of the ROP. The ROP (April 2005) reserved allocations of water to be made available through approved proposed infrastructure developments.

The amendment to the ROP was approved by the Governor in Council on 17 November 2005 and came into effect on 21 November 2005.

Amendment to include Boyne River and Tarong Water Supply Scheme and Boyne and Stuart River catchments into the plan

Preparation of the draft amendment for the Boyne and Stuart River Catchments

On the 6th of September 2004, the chief executive of NR&M published a notice inviting interested individuals and groups to make submissions on the Department's intention to amend the ROP to include the Boyne River and Tarong Water Supply Scheme and Boyne and Stuart River catchments.

Release of the draft amendment for the Boyne River and Tarong Water Supply Scheme and Boyne and Stuart River catchments into the plan

The draft amending ROP was released on 15 May 2006. A Public Notice was published to advise of the release and advertise two public meetings held in Kingaroy and Mundubbera.

Finalisation of the amendment to include Boyne River and Tarong Water Supply Scheme and Boyne and Stuart River catchments

A total of 17 submissions were received on the draft amending ROP for the Boyne and Stuart River Catchments. These submissions were referred to the independent Referral Panel who made recommendations to the chief executive. A report on issues raised in the submissions has been prepared by the Department and is available on request.

The amendment to the ROP was approved by the Governor in Council on 14 December 2006 and came into effect on 18 December 2006.

Future amendments

The ROP will be progressively amended on a priority basis to extend its application to include the following water supply schemes and unsupplemented areas:

- *Three Moon Creek Water Supply Scheme;*
- *Gregory, Elliott and Isis catchments; and*
- *unsupplemented tributaries and all other areas.*

Proposed infrastructure

The ROP has reserved allocations of water which will be made available through proposed infrastructure developments.

Proposed infrastructure in the Bundaberg Water Supply Scheme and Upper Burnett Water Supply Scheme includes:

- *raising of Jones Weir (Stage 2); and*
- *raising of Ned Churchward Weir (Stage 2).*

Proposed infrastructure in the Barker Barambah Water Supply Scheme includes the construction of Barlil Weir.

The specific volume of the reserved allocations and the details of the infrastructure are provided in the overview of Chapter 7.

Following the construction of each proposed piece of infrastructure to the satisfaction of the chief executive, it is intended that water allocations will be granted or amended in accordance with the approved infrastructure. A Resource Operations Licence (ROL) will also be granted where required.

As the design details of the new infrastructure have yet to be finalised, this ROP details a process for amending the ROP to include infrastructure design and construction details. This amendment will allow water to be made available within the project areas at the earliest opportunity.

The process by which this amendment will occur is explained in the overview of Chapter 8.

**Chapter
2****Scope of the ROP****Overview**

The Water Act clearly specifies the elements a ROP must contain or address. The elements include the WRP which the ROP is implementing, its name, the area and the water to which it applies, the infrastructure involved, how water will be managed and how it will be monitored.

The ROP applies to the entire Burnett Basin area covered by the WRP. Within this basin the ROP identifies project areas for:

- *converting water entitlements to tradeable water allocations;*
- *establishing zones and rules for water trading; and*
- *establishing rules for operating infrastructure.*

In addition the ROP specifies which reaches are to be included in water trading zones.

2.1 WRP under which the ROP is made

The ROP is made to implement the *Water Resource (Burnett Basin) Plan 2000*.

2.2 Name of the ROP

The name of this ROP is the *Burnett Basin Resource Operations Plan, April 2010*.

2.3 Commencement of the ROP

The Burnett Basin ROP was approved by the Governor in Council on 29 May 2003 and came into effect on 2 June 2003. The ROP commenced on the first business day after the ROP took effect.

Amendments to the ROP take effect on the day approval by the Governor in Council is notified in the Gazette. Amendments to the ROP commence on the first business day after the amendment to the ROP takes effect.

2.4 ROP area

The ROP area is the entire Burnett Basin area covered by the WRP. The area covered is shown in Map A.

The ROP contains the management rules for the following areas:

- Boyne River Water Project Area (Boyne River and Tarong Water Supply Scheme and the Boyne and Stuart Rivers Water Management Area);
- Bundaberg Water Project Area (Bundaberg Water Supply Scheme and Lower Burnett and Kolan Rivers Water Management Area);
- Barker Barambah Water Project Area (Barker Barambah Water Supply Scheme and Barker Barambah Creeks Water Management Area); and
- Upper Burnett Water Project Area (Upper Burnett Water Supply Scheme and the Upper Burnett and Nogo Rivers Water Management Area).

These water supply schemes and water management areas are shown in Maps B and C.

2.5 Water to which the ROP applies

The ROP applies to all water contained in a watercourse or lake, or water in springs not connected to artesian water, or subartesian water connected to artesian water and water collected in a weir or dam constructed across a watercourse or lake in the ROP area.

2.6 Water infrastructure to which the ROP applies

The ROP applies to the infrastructure outlined in the attachments for the following water supply schemes:

- Bundaberg Water Supply Scheme – Attachment 4.1D;
- Upper Burnett Water Supply Scheme – Attachment 4.2D;
- Barker Barambah Water Supply Scheme – Attachment 4.3D; and
- Boyne River and Tarong Water Supply Scheme - Attachment 4.4D.

Proposed infrastructure within these water supply schemes is dealt with in Chapters 7 and 8.

2.7 How water to which the ROP applies will be sustainably managed

The ROP has been developed to meet the outcomes for sustainable management of water specified in Part 3 of the WRP. These outcomes will be met through implementation of the following management strategies and requirements specified in the WRP including:

- ensuring security of water supply;
- allowing water to be used for urban, industrial, agricultural and domestic uses;
- protecting supplemented and unsupplemented water entitlements;
- providing for community expectations on future water requirements, maintaining areas of significant conservation value and protecting species of conservation value; and

providing for environmental outcomes such as:

- maintaining riverine and estuarine ecosystems;
- preventing saltwater intrusion into groundwater;
- providing wet season flows; and
- allowing movement of fish.

Management strategies for supplemented water supply schemes and unsupplemented water management areas are specified in Chapters 4 and 5 respectively. Dealing with new water entitlements and the process for meeting future water requirements are specified in Chapters 6 and 7 respectively.

2.8 Water and natural ecosystem monitoring practices that will apply in the ROP area

The monitoring and reporting processes required to comply with the WRP are specified in Chapter 3 of this document.

2.9 ROP area zones

For the purpose of defining the location of a water allocation within a particular reach of the river, geographic zones have been specified in the ROP area. These zones are integral components of the operational arrangements specified for the water supply schemes and water management areas identified in Chapters 4 and 5.

Attachments 2.1 and 2.2 define and display these zones, according to their number and geographic location in the ROP area.

**Chapter
3****Monitoring****Overview**

The purposes of the monitoring programs are:

- *to determine if rules specified in the ROP have been successfully implemented;*
- *to help assess if outcomes specified in the WRP have been achieved; and*
- *to carry out monitoring of impacts in and immediately below impounded areas.*

Attachment 3.1 shows the linkages between the outcomes prescribed in the WRP and the relevant ROP rules that are to achieve the outcomes. It also lists examples of monitoring that will be undertaken to assess if the outcomes are being achieved.

An outline of the monitoring framework is shown in Figure 3.1.

Monitoring programs will include:

- *water monitoring (e.g. stream flow, storage level, water use); and*
- *natural ecosystem monitoring (e.g. water quality, riparian vegetation, fish).*

Water monitoring

The ROP specifies rules regarding water infrastructure operation and the taking of water. These rules have been developed to implement management strategies that will achieve the WASOs and EFOs specified in the WRP. Water monitoring will be undertaken to determine if the rules are successfully implemented and the objectives are being achieved. This monitoring will include the collection of:

- *infrastructure operation information;*
- *stream flow information; and*
- *water diversion and use information.*

This information will be collected as part of the ROL holder monitoring requirements specified in Chapter 4, and as part of the State monitoring program specified in Attachment 3.2.

It will be a condition of a ROL that the ROL holder must carry out and report on the stated monitoring program as set out in the ROP.

The measuring of water diversion and use by meters and/or other flow measurement devices is fundamental to the responsible management of the basin's water resources and will be achieved through the ROP.

Meters and/or other flow measurement devices are required to provide data for water management activities, including:

- *demonstrating compliance with operating and management rules;*
- *equitable sharing of available water;*
- *property scale water management; and*
- *future water resource planning.*

All water entitlements in the project areas covered by the ROP are currently, or will be metered in accordance with the Department of Environment and Resource Management (the department) Metering Water Extractions Policy. The introduction of metering for other water entitlements will occur as the ROP is progressively implemented in accordance with this policy.

Where meters or other approved flow measurement devices are to be installed as a requirement of the ROP, local water user representatives will be invited to participate in the planning and management of the metering project.

A project team will be established for each implementation area. This team, to be made up of departmental staff and local water user representatives, will manage the process to ensure that local conditions and concerns are adequately addressed. The process may include:

- consultation with affected water users;*
- establishment of project management guidelines;*
- evaluation of existing works for meter installation requirements;*
- preliminary design and costing of installations to meet user and regulatory needs;*
- consideration of financial arrangements for metering; and*
- contractual arrangements for the supply and installation of water meters or flow measurement devices.*

Natural ecosystem monitoring

The natural ecosystem monitoring program specified in this ROP details information to be collected to assist in assessing the effectiveness of the management strategies in achieving the ecological outcomes specified within the WRP.

The natural ecosystem monitoring program will collect information such as:

- riparian and aquatic vegetation abundance and type;*
- macroinvertebrate abundance and diversity;*
- fish community data;*
- geomorphic processes;*
- aquatic habitat;*
- bank stability;*
- water quality; and*
- groundwater levels.*

The natural ecosystem monitoring program is specified in Attachment 3.3.

Related monitoring programs

Monitoring is an integral part of water resource planning and management with the outcomes of evaluation being incorporated into future water planning.

The ROP sets out the monitoring requirements that will be undertaken by the Queensland Government and ROL holders. Information collected as part of other monitoring programs (such as community monitoring programs, Waterwatch, National Action Plan for Salinity and

Water Quality) or specific research projects in the basin may be used to help with the assessment of the ecological outcomes of the ROP and WRP, but are not detailed here.

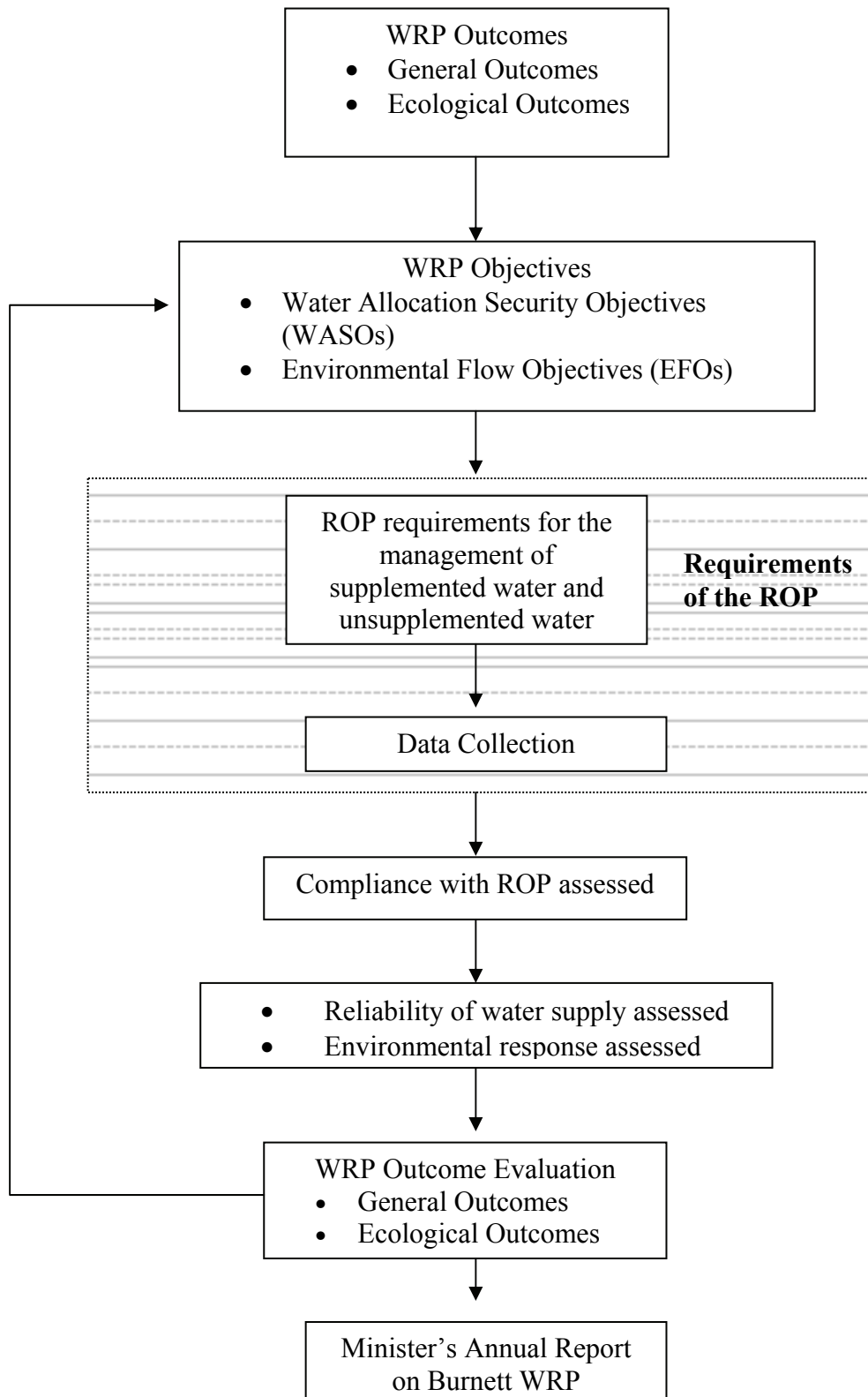
The ROP monitoring programs are utilising methodologies that are based on the best scientific knowledge to date. It is anticipated that with time and a better understanding of the science behind environmental flows and changes to natural flow regimes, different methodologies and indicators may be developed and adopted. The ROP monitoring programs are designed to include adaptive management techniques, whereby up-to-date scientific research findings can be incorporated into the methodologies of the monitoring program, staying abreast of current scientific trends.

Reporting

Reporting on the implementation of the ROP, including results of monitoring, will be included in the Minister's Annual Report on the WRP. The report will include:

- findings of relevant research;*
- an assessment of whether WRP outcomes are being achieved;*
- an assessment of the validity of WRP objectives;*
- the total water entitlements covered by the WRP; and*
- any non-compliance with the ROP.*

Several years of data may be required before outcomes and objectives can be meaningfully evaluated. This is due to the time it takes for ecosystems to respond to flow regimes, and the statistical nature of the objectives.

Figure 3.1: Monitoring framework

3.1 Monitoring Linkages to WRP Outcomes

Overview

Attachment 3.1 shows the linkages between the WRP outcomes, the relevant ROP rules that are to achieve the outcomes and lists examples of monitoring that will be undertaken to assess if the outcomes are being achieved.

3.2 Queensland Government monitoring requirements

There are two components to Queensland Government monitoring requirements. These are:

- water monitoring; and
- natural ecosystem monitoring.

Water monitoring

The water quantity, including entitlement metering, and quality monitoring program is specified in Attachment 3.2. Along with this monitoring, the chief executive will be performing an annual risk assessment review to assess any impact of further floodplain or overland-flow development that may potentially impact on the objectives or outcomes stated within the WRP.

Natural ecosystem monitoring

The natural ecosystem monitoring requirements for the ROP area and for specific catchments within the ROP area are specified in Attachment 3.3. This monitoring will be conducted in supplemented and unsupplemented reaches throughout the Kolan River, Burnett River, Boyne River, Stuart River, Barker Creek and Barambah Creek subcatchments.

3.3 ROL holder monitoring requirements

The monitoring requirements for the Bundaberg Water Supply Scheme are detailed in Chapter 4, Section 4.1.8.

The monitoring requirements for the Upper Burnett Water Supply Scheme are detailed in Chapter 4, Section 4.2.8.

The monitoring requirements for the Barker Barambah Water Supply Scheme are detailed in Chapter 4, Section 4.4.8.

The monitoring requirements for the Boyne River and Tarong Water Supply Scheme are detailed in Chapter 4, Section 4.5.8.

The ROL holder must provide any monitoring data required under this chapter to the chief executive upon request and within the time requested.

3.4 Standard of data collecting

1. Where this plan requires monitoring by a ROL holder, including measurement, collection, analysis and storage of data, the ROL holder must ensure the monitoring is consistent with the Water Monitoring Data Collection Standard.
2. The Water Monitoring Data Collection Standard may be reviewed and updated by the chief executive at any time.
3. The chief executive must notify the ROL holder at least 20 business days before any substantive changes are made to the Water Monitoring Data Collection Standard.

3.5 Standard of data reporting

1. Where this plan requires transfer of data or reporting by a ROL holder, the ROL holder must ensure the transfer or reporting is consistent with the Water Monitoring Data Reporting Standard.
2. The Water Monitoring Data Reporting Standard may be reviewed and updated by the chief executive at any time.
3. The chief executive must notify the ROL holder at least 20 business days before any substantive changes are made to the Water Monitoring Data Reporting Standard.

Chapter**4****Supplemented water supply schemes****Overview**

Supplemented water is water that is supplied from a water supply scheme under a ROL or Interim Resource Operations Licence (IROL). This chapter deals with water supply schemes and the management of supplemented water, including the conversion of existing supplemented water authorisations to water allocations.

Unsupplemented water management (e.g. water harvesting) is covered in Chapter 5.

Water supply schemes and their operation

This ROP applies to the following water supply schemes:

- *Bundaberg Water Supply Scheme;*
- *Upper Burnett Water Supply Scheme;*
- *Barker Barambah Water Supply Scheme; and*
- *Boyne River and Tarong Water Supply Scheme.*

The approximate extent of these water supply schemes is shown in Map B.

ROLs have been granted for the Bundaberg, Upper Burnett, Barker Barambah and Boyne River and Tarong Water Supply Schemes. However, the ROL holders will continue to operate under the rules contained in the previous ROL or IROL until commencement of the subsequent water year or as specified in the implementation schedule in Attachment 9.1.

Proposed infrastructure

Proposed additional infrastructure on the Burnett River is the:

- *raising of Jones Weir (Stage 2); and*
- *raising of Ned Churchward Weir (Stage 2).*

Proposed additional infrastructure on Barambah Creek is the construction of Barlil Weir.

The Coordinator-General has yet to complete investigations into the raising of Ned Churchward Weir (Stage 2).

The volume of water reserved for and made available by the proposed infrastructure is set out in Chapter 7, Section 7.1.

Although the Coordinator-General has conditionally approved the infrastructure, the design specifications and operating arrangements are in the process of finalisation. The chief executive will amend the ROP under s.106(b) of the Water Act, to provide for the operation of the infrastructure and a process for the grant of the associated water allocations, upon receipt of final specifications for the proposed infrastructure, which are consistent with the WRP, including the WASOs and EFOs. The amendments that may be made in this process are listed in Chapter 8, Section 8.1.

Other water supply schemes in the Burnett Basin

This ROP does not yet apply to the Three Moon Creek Water Supply Scheme, which will be included through an amendment to the ROP at a later stage.

In the interim, this scheme will be operated and managed in accordance with SunWater's existing IROLs.

Conversion of current authorisations to water allocations

This chapter provides for the conversion of existing authorisations to water allocations. Details of the existing authorisations to be converted and these conversions are outlined for water supply schemes. Supplemented water allocations are described in terms of volume, location, the purpose for which the water is used and the priority group.

Water allocations will be tradeable separately from the title to land within defined limits and rules proposed in the ROP.

Location

The location from which water may be taken under a water allocation is specified as a zone. These zones are defined in Attachment 2.1.

Purpose

The purpose for which water may be taken under a water allocation is specified as 'agriculture', 'any' or 'distribution loss'. 'Any' is the nominated purpose for all uses of water, including agriculture. 'Agriculture' is the nominated purpose for those existing authorisations that are primarily used for agricultural purposes. 'Distribution loss' is the nominated purpose for losses associated with the delivery of water from a diversion point on a watercourse through SunWater's off-stream distribution system.

Priority

Water allocations fall into 'medium' priority and 'high' priority groups. The WASOs for supply of these two groups are specified in the WRP.

Volumes for certain water allocations

The volume for a water allocation will be the volume stated on the existing authorisation, subject to possible adjustments to the volume for entitlements associated with watering for stock and domestic purposes.

For example, elements of existing authorisations providing for taking water for stock and domestic purposes on land adjoining a watercourse (i.e. riparian and adjoining lands) will not convert to water allocations. This is because, under the Water Act, an owner of land adjoining a watercourse, lake or spring may, without a water entitlement, take water for domestic purposes and watering stock that would be normally depastured on the land.

WASOs in water supply schemes

The WASOs for water allocations are specified in the WRP.

Water sharing rules

The water sharing rules:

- *specify how available water resources will be apportioned between the medium priority and high priority water allocations;*
- *detail how announced allocations will be determined by the ROL holder and when they must be revised; and*
- *detail any restrictions that may apply.*

Details of how water supplied under a water allocation may be reassigned between water users are listed in Section 2.2 of Attachment 4.1F, 4.2F and 4.3F and Section 2.1 of Attachment 4.4F.

Water entitlements in other water supply schemes in the Burnett Basin

Existing authorisations outside the Bundaberg, Upper Burnett, Barker Barambah and Boyne River and Tarong Water Supply Schemes will continue to have effect under their existing terms and conditions unless otherwise amended, whether through an amendment to the ROP or for consistency with the WRP or as a consequence of other routine actions under the Water Act.

Water allocation change rules

Water allocations may be permanently changed subject to the rules given in Attachments 4.1H, 4.2H, 4.3H and 4.4H. A change to a supplemented water allocation may involve a reconfiguration of one or more of the following:

- *the nominal volume;*
- *the location from which water may be taken;*
- *the purpose for which water may be taken;*
- *any conditions required by the chief executive to be entered on the water allocations register under s.127(1)(e) of the Water Act; and*
- *the priority group to which the water belongs.*

The most common forms of change are expected to be relocation, amalgamation and subdivision of water allocations.

If a water allocation holder's proposed change were not covered by the rules specified in the ROP – that is, if it were neither expressly permitted nor expressly prohibited – then the holder would be able to apply to change the water allocation under s.130 of the Water Act.

Monitoring and reporting

An overview of the ROP monitoring program is provided in Chapter 3. Attachments 4.1G, 4.2G, 4.3G and 4.4G specify the monitoring and reporting requirements for ROL holders.

If, as a result of the monitoring required under this ROP, the ROL holder becomes aware of an incident or storage operation practice that may cause or threaten to cause material or

serious environmental harm as defined by the Environmental Protection Act 1994 (EP Act), the ROL holder has an obligation under s.320 of the EP Act to report the incident to the Department of Environment and Resource Management (DERM). This may include water released from storages not meeting the relevant water quality guidelines as determined by the Environmental Protection (Water) Policy 2009.

Water entitlements being converted to allocations

Some of the Local Governments requested a review of the entitlements within the project areas specified in IROLs. These entitlements are held by Local Governments and SunWater and remained as Interim Water Allocations (IWAs) until the review process was concluded.

The review recommended that the entitlements listed in Table 1 of Attachment 4.2A be converted to water allocations.

The 2009 ROP provided for the conversion of the IWAs to water allocations.

4.1 Bundaberg Water Supply Scheme

Overview

This section deals with the operation of infrastructure and the management of supplemented water associated with the Bundaberg Water Supply Scheme. This scheme is located on the Burnett River extending from within the ponded area of Paradise Dam downstream to Ben Anderson Barrage, and on the Kolan River from the impoundment area of Fred Haigh Dam at full supply level downstream to the Kolan River Barrage, including locations directly benefited by supplemented flow or pondage from these river reaches. The extent is detailed in Section 4.1.1 and shown on Map B.

This overview highlights some of the key aspects of the ROP relating to supplemented water management in this scheme.

Subscheme operation strategy

The operational arrangements require the Bundaberg Water Supply Scheme to be treated as two subschemes when the level in Fred Haigh Dam at the start of the water year is at or below 66.06 m AHD (this is approximately 200 000 ML). The details of these operating arrangements are provided in Attachment 4.1E and 4.1F. The subschemes are:

- *Kolan River Subscheme; and*
- *Burnett River Subscheme.*

For the subschemes, separate announced allocations are to be made for each subscheme, although they will continue to operate as one scheme.

Environmental management rules

The operating rules include management strategies for passing low, medium and high flows. Rules are included for specific infrastructure such as maintaining water levels in Ned Churchward Weir during critical periods and passing flows at Bucca Weir as required. The development of procedures to be applied on a daily basis is required to allow decisions about

low, medium and high flow releases to be made in accordance with the WRP. The ROL holder is required to implement these procedures as specified in Attachment 4.1E, Section 2.7.

Releases associated with fish transfer devices

The release strategies specify the requirements for the operations of the fish transfer devices on Ned Churchward Weir, Ben Anderson Barrage and Kolan Barrage.

Water sharing rules

The water sharing rules specify how available water will be shared between the medium and high priority water allocation groups.

The water sharing rules include announced allocation rules for medium and high priority water allocations and rules that define any restrictions that are to be applied. These include carrying over, or bringing forward from one water year to the next, water able to be taken under a water allocation.

Announced allocations for medium and high priority water allocations will be determined separately in the Kolan River and Burnett River Subschemes when the level of Fred Haigh Dam at the start of the water year is at or below 66.06 m AHD (approximately 200 000 ML).

The Water Regulation 2002, s.55 provides that the water in an aquifer under the bed or banks of the Kolan River to a depth of 10 m between AMTD 14.5 and AMTD 76.4, is water in a watercourse, and therefore this water is subject to the water sharing rules specified in Attachment 4.1F.

4.1.1 Extent of the water supply scheme

The Bundaberg Water Supply Scheme comprises the entire extent of the two subschemes described below. This scheme operates as a single system until the level in Fred Haigh Dam at the start of the water year is at or below 66.06 m AHD (approximately 200 000 ML). The extent of the combined scheme is shown in Map B.

The Kolan River Subscheme extends from the Kolan Barrage to the impounded area of Fred Haigh Dam at full supply level. This corresponds to the Kolan River reach from AMTD 14.7 to AMTD 116. It includes the following infrastructure:

- Fred Haigh Dam;
- Bucca Weir; and
- Kolan Barrage.

The Burnett River Subscheme extends from Ben Anderson Barrage to within the ponded area of Paradise Dam. This corresponds to the Burnett River reach from AMTD 25.9 to AMTD 162.8. It includes the following infrastructure:

- Paradise Dam;
- Ned Churchward Weir; and
- Ben Anderson Barrage.

The subschemes also include locations directly benefited by supplemented flow or pondage from the river reaches described above.

4.1.2 Water allocations associated with the water supply scheme

Changes to the water allocations may be allowed in accordance with the water allocation change rules given in Section 4.1.7.

4.1.3 Reserved for future amendments

4.1.4 Infrastructure associated with the water supply scheme

The infrastructure associated with the Bundaberg Water Supply Scheme is described in Attachment 4.1D and may not be changed unless the change is provided for in Chapter 8 of the ROP.

Proposed infrastructure within the Bundaberg Water Supply Scheme is dealt with in Chapters 7 and 8.

4.1.5 Infrastructure operating rules

Operating rules for the infrastructure associated with the Bundaberg Water Supply Scheme are given in Attachment 4.1E.

4.1.6 Water sharing rules

Water sharing rules for the Bundaberg Water Supply Scheme are described in Attachment 4.1F.

The volume of water available at any time to holders of medium and high priority water allocations in the Bundaberg Water Supply Scheme must be determined through the water sharing rules.

4.1.7 Water allocation change rules

The water allocation change rules for supplemented water supply schemes are described in Section 4.10.

4.1.8 Monitoring and reporting requirements for the ROL holder

The monitoring and reporting requirements for the Bundaberg Water Supply Scheme are given in Attachment 4.1G.

4.2 Upper Burnett Water Supply Scheme

Overview

This section deals with the operation of infrastructure and management of supplemented water associated with the Upper Burnett Water Supply Scheme. On the Nogo River this scheme includes the ponded area of Wuruma Dam downstream to the Burnett River. On the Burnett River the scheme extends from the ponded area of John Goleby Weir downstream to within the ponded area of Paradise Dam. The scheme includes locations directly benefited by supplemented flow or pondage from these river reaches.

The extent of the Upper Burnett Water Supply Scheme is detailed in Section 4.2.1 and shown on Map B.

This overview highlights some of the key aspects of the ROP relating to supplemented water management in this scheme.

Subscheme operation strategy

The Upper Burnett Water Supply Scheme consists of four subschemes. These are:

- *John Goleby Subscheme;*
- *Wuruma–Kirar Subscheme;*
- *Jones Subscheme; and*
- *Claude Wharton Subscheme.*

The details of these subschemes are specified in Section 4.2.1.

Environmental management rules

The operating rules include management strategies for passing low, medium and high flows. Rules are specified for specific infrastructure such as passing flows at Claude Wharton Weir as required. The development of procedures to be applied on a daily basis is required to allow decisions about low, medium and high flow releases to be made in accordance with the WRP. The ROL holder is required to develop and implement these procedures as specified in Attachment 4.2E, Section 2.7.

Water sharing rules

The water sharing rules specify the way the available water will be shared between the water allocation priority groups, namely medium and high.

The water sharing rules in the ROP include announced allocation rules for medium and high priority water allocations and rules that define any restrictions that are to be applied. Announced allocations for medium and high priority water allocations will be determined separately in the subschemes.

Releases associated with fish transfer devices

The release strategies for the operation of the fish transfer devices on Kirar Weir are contained in the Fishway Management Plan developed and administered by Queensland Primary Industries and Fisheries in consultation with the ROL holder.

4.2.1 Extent of the water supply scheme

The Upper Burnett Water Supply Scheme is divided into four subschemes as detailed in Map B. These are:

- **John Goleby Subscheme:**
 - this subscheme extends from AMTD 333.9 on the Burnett River to the confluence of the Burnett and Nogo Rivers (AMTD 311.8) and includes John Goleby Weir;

- **Wuruma–Kirar Subscheme:**
 - this subscheme extends from AMTD 44.5 on the Nogo River to AMTD 253 on the Burnett River and includes Wuruma Dam and Kirar Weir;
- **Jones Subscheme:**
 - this subscheme extends from AMTD 253 to AMTD 213.1 on the Burnett River and includes Jones Weir; and
- **Claude Wharton Subscheme:**
 - this subscheme extends from AMTD 213.1 on the Burnett River to the upper limit of the Bundaberg Water Supply Scheme at AMTD 162.8 and includes Claude Wharton Weir.

The subschemes also include locations directly benefited by supplemented flow or pondage from the river reaches described above.

4.2.2 Water allocations associated with the water supply scheme

Changes to the water allocations may be allowed in accordance with the water allocation change rules given in Section 4.2.7.

4.2.3 IWAs associated with the water supply scheme to be converted

The supplemented IWAs in the Upper Burnett Water Supply Scheme that will be converted to water allocations are detailed by location, nominal volume and priority group in Table 1, Attachment 4.2A.

4.2.4 Infrastructure associated with the water supply scheme

The infrastructure associated with the Upper Burnett Water Supply Scheme is described in Attachment 4.2D.

Infrastructure details defined in Attachment 4.2D may not be changed without amendment of the ROP unless the change is provided for in Chapter 8 of the ROP.

4.2.5 Infrastructure operating rules

Operating rules for the infrastructure associated with the Upper Burnett Water Supply Scheme are given in Attachment 4.2E.

4.2.6 Water sharing rules

Water sharing rules for the Upper Burnett Water Supply Scheme are described in Attachment 4.2F.

The volume of water available at any time to individual medium and high priority water allocation holders in the Upper Burnett Water Supply Scheme must be determined through the water sharing rules.

4.2.7 Water allocation change rules

The water allocation change rules for supplemented water supply schemes are discussed in Section 4.10.

4.2.8 Monitoring and reporting requirements for the ROL holder

The monitoring and reporting requirements proposed for the Upper Burnett Water Supply Scheme are given in Attachment 4.2G.

4.3 Reserved for future amendments

4.4 Barker Barambah Water Supply Scheme

Overview

This section deals with the operation of infrastructure and the management of supplemented water associated with the Barker Barambah Water Supply Scheme. This scheme is located on the part of the Barambah Creek between AMTD 85 and AMTD 189.5 and the part of Barker Creek between the confluence of Barker Creek and Barambah Creek and Bjelke-Petersen Dam, including the impounded area of the dam (AMTD 0 to AMTD 38.2). This also includes locations directly benefited by supplemented flow or pondage from these stream reaches. The extent is detailed in Section 4.4.1 and shown on Map B.

This overview highlights some of the key aspects of the ROP relating to supplemented water management in this scheme.

Environmental management rules

The operating rules include management strategies for providing compensation flows. Rules are included for specific infrastructure such as Silverleaf Weir. The ROL holder is required to implement these rules as specified in Attachment 4.3E, Section 2.7.

Water sharing rules

The water sharing rules specify how available water will be shared between the medium and high priority water allocation groups.

The water sharing rules include announced allocation rules for medium and high priority water allocations and rules that define any restrictions that are to be applied. These include carry over and forward draws in consecutive water years.

4.4.1 Extent of the water supply scheme

The Barker Barambah Water Supply Scheme comprises the part of Barambah Creek between AMTD 85 and AMTD 189.5 and the part of Barker Creek between the confluence of Barker Creek and Barambah Creek and Bjelke-Petersen Dam, including the impounded area of the dam (AMTD 0 to AMTD 38.2). The extent of the combined scheme is shown in Map B.

It includes the following infrastructure:

- Bjelke-Petersen Dam;
- Joe Sippel Weir; and
- Silverleaf Weir.

The scheme also includes locations directly benefited by supplemented flow or pondage from the stream reaches described above.

4.4.2 Water allocations associated with the water supply scheme

Changes to the water allocations may be allowed in accordance with the water allocation change rules given in Section 4.4.7.

4.4.3 Reserved for future amendments

4.4.4 Infrastructure associated with the water supply scheme

The infrastructure associated with the Barker Barambah Water Supply Scheme is described in Attachment 4.3D and may not be changed unless the change is provided for in Chapter 8 of the ROP.

Proposed infrastructure within the Barker Barambah Water Supply Scheme is dealt with in Chapters 7 and 8.

4.4.5 Infrastructure operating rules

Operating rules for the infrastructure associated with the Barker Barambah Water Supply Scheme are given in Attachment 4.3E.

4.4.6 Water sharing rules

Water sharing rules for the Barker Barambah Water Supply Scheme are described in Attachment 4.3F.

The volume of water available at any time to holders of medium and high priority water allocations in the Barker Barambah Water Supply Scheme must be determined through the water sharing rules.

4.4.7 Water allocation change rules

The water allocation change rules for supplemented water supply schemes are described in Section 4.10.

4.4.8 Monitoring and reporting requirements for the ROL holder

The monitoring and reporting requirements for the Barker Barambah Water Supply Scheme are given in Attachment 4.3G.

4.5 Boyne River and Tarong Water Supply Scheme

Overview

This section deals with the operation of infrastructure and the management of supplemented water associated with the Boyne River and Tarong Water Supply Scheme. This scheme extends from the impoundment area of Boondooma Dam on the Boyne River downstream to the confluence with the Burnett River. The scheme includes locations directly benefited by supplemented flow or pondage from these stream reaches. The extent is detailed in Section 4.5.1 and shown on Map B.

This overview highlights some of the key aspects of the ROP relating to supplemented water management in this scheme.

Environmental management rules

There are no specific environmental management rules required for the passing of low, medium and high flows, as scheme operation demonstrates compliance with the objectives stated within the WRP.

Water sharing rules

The water sharing rules specify how available water will be shared between the medium and high priority water allocation groups.

The water sharing rules include announced allocation rules for medium and high priority water allocations and rules that define any restrictions that are to be applied.

Conversion of an interim water allocation to a water allocation

An interim water allocation held by Tarong Energy Corporation Limited was converted to a water allocation in the November 2007 ROP.

4.5.1 Extent of the water supply scheme

The Boyne River and Tarong Water Supply Scheme comprises the part of the Boyne River between the ponded area of Boondooma Dam downstream to the confluence with the Burnett River (AMTD 110.5 to AMTD 0). The scheme also includes locations directly benefited by supplemented flow or pondage from the stream reaches described above.

4.5.2 Water allocations associated with the water supply scheme

Changes to the water allocations may be allowed in accordance with the water allocation change rules given in Section 4.10.

4.5.3 Reserved for future amendments

4.5.4 Infrastructure associated with the water supply scheme

The infrastructure associated with the Boyne River and Tarong Water Supply Scheme is described in Attachment 4.4D and may not be changed unless the change is provided for in Chapter 8 of the ROP.

4.5.5 Infrastructure operating rules

Operating rules for the infrastructure associated with the Boyne River and Tarong Water Supply Scheme are given in Attachment 4.4E.

4.5.6 Water sharing rules

Water sharing rules for the Boyne River and Tarong Water Supply Scheme are described in Attachment 4.4F.

The volume of water available at any time to holders of medium and high priority water allocations or interim water allocations in the Boyne River and Tarong Water Supply Scheme must be determined through the water sharing rules.

4.5.7 Water allocation change rules

The water allocation change rules for supplemented water supply schemes are described in Section 4.10.

4.5.8 Monitoring and reporting requirements for the ROL holder

The monitoring and reporting requirements for the Boyne River and Tarong Water Supply Scheme are given in Attachment 4.4G.

4.6 to 4.9 reserved for future amendments

4.10 Water allocation change rules

Changing and transferring water allocations

The trade of a water allocation involves a transfer of the ownership of the allocation and may not involve any change to the allocation itself. A transfer occurs when the registrar of water allocations registers the new ownership on the water allocation register.

A change to a water allocation involves a change to the nature of the water allocation itself rather than a transfer of ownership. A common form would be a change to the location at which the water allocation is taken. A change to a water allocation is achieved by obtaining a change certificate on application to the chief executive. This certificate can then be lodged with the registrar, who will record the change.

A change may also involve the subdivision of a water allocation. This would typically occur to allow one of the new water allocations resulting from a subdivision to be moved to a new location. A subdivision of a water allocation is achieved by obtaining a certificate approving the subdivision on application to the chief executive. This certificate, together with a change certificate about the change in location, can then be lodged with the registrar, who will record the change. Conversely, two or more

water allocations could be changed by amalgamation into a single allocation.

To sell a water allocation to, for example, a downstream buyer, a vendor may need to apply to change the location of the water allocation to reflect the new downstream location. A change certificate and transfer document, to transfer the allocation to the new owner, can then be lodged with the registrar who will record the change and transfer.

For water allocations supplied from a channel system, the location of the water allocation is specified as the zone on the river from which the water supply is diverted into the channel system. A person on a channel system could transfer an allocation to anyone on another part of the channel system or to anyone on the river within the same zone as the channel supply is sourced without applying for a location change.

For water allocations managed under a ROL (e.g. a water allocation managed by SunWater in the Bundaberg Water Supply Scheme), the registrar will not record a transfer of ownership of the water allocation or a change to the water allocation unless a supply contract has been entered into between the new allocation holder and the holder of the ROL.

Water allocation change rules

Water allocation change rules for the water supply schemes are set out in the following attachments:

- Bundaberg Water Supply Scheme – Attachment 4.1H;
- Upper Burnett Water Supply Scheme – Attachment 4.2H;
- Barker Barambah Water Supply Scheme – Attachment 4.3H; and
- Boyne River and Tarong Water Supply Scheme – Attachment 4.4H.

They describe the changes that are permitted and those that are prohibited.

The permitted changes have been pre-tested and are known to have acceptable impacts. A water allocation holder may apply for a change in accordance with the permitted changes. The chief executive must approve an application for such a change and issue a certificate fully specifying the approved change.

Other changes to water allocations – s.130 of the Water Act

If a water allocation holder's proposed change was not covered by the rules specified in either Attachment 4.1H, 4.2H, 4.3H or 4.4H – that is, if it were neither expressly permitted nor expressly prohibited – then the holder would be able to apply to change the water allocation under s.130 of the Water Act.

Notice of the application, inviting public submissions and detailing where it could be inspected, would be published in local newspapers. The chief executive would then determine whether the application should be approved, having regard to its potential impact on interests including those of other entitlement holders and of natural ecosystems. On approving the application, the chief executive would issue a change certificate for lodgement with the registrar of water allocations. If the chief executive refuses the application, the applicant can appeal to the Land Court.

**Chapter
5****Unsupplemented water management****Overview**

Unsupplemented water is water that is not supplied by a water supply scheme. This chapter deals with unsupplemented water management within the project areas defined below including the conversion of some existing authorisations to water allocations.

Unsupplemented water management will continue to be the responsibility of the department.

Supplemented water management within a water supply scheme in the project areas defined in Chapter 2 is the responsibility of a ROL holder, which is covered in Chapter 4.

Unsupplemented water management arrangements

Water management areas are those areas where unsupplemented water management arrangements will apply in this ROP. Because unsupplemented water management within water supply scheme areas applies to water harvesting operations, there is an overlap of water management areas and water supply schemes. Unsupplemented water management arrangements are detailed in the ROP for each of the following water management areas.

The approximate extent of the water management areas is shown in Map C.

Over time, future amendments to the ROP will progressively extend the unsupplemented water management arrangements to other parts of the Burnett Basin.

Lower Burnett and Kolan Rivers Water Management Area

The Burnett River from the confluence of St Agnes Creek downstream to Ben Anderson Barrage on the Burnett River, the Kolan River from the impoundment area of Fred Haigh Dam at full supply level (AMTD 116) downstream to the Kolan River Barrage, including locations directly benefited by flow or pondage from these river reaches.

For unsupplemented water management, this area is the Lower Burnett and Kolan Rivers Water Management Area.

Upper Burnett and Nogo Rivers Water Management Area

The Burnett River from the impoundment area of John Goleby Weir at full supply level (AMTD 333.9) downstream to the Burnett River confluence with St Agnes Creek, and the Nogo River from the impoundment area of Wuruma Dam at full supply level (AMTD 44.5) to its confluence with the Burnett River including locations directly benefited by flow or pondage from these river reaches.

For unsupplemented water management, this area is the Upper Burnett and Nogo Rivers Water Management Area.

Barker Barambah Creeks Water Management Area

Barker Creek from the impoundment area of Bjelke-Petersen Dam to the junction with Barambah Creek and Barambah Creek from AMTD 189.5 to AMTD 85, including locations directly benefited by flow or pondage from these stream reaches.

For unsupplemented water management, this area is the Barker Barambah Creeks Water Management Area.

Boyne and Stuart Rivers Water Management Area

The Boyne River from AMTD 181.8 downstream to the confluence with the Burnett River, the Stuart River from AMTD 155.7 downstream to the confluence with the Boyne River, Reedy Creek from AMTD 0.2 downstream to the confluence with the Stuart River, and Flagstone Creek from AMTD 0.9 downstream to the confluence with the Stuart River, including locations directly benefited by flow or pondage from these stream reaches.

For unsupplemented water management, this area is the Boyne and Stuart Rivers Water Management Area.

Location

The zones described for the Lower Burnett and Kolan Rivers Water Management Area, the Upper Burnett and Nogo Rivers Water Management Area, the Barker Barambah Creeks Water Management Area, and the Boyne and Stuart Rivers Water Management Area are detailed in Attachment 2.2.

Purpose

The purpose for which water may be taken under a water allocation is specified as 'agriculture' or 'any'. 'Any' is the nominated purpose for all uses of water, including agriculture. 'Agriculture' is the nominated purpose for those existing authorisations that are primarily used for agricultural purposes.

Water allocations

Unsupplemented water allocations are described in terms of volume, location, the purpose for which water is used, the maximum rate for taking water and the water allocation groups (flow conditions under which it may be taken).

Water allocations are tradeable separately from the title to land within defined limits and rules in the ROP.

The volume specification for unsupplemented water allocations is a volumetric limit and a nominal volume.

The volumetric limit is a volume shown on the water allocation that is used to calculate the maximum volume of water, in megalitres, that may be taken under the water allocation in the water year.

The nominal volume has been determined from the long-term average amount of water estimated to be taken annually. The nominal volume represents the long-term average amount of water entitled to be taken under the water allocation which establishes a uniform measure for all unsupplemented water entitlements throughout the basin. The nominal volume is also relevant in relation to the basis on which a reconfiguration of a water allocation is permitted.

The nominal volume does not affect how much water can actually be taken within a particular water year or flow event. The amount of water taken is dependent on the flow conditions and rate for taking water stated for the water allocation, the operating rules in the ROP and the availability of water in the locality at the time, subject to not exceeding the volumetric limit for the water allocation.

Authorisations outside the water management areas

Water entitlements outside the specified water management areas continue to have effect under their existing terms and conditions unless otherwise amended through a change to the ROP, or for consistency with the WRP, or as a consequence of other routine actions under the Water Act.

Irrigation area-based licences and water harvesting licences on unsupplemented streams that are not within a water management area are not being converted to water allocations.

WASOs in water management areas

The WASOs for water allocations that have been converted from unsupplemented authorisations are specified in the WRP.

Operating and environmental management rules in water management areas

The operating rules for unsupplemented water including the arrangements under which water may be taken and the strategies for meeting environmental flow requirements are given for each water management area. The specification of volumetric limits and flow thresholds are examples of these strategies.

A seasonal water assignment occurs when the holder of a water allocation assigns to another person, for a water year, the benefit of all or part of the water associated with the allocation. Rules for seasonal water assignment are detailed for each water management area.

Water allocation change rules in water management areas

Water allocations may be permanently changed subject to the rules given in Attachments 5.1D, 5.2D, 5.3D and 5.4D. A change to an unsupplemented water allocation may involve a reconfiguration of one or more of:

- the nominal volume;*
- the volumetric limit;*
- the location from which water may be taken;*
- the purpose for which water may be taken;*
- any conditions required by the chief executive to be entered on the water allocations register under s.127(1)(e) of the Water Act;*
- the maximum rate at which water may be taken; or*
- the water allocation group (flow conditions under which water may be taken).*

Changes to a water allocation that are not permitted are covered in Section 2 of Attachments 5.1D, 5.2D, 5.3D and 5.4D.

If a water allocation holder's proposed change were not covered by the rules specified in the ROP – that is, if it were neither expressly permitted nor expressly prohibited – then the holder would be able to apply to change the water allocation under s.130 of the Water Act.

5.1 Lower Burnett and Kolan Rivers Water Management Area

Overview

This section specifies unsupplemented water management arrangements for the Lower Burnett and Kolan Rivers Water Management Area, which extends from the confluence of St Agnes Creek downstream to Ben Anderson Barrage on the Burnett River and from the impoundment area of Fred Haigh Dam at full supply level (AMTD 116) downstream to the Kolan River Barrage on the Kolan River, including locations directly benefited by flow or pondage from these river reaches.

This overview highlights some key aspects of the ROP relating to unsupplemented water management in the Burnett and Kolan Rivers within this water management area and the details of the rules that follow.

5.1.1 Extent of the Lower Burnett and Kolan Rivers Water Management Area

The extent of the Lower Burnett and Kolan Rivers Water Management Area as shown on Map C is:

- the Burnett River from the confluence of St Agnes Creek (AMTD 97.9) downstream to Ben Anderson Barrage (AMTD 25.9), including locations directly benefited by flow or pondage from these river reaches; and
- the Kolan River from the impoundment area of Fred Haigh Dam (AMTD 116) downstream to the Kolan River Barrage (AMTD 14.7), including locations directly benefited by flow or pondage from these river reaches.

5.1.2 Subcatchment areas

The Lower Burnett and Kolan Rivers Water Management Area contain two WRP subcatchment areas, 'A' and 'C'.

The subcatchment areas as shown on Map D are:

- **Subcatchment 'A'** – from AMTD 0 at the mouth of the Kolan River to the source of the Kolan River, excluding the catchment area of Gin Gin Creek; and
- **Subcatchment 'C'** – from AMTD 0 at the mouth of the Burnett River to the confluence of St Agnes Creek and the Burnett River at AMTD 97.9 approximately.

The WASOs for water harvesting in these subcatchment areas are specified in Schedule 6, Part 2 of the WRP.

5.1.3 Reserved for future amendments

5.1.4 Operating rules

Water harvesting operating rules for water allocations located in the Lower Burnett and Kolan Rivers Water Management Area are given in Attachment 5.1C.

5.1.5 Water allocation change rules

Water allocation change rules are detailed in Attachment 5.1D.

5.1.6 Water allocation zones

Water allocation zones for the Lower Burnett and Kolan Rivers project area are specified in Attachment 2.2, Table 1.

5.1.7 Water allocation groups

The groups for unsupplemented water harvesting water allocations for the Lower Burnett and Kolan Rivers Water Management Area are detailed in Table 1.

Table 1: Water allocation groups

WRP Subcatchment	Water Allocation Groups	Flow Condition	Zone
A	Class 1A	Flow condition: Start when 2 000 ML/day passing Kolan River Barrage, cease when less than 1 000 ML/day passing Kolan River Barrage.	Kolan AA, Kolan AB, Kolan AC, Kolan AD
	Class 2A	Flow condition: Start when 3 000 ML/day passing Kolan River Barrage, cease when less than 1 000 ML/day passing Kolan River Barrage.	
C	Class 3C	Flow condition: Start when 3 000 ML/day passing Ned Churchward Weir, cease when less than 1 200 ML/day passing Ben Anderson Barrage.	Burnett CA, Burnett CB
	Class 4C	Flow condition: Start when 1 200 ML/day passing Ned Churchward Weir, cease when less than 1 200 ML/day passing Ben Anderson Barrage.	
	Class 5C	Flow condition: Start when 86.4 ML/day passing Ben Anderson Barrage.	

5.2 Upper Burnett and Nogo Rivers Water Management Area

Overview

This section specifies unsupplemented water management arrangements for the Upper Burnett and Nogo Rivers Water Management Area, which extends from the impoundment area of John Goleby Weir at full supply level (AMTD 333.9) on the Burnett River downstream to the Burnett River confluence with St Agnes Creek, and the Nogo River from the impoundment area of Wuruma Dam at full supply level (AMTD 44.5) to its confluence with

the Burnett River including locations directly benefited by flow or pondage from these river reaches.

This overview highlights some key aspects of the ROP relating to unsupplemented water management in the Burnett and Nogo Rivers within this water management area and the details of the rules that follow.

5.2.1 Extent of the Upper Burnett and Nogo Rivers Water Management Area

The extent of the Upper Burnett and Nogo Rivers Water Management Area as shown on Map C is:

- the Burnett River from AMTD 333.9 downstream to the confluence of St Agnes Creek (AMTD 97.9), including locations directly benefited by flow or pondage from these river reaches; and
- the Nogo River from AMTD 44.5 to the confluence with the Burnett River (AMTD 311.8), including locations directly benefited by flow or pondage from these river reaches.

5.2.2 Subcatchment areas

The Upper Burnett and Nogo Rivers Water Management Area includes parts of six WRP subcatchment areas.

The subcatchment areas as shown on Map D are:

- **Subcatchment 'G'** – from the confluence of the Burnett River with St Agnes Creek at AMTD 97.9 to the confluence of Barambah Creek with the Burnett River at AMTD 187.4;
- **Subcatchment 'M'** – from the source of the Auburn River to its confluence with the Burnett River at AMTD 251.8 approximately;
- **Subcatchment 'N'** – from Barambah Creek confluence with the Burnett River at AMTD 187.4 approximately to Jones Weir at AMTD 240.1 on the Burnett River at Mundubbera;
- **Subcatchment 'O'** – from Jones Weir at AMTD 240.1 on the Burnett River at Mundubbera to GS 136103B on the Burnett River at Ceratodus at AMTD 321.1 approximately;
- **Subcatchment 'P'** – from the source of the Burnett River to GS 136103B located at Ceratodus at AMTD 321.1 approximately; and
- **Subcatchment 'S'** – from the source of the Nogo River to its confluence with the Burnett River at AMTD 311.8 approximately.

The WASOs for water harvesting in these subcatchment areas are specified in Schedule 6, Part 2 of the WRP.

5.2.3 Reserved for future amendments

5.2.4 Operating rules

Water harvesting operating rules for water allocations located in the Upper Burnett and Nogo Rivers Water Management Area are given in Attachment 5.2C.

5.2.5 Water allocation change rules

Water allocation change rules are detailed in Attachment 5.2D.

5.2.6 Water allocation zones

Water allocation zones for the Upper Burnett and Nogo Rivers project area are specified in Attachment 2.2, Table 1.

5.2.7 Water allocation groups

The water allocation groups for unsupplemented water harvesting for the Upper Burnett and Nogo Rivers Water Management Area are detailed in Table 2.

Table 2: Water allocation groups

WRP Subcatchment	Water Allocation Groups	Flow Condition	Zone
G	Class 7G	2 000 ML/day passing flow at Jones Weir	Burnett GA, Burnett GB
	Class 8G	2 000 ML/day passing flow at Mt Lawless Gauging Station	
	Class 9G	864 ML/day passing flow at Mt Lawless Gauging Station	
	Class 14G	1 037 ML/day passing flow at Mt Lawless Gauging Station	
M	Class 6M	1 037 ML/day passing flow at Jones Weir	Auburn MA
N	Class 6N	1 037 ML/day passing flow at Jones Weir	Burnett NA, Burnett NB, Burnett NC
	Class 7N	2 000 ML/day passing flow at Jones Weir	
	Class 8N	2 000 ML/day passing flow at Mt Lawless Gauging Station	
	Class 12N	1 037 ML/day passing flow at Claude Wharton Weir	
	Class 13N	2 000 ML/day passing flow at Claude Wharton Weir	
O	Class 6O	1 037 ML/day passing flow at Jones Weir	Burnett OA, Burnett OB, Burnett OC, Burnett OD
	Class 7O	2 000 ML/day passing flow at Jones Weir	
	Class 10O	432 ML/day passing flow at GS 136103B (Ceratodus)	
P	Class 10P	432 ML/day passing flow at GS 136103B (Ceratodus)	Burnett PA
	Class 11P	2 592 ML/day passing flow at GS 136103B (Ceratodus)	

5.3 Barker Barambah Creeks Water Management Area

Overview

This section specifies unsupplemented water management arrangements for the Barker Barambah Creeks Water Management Area. This extends from the impoundment area of Bjelke-Petersen Dam at full supply level on Barker Creek downstream to the Barambah

Creek junction, and Barambah Creek from AMTD 189.5 to AMTD 85. Locations directly benefited by flow or pondage from these stream reaches are included.

The Water Management Area is the same geographical area as the Barker Barambah Water Supply Scheme, but these unsupplemented water management arrangements refer to the taking of water under stipulated stream flow conditions (water harvesting) within the bounds of the Barker Barambah Water Supply Scheme.

This overview highlights some key aspects of the ROP relating to unsupplemented water management in the Barker and Barambah Creeks within this water management area and the details of the rules that follow.

5.3.1 Extent of the Barker Barambah Creeks Water Management Area

The extent of the Barker Barambah Creeks Water Management Area as shown on Map C is:

- Barker Creek from AMTD 38.2 downstream to the confluence with Barambah Creek, including locations directly benefited by flow or pondage from these stream reaches; and
- Barambah Creek from AMTD 189.5 downstream to AMTD 85 including locations directly benefited by flow or pondage from these stream reaches.

5.3.2 Subcatchment areas

The Barker Barambah Creeks Water Management Area includes parts of two WRP subcatchment areas.

The subcatchment areas as shown on Map D are:

- **Subcatchment 'H'** – Barambah Creek from the confluence of Barambah Creek with the Burnett River upstream to AMTD 171.8 (Joe Sippel Weir);
- **Subcatchment 'J'** – from the source of Barker Creek to its confluence with Barambah Creek and Barambah Creek from AMTD 171.8 (Joe Sippel Weir) to its source.

The WASOs for water harvesting in these subcatchment areas are specified in Schedule 6, Part 2 of the WRP.

5.3.3 Reserved for future amendments

5.3.4 Operating rules

Water harvesting operating rules for water allocations located in the Barker Barambah Creeks Water Management Area are given in Attachment 5.3C.

5.3.5 Water allocation change rules

Water allocation change rules are detailed in Attachment 5.3D.

5.3.6 Water allocation zones

Water allocation zones for the Barker and Barambah Creeks project area are specified in Attachment 2.2, Table 1.

5.3.7 Water allocation groups

The water allocation groups for unsupplemented water harvesting for the Barker Barambah Creeks Water Management Area are detailed in Table 3.

Table 3: Water allocation groups

WRP Subcatchment	Water Allocation Groups	Flow Condition	Zone
H	Class 1H	Start 875 ML/day at Silverleaf Weir Gauging Station. Cease 200 ML/day at Ficks Crossing Gauging Station or its replacement.	Barker Barambah HJ, HK, HL
	Class 2H	Start 950 ML/day at Ficks Crossing Gauging Station or its replacement. Cease 432 ML/day at Ficks Crossing Gauging Station or its replacement.	
	Class 3H	Start 300 ML/day at Litzows Gauging Station and 1 400 ML/day at Ficks Crossing Gauging Station or its replacement. Cease 432 ML/day at Ficks Crossing Gauging Station or its replacement.	
J	Class 1J	Start 500 ML/day at Litzows Gauging Station. Cease 432 ML/day at Ficks Crossing Gauging Station or its replacement.	Barker Barambah JC, JD
	Class 2J	300 ML/day at Glenmore Gauging Station and Bjelke-Petersen Dam is overflowing.	

5.4 Boyne and Stuart Rivers Water Management Area

Overview

This section specifies unsupplemented water management arrangements for the Boyne and Stuart Rivers Water Management Area which extends from:

- *AMTD 181.8 on the Boyne River downstream to the confluence with the Burnett River;*
- *AMTD 155.7 on the Stuart River downstream to the confluence with the Boyne River;*
- *AMTD 0.2 on Reedy Creek downstream to the confluence with the Stuart River; and*
- *AMTD 0.9 on Flagstone Creek downstream to the confluence with the Stuart River, including locations directly benefited by flow or pondage from these stream reaches.*

This overview highlights some key aspects of the ROP relating to unsupplemented water management in this water management area and the details of the rules that follow.

Conversion of unsupplemented authorisations to water allocations

Existing unsupplemented water entitlements within the Boyne and Stuart Rivers Water Management Area were converted to water allocations in the November 2007 ROP.

Water allocation groups are specified for these allocations. Where flow conditions are

attached to existing entitlements, these have been amended to reflect actual operation of the system to manage flows and entitlements throughout the management area without impacting on supplemented water. The maximum rate for taking water has been set at the maximum value for the authorised pump size as tabulated in Schedule 7 of the WRP.

All pumps taking unsupplemented water in the Water Management Area will require or continue to require metering of water use.

5.4.1 Extent of the Boyne and Stuart Rivers Water Management Area

The extent of the Boyne and Stuart Rivers Water Management Area as shown on Map C is:

- The Boyne River from AMTD 181.8 downstream to the confluence with the Burnett River, including locations directly benefited by flow or pondage from these stream reaches;
- The Stuart River from AMTD 155.7 downstream to the confluence with the Boyne River, including locations directly benefited by flow or pondage from these stream reaches;
- Reedy Creek from AMTD 0.2 downstream to the confluence with the Stuart River and;
- Flagstone Creek from AMTD 0.9 downstream to the confluence with the Stuart River.

5.4.2 Subcatchment areas

The Boyne and Stuart Rivers Water Management Area includes parts of two WRP subcatchment areas.

The subcatchment areas as shown on Map D are:

- **Subcatchment 'K'** – from the source of the Stuart River to its confluence with the Boyne River and the Boyne River from its source to AMTD 86.7 (Boondooma Dam);
- **Subcatchment 'L'** – the Boyne River from AMTD 86.7 (Boondooma Dam) to its confluence with the Burnett River.

The WASOs for water entitlements being converted in these subcatchment areas are specified in Schedule 6, Part 2 of the WRP.

5.4.3 Reserved for future amendments

5.4.4 Operating rules

Operating rules for water allocations located in the Boyne and Stuart Rivers Water Management Area are given in Attachment 5.4C.

5.4.5 Water allocation change rules

Water allocation change rules are detailed in Attachment 5.4D.

5.4.6 Water allocation zones

Water allocation zones for the Boyne and Stuart Rivers project areas are specified in Attachment 2.2, Table 1.

5.4.7 Water allocation groups

The water allocation groups for unsupplemented allocations within the Boyne and Stuart Rivers Water Management Area are detailed in Table 4.

Table 4: Water allocation groups

WRP Subcatchment	Water Allocation Groups	Flow Condition	Zone
K	Class 1K	There is no flow threshold.	Boyne and Stuart KA, KB, KC, KD & KE
	Class 2K	The taking of water under the authority of this water allocation must be limited by a device approved by the chief executive that prevents the taking of this water allocation from Stuart River unless a flow of greater than 0.250 m ³ /s is flowing over the spillway of Gordonbrook Dam..	
	Class 3K	1.16 m ³ /s passing Carter's Gauging Station.	
	Class 4K	The taking of water under the authority of this water allocation must be limited by a device approved by the chief executive that prevents the taking of this water allocation from Stuart River unless a flow of greater than 1 m ³ /s is passing the point of take.	
	Class 5K	When the water level falls more than 1.5 m below the spillway level of Gordonbrook Dam, the taking of this water allocation is only to be carried out between 8 am and 12 noon on any day; and when the water level falls more than 2.4 m below the spillway level, the taking of this water allocation is prohibited.	
	Class 6K	The taking of water under the authority of this water allocation must be limited by a device approved by the chief executive that prevents the taking of this water allocation from the Stuart River unless a flow condition of greater than 0.074 m ³ /s is passing the point of take.	
	Class 7K	There is no flow threshold.	
WRP Subcatchment	Water Allocation Groups	Flow Condition	Zone
L	Class 1L	Start when 345 ML/day passing Derra Gauging Station. Cease when less than 86.4 ML/day passing Derra Gauging Station.	Boyne LA
	Class 2L	Start when 700 ML/day passing Derra Gauging Station. Cease when 345 ML/day passing Derra Gauging Station.	
	Class 3L	2 400 ML/day passing Derra Gauging Station.	
	Class 4L	Boondooma Dam must be overflowing.	

Chapter**6****Granting and amending water allocations, licences and Resource Operations licences****Overview**

This chapter provides for the grant or amendment of water entitlements, and Resource Operations Licences (ROLs) in the ROP area. In particular it provides:

- for water licences to be granted to particular groups of water users, who make application under s.206 of the Water Act (Section 6.1);*
- the process for dealing with existing water licence applications in the project areas not provided for in Section 6.1 (Section 6.3);*
- a process for granting water allocations for the water reserved under Chapter 7;*
- the process for granting or amending a ROL for the proposed Barlil Weir (Section 6.4); and*
- provides a process for amending water allocations.*

A brief explanation of these grants is outlined below.

Granting of water licences to particular groups of water users

Applications may be lodged under s.206 of the Water Act for a water licence to take water. If an application for a water licence to take water under s.206 of the Water Act does not fall within one of the categories of application covered by Sections 6.1.2 to 6.1.4 of the ROP, the chief executive will refuse the application.

Holders of a mining tenure (e.g. a mineral development licence or mining lease) may apply under s.206 of the Water Act for a water licence to take water. Section 6.1.2 sets out how these applications will be decided. Any water licence issued will be limited to the taking of water where essential for mine site water management, to achieve improved environmental outcomes associated with mining operations. For example, on older mine sites, on-site water management practices may have led to poor quality water entering watercourses. A water licence could permit that water to be taken from the watercourse and suitably treated. A water licence could also be required if a watercourse is to be used to temporarily store and move water about within a mine site.

Local Governments may apply under s.206 of the Water Act for a water licence to take water. Section 6.1.3 sets out how these applications will be decided. Any water licence issued will be limited to taking of water for the construction and maintenance of public assets, such as roads and bridges. Current management arrangements require Local Governments to apply for a water permit to access small volumes of water for routine construction and maintenance purposes. The proposed arrangement will allow councils to access unsupplemented water for these routine matters under a water licence, reducing the administrative requirement on Local Governments.

Proponents for new developments of significant economic importance to the State (such as mines) may apply under s.206 of the Water Act for a water licence to take water for that development if no unallocated water is being made available in the locality of the development (see Section 6.1.4). Applications will be refused where there are reasonable alternative means of obtaining a water supply such as through tradeable water allocations, or

from other sources (e.g. from bores in areas where that resource is available). The water granted under Section 6.1.4 will be limited to a total volume of 1 000 ML throughout the plan area.

Grant of water allocations associated with Avondale Water Board

The Water Resources (Avondale Water Supply Area and Water Board) Regulation 1996 established an irrigation development on the north side of the Kolan River at Avondale and rules by which the Board operates.

The Water Resources (Avondale Water Supply Area and Water Board) Regulation was repealed as a result of the proclamation of the Water Act. The existing authorisations are to remain in force until replaced by water allocations through an amendment to the ROP in the future. The granting of allocations associated with the board will be in accordance with the Water Act.

Existing applications for water licences

All existing applications in the project areas to take water under s.206 of the Water Act that do not fall within one of the categories of application covered by Sections 6.1.2 to 6.1.4 of the ROP will be refused.

Granting or amending a ROL for the proposed Barlil Weir

Section 6.4 sets out a process under s.108 of the Water Act, for the proponent (Burnett Water Pty Ltd) or another entity approved by the Minister responsible for administering the State Development and Public Works Organisation Act 1971 as the proponent for the proposed Barlil Weir to obtain a ROL for Barlil Weir.

The proponent must obtain the relevant ROL prior to construction of Barlil Weir.

Section 6.4 also sets out a process for s.111A of the Water Act for any ROL for Barlil Weir to be amended by the chief executive.

Grant of licence to interfere

Under s.1037A of the Water Act the chief executive granted licence number 406914 to South Burnett Regional Council for infrastructure associated with an authorisation to take water previously held by Kingaroy Shire Council. This completes the provisions under s6.2 of the November 2007 ROP.

6.1 Water licence applications under s.206 of the Water Act

6.1.1 All other applications

The chief executive must refuse all new water licence applications to take water in the ROP area made under s.206 of the Water Act other than those dealt with in Sections 6.1.2, 6.1.3 and 6.1.4 or where the volume allowed to be taken under a new

licence does not increase the total volume of water allowed to be taken from a catchment under licences and water allocations.

6.1.2 Mining tenure

For the purposes of this section, 'mining tenure' means a mineral development licence or mining lease granted under the *Mineral Resources Act 1989*.

- The holder of a mining tenure may apply for a water licence to take water in the ROP area under s.206 of the Water Act.
- The chief executive must deal with the application in accordance with this section and the provisions of the Water Act.
- Any water licence issued under s.206 of the Water Act in accordance with Section 6.1.2 must be limited to the taking of water, where essential for mine site water management, to achieve improved environmental outcomes associated with mining operations.
- A condition of a water licence under this section will be that the water may only be taken if there would be an inconsequential effect on the flow naturally occurring in the watercourse downstream of the mine site.
- In deciding whether or not to grant or refuse an application, the chief executive will take into consideration the criteria in Section 26 of the WRP.

6.1.3 Local Governments

- Local Governments may apply for a water licence to take water in the ROP area under s.206 of the Water Act.
- The chief executive must deal with the application in accordance with this section and the provisions of the Water Act.
- Any water licence issued under s.206 of the Water Act in accordance with Section 6.1.3 will be limited to the taking of water required for the construction and maintenance of public assets such as roads and bridges.
- In deciding whether or not to grant or refuse an application, the chief executive will take into consideration the criteria in Section 26 of the WRP.
- The chief executive will refuse any application to take water from a watercourse in which water is managed under a ROL or IROL.
- The chief executive will refuse any application to take water from sections of a watercourse where water allocations have been established.

6.1.4 Significant projects

- A person may apply for a water licence to take water in the ROP area under s.206 of the Water Act if the water is required for a project of significant economic importance to the State, such as a mining project.
- The chief executive must deal with the application in accordance with Section 6.1.4 and the provisions of the Water Act.
- The chief executive will refuse any application to take water from a watercourse in which water is managed under a ROL or IROL.
- The chief executive will refuse any application to take water from sections of a watercourse where water allocations have been established.
- The chief executive will not approve licences to the extent that the total of the maximum annual volumes of the licences that are granted under this section exceed 1 000 ML throughout the plan area.

- The chief executive may refuse an application if an alternative supply is available to the applicant.

6.2 Reserved for future amendments

6.3 Process for dealing with existing applications for water licences

The chief executive must refuse all existing applications in the Lower Burnett and Kolan Rivers Water Management Area, Upper Burnett and Nogo Rivers Water Management Area, Barker Barambah Creeks Water Management Area and the Boyne and Stuart Rivers Water Management Area to take water other than in accordance with Sections 6.1.2, 6.1.3 and 6.1.4.

6.4 Process for granting or amending a ROL for the proposed Barlil Weir

A ROL for the proposed Barlil Weir must be held by an entity that is approved by the Minister responsible for administering the *State Development and Public Works Organisation Act 1971* as the proponent for the infrastructure. The Minister's approval is required only until the infrastructure is constructed and the associated water allocations are granted under the ROP in accordance with Section 7.1 in Chapter 7 and Section 8.1 in Chapter 8.

6.4.1 Granting a ROL

The proponent of the proposed Barlil Weir (Burnett Water Pty Ltd or another entity approved by the Minister responsible for administering the *State Development and Public Works Organisation Act 1971* as the proponent for the infrastructure) may be granted a ROL for the construction of Barlil Weir (the 'infrastructure').

The proponent must make application to the chief executive for a ROL for the construction of Barlil Weir. The application must be supported by details of:

- design and construction specifications for the infrastructure;
- proposed operating arrangements for the infrastructure;
- any other information the applicant believes will be of assistance to the chief executive in deciding the application; and
- written evidence of the approval by the Minister responsible for administering the *State Development and Public Works Organisation Act 1971* that the applicant is the proponent of the infrastructure.

The chief executive may request the proponent to give further information needed to grant the ROL.

Before granting the ROL, the chief executive must consider the following:

- the application and additional information given about the application;
- the views expressed at any conference held between the chief executive and the proponent;
- the public interest; and
- mechanisms for minimising impacts on existing entitlement holders during

construction and before the infrastructure reaches an operational level.

If the chief executive decides to grant the ROL, the chief executive must issue the ROL in accordance with s.108 of the Water Act.

6.4.2 Amending a ROL by the chief executive

The chief executive may amend a ROL if the chief executive is satisfied the ROL should be amended under s.111A of the Water Act.

The chief executive may request the ROL holder to give further information needed to assess whether an amendment to the ROL is required.

The chief executive may invite the ROL holder to a conference to help in deciding whether an amendment is required.

In deciding whether an amendment is required, the chief executive must consider the matters as if the application were an application for a ROL with any necessary changes.

If the chief executive decides to amend the ROL, the chief executive must issue the amended ROL in accordance with s.111A of the Water Act.

6.4.3 Amending a ROL on application of the ROL holder

The ROL holder may up until the infrastructure (the subject of the ROL) is constructed and the associated water allocation is granted under the ROP in accordance with Section 7.1 of Chapter 7 and Section 8.1 of Chapter 8 apply to amend the ROL under s.111A of the Water Act.

The application to amend the ROL must be made as if it were an application for a ROL except for the requirement for written evidence of the approval by the Minister responsible for administering the *State Development and Public Works Organisation Act 1971*.

In deciding the application, the chief executive must assess the application as if it were an application for a ROL, with any necessary changes.

If the chief executive decides to amend the ROL, the chief executive must issue the amended ROL in accordance with s.111A of the Water Act.

Chapter**7****Meeting future water requirements****Overview**

This chapter focuses on potential future releases of unallocated water in the ROP Area. These releases would be additional to those dealt with in Chapter 6 of the ROP.

Included in this chapter is information about proposed future infrastructure in the Burnett Basin and unallocated water potentially available for release throughout the Burnett Basin. This includes the reservation of water allocations to be granted to the proponent (Burnett Water Pty Ltd or another entity approved by the Minister responsible for administering the State Development and Public Works Organisation Act 1971) of proposed infrastructure. This chapter states the process that must be undertaken before any unallocated water can be released.

Unallocated water available for future release

The WRP provides for an allocation of up to 1 000 ML to meet future urban demands within the Elliott, Isis and Gregory catchments. As this release is not being dealt with at this time, it will be necessary to amend the ROP to provide for the release of this water. It is intended that these amendments occur through the statutory process prescribed in s.105 of the Water Act.

The unallocated water resulting from the proposed infrastructure within the ROP area has been reserved for the proponent of the proposed infrastructure. It will be necessary to amend the ROP to provide for the release of this water. It is intended that these amendments occur through the statutory process prescribed in s.106(b) of the Water Act.

Reservation of water allocations for future release

Reservations have been made for the following infrastructure proposals:

- raising of Jones Weir (Stage 2);*
- construction of Barlil Weir; and*
- raising of Ned Churchward Weir (Stage 2).*

Queensland and Commonwealth EIS processes have been completed for the first two proposals. These proposals are able to proceed in accordance with the requirements established by the Coordinator-General and/or the Minister responsible for administering the State Development and Public Works Organisation Act 1971, on behalf of the State of Queensland, and by the Commonwealth Minister for the Environment, on behalf of the Commonwealth.

The EIS process for Ned Churchward Weir (Stage 2) has yet to be completed. The Coordinator-General considered it prudent to defer the completion of his evaluation of the EIS until further environmental investigations were completed. The raising of Ned Churchward Weir (Stage 2) can therefore not proceed until the Coordinator-General's evaluation has been completed and approvals under relevant Commonwealth legislation have been obtained.

The volume of water reserved for and made available by the proposed infrastructure is set out in Section 7.1.

These volumes have been determined on the basis of the hydrologic modelling carried out by Burnett Water Pty Ltd during the EIS process. The Department, Burnett Water Pty Ltd and SunWater have carried out further detailed hydrologic modelling to support the reservations. This further modelling by Burnett Water Pty Ltd and SunWater has been submitted to the chief executive in accordance with the Water Act, under which submissions were invited in relation to the preparation of the ROP.

The amendments to the ROP necessary to provide for this proposed infrastructure and the release of this water are specified in Chapter 8.

Process for granting ROLs and reserved water for proposed infrastructure

A ROL will be granted for the proposed Barlil Weir under Chapter 6. Amendments to the ROL may also be made under Chapter 6 during the construction of the infrastructure. When final operating rules for the infrastructure are known, it is intended that the ROP be amended. The ROP amendment will provide for the final operating arrangements and for release of the reserved water to the proponent of Barlil Weir.

Amendments to the ROP providing for the Jones Weir and Ned Churchward Weir proposals and release of the reserved water to the proponent of the infrastructure will be made following the finalisation of specifications by the infrastructure proponent.

The amendments to the ROP will provide for:

- a process for the grant of or amendment to any ROL required to operate the proposed infrastructure;*
- final operating arrangements for the proposed infrastructure; and*
- a process for the grant of water allocations for the reserved water.*

Any ROLs required for the proposed infrastructure will be granted or amended if necessary prior to the construction of the infrastructure.

Water allocations for the reserved water will be granted when the chief executive is satisfied the infrastructure has achieved operational status. The location of these allocations will be the ponded area of the specified infrastructure.

The ROP will not be amended to provide for the grant of a water allocation until it is demonstrated that the supply of water under the proposed water allocation will not impact on WASOs and EFOs.

Section 8.1 in Chapter 8 contains more detail about the amendments that may be made to the ROP for the proposed infrastructure.

7.1 Water reserved under the ROP

An amount up to or equivalent to the amount of the reserved water specified in

Columns 2 and 3 of Table 1 will be granted to the proponent (Burnett Water Pty Ltd or another entity approved by the Minister responsible for administering the *State Development and Public Works Organisation Act 1971* as the proponent for the infrastructure) of the infrastructure specified in Column 1 of Table 1. The chief executive will amend the ROP under s.106(b) of the Water Act to provide a process for the grant of the associated water allocations, upon receipt of final specifications for the proposed infrastructure which are consistent with the WRP, including the WASOs and EFOs.

Table 1: Water reserved under the ROP

Proposed Infrastructure	High Priority	Medium Priority
Jones Weir (Stage 2)	200 ML/year	6 100 ML/year
Ned Churchward Weir (Stage 2)	0 ML/year	15 295 ML/year
Barlil Weir	0 ML/year	4 250 ML/year

The allocations specified in Table 1 for the proposed infrastructure have been assessed as being available on the basis of the Department's IQQM modelling. This includes the proposed design specifications and assumed operating arrangements associated with the proposed infrastructure. Adjustments to these volumes may be required if the structural arrangements relevant to EFOs and WASOs are inconsistent with the WRP.

Chapter
8**Amending the ROP****Overview**

The Water Act, s.106(b) provides that amendments can be made to a ROP through a simplified process, without following a public consultation process if:

- *the amendment is one that would correct a minor error or make a change that is not a change of substance; or*
- *it is stated in the ROP that an amendment of this type can be made under the simple process.*

Sections 8.1 and 8.2 detail the amendments that may be made to the ROP under the simple process.

Amendments to the ROP other than those detailed in Sections 8.1 and 8.2 can be made only after completion of a full public consultation process.

Amending the ROP to allow new infrastructure

The ROP can be amended to provide for the construction and operation of specified water infrastructure within the priority areas. The infrastructure is listed in Table 1, Chapter 7. The ROP will be amended following the provision of the detailed infrastructure specifications to the satisfaction of the chief executive.

Allowing the ROP to be amended for this infrastructure will provide additional water allocation to meet the future water requirements of the basin, without endangering the WRP outcomes. This approach has been developed to provide certainty regarding the reservation associated with the proposed infrastructure while providing for some flexibility in the final infrastructure design.

Before any amendment can be made to the ROP, the chief executive must be satisfied that the amendment is consistent with the outcomes of the WRP including the specified WASOs and EFOs.

The infrastructure proponent will supply the chief executive with enough detail to be satisfied that the constructed infrastructure will meet the outcomes of the WRP.

The possible amendments to allow for new infrastructure are listed in Section 8.1.

The current version of the ROP will be available from departmental offices and the DERM website.

8.1 Amending the ROP to allow approved infrastructure

To allow for the proposed infrastructure detailed in Chapter 7, the following amendments can be made to the ROP under s.106(b) of the Water Act:

- provide for a process for granting reserved water allocations;
- provide for a process for granting or amending a ROL;

- add or amend infrastructure details in the attachments to Chapter 4;
- add or amend operating rules for the infrastructure in the attachments to Chapter 4 including:
 - environmental management rules; and
 - water sharing rules;
- add or amend monitoring practices in the attachments to Chapter 4;
- add or amend the implementation schedule in Attachment 9.1;
- add or amend the change rules contained in the attachments to Chapters 4 and 5;
- add or amend seasonal water assignment rules contained in the attachments to Chapters 4 and 5;
- add or amend water supply scheme boundaries, subscheme boundaries and zone boundaries to accommodate approved infrastructure; and
- any consequential amendment required to provide consistency with these amendments.

The amendment to the ROP must be consistent with the WRP and will not compromise the specified WASOs and EFOs.

When amendments are made to the ROP to allow for the proposed infrastructure, the chief executive will notify as many water allocation holders within the affected water supply schemes as possible.

8.2 Other amendments that can be made to the ROP

In addition, the following amendments can be made to the ROP under s.106(b) of the Water Act, subject to compliance with the WRP objectives.

An amendment necessary to implement an amendment to the WRP made under s.57(b) of the Water Act.

An amendment to replace the performance-based requirements with specific operational rules for meeting environmental management rules given in Attachments 4.1E, 4.2E, 4.3E and 4.4E.

An amendment to modify the operating and/or monitoring requirements applying to Ned Churchward Weir, to reflect the provisions of the State and Federal agreement for the construction of the weir.

An amendment that provides for improved or more efficient monitoring for assessing the WRP outcomes. Examples may include:

- increasing monitoring effort to investigate impacts of storage operation or flow management;
- changing indicators for ecological monitoring;
- increasing reporting requirements for compliance purposes; and
- a reduction or removal of monitoring requirements, if it can be shown that no further information or benefit is gained from the continuation of the monitoring requirements.

An amendment to the infrastructure details in the attachments to Chapter 4, provided the amendment is one of the following:

- an amendment to correct an error in the details shown in Attachments 4.1D, 4.2D, 4.3D or 4.4D (e.g. revision of surface area, storage volumes, spillway and/or outlet discharge relationships);
- the installation of, or modification to, a fish transfer system on any of the infrastructure detailed; and
- the installation of, or modification to, multilevel inlet works on any of the infrastructure detailed.

Add or amend:

- Table 1, Table 2, Table 3 or Table 4 in Attachment 4.1H;
- Table 1, Table 2, Table 3 or Table 4 in Attachment 4.2H;
- Table 1, Table 2, Table 3 or Table 4 in Attachment 4.3H;
- Table 1, Table 2, Table 3 or Table 4 in Attachment 4.4H;
- Table 1 in Attachment 5.1C, 5.2C or 5.3C; and
- Table 1 in Attachment 5.1D, 5.2D or 5.3D.

An amendment based on information required under Chapters 3 and 4 to be supplied by the ROL holder.

An amendment to the ROP to provide for the grant of water allocations within the Bundaberg Water Supply Scheme to Avondale Water Board ratepayers to replace entitlements originally granted under the *Water Resources (Avondale Water Supply Area and Water Board) Regulation* and the Water Act.

An amendment to Attachment 4.3F, Section 2.1.

An amendment to water allocation change rules to allow changes to priority group.

An amendment to include a supplemented water sharing rule designed to allow access to run of the river water without impacting upon the objectives of the WRP.

An amendment to critical water supply arrangements.

8.3 Future amendments contemplated under s.105 of the Water Act

8.3.1 Boyne River catchment

Future amendments may be considered in relation to improving the performance against WASOs in the Boyne River catchment in accordance with s.39 of the WRP.

Chapter **9** **Implementation of the Resource Operations Plan**

Overview

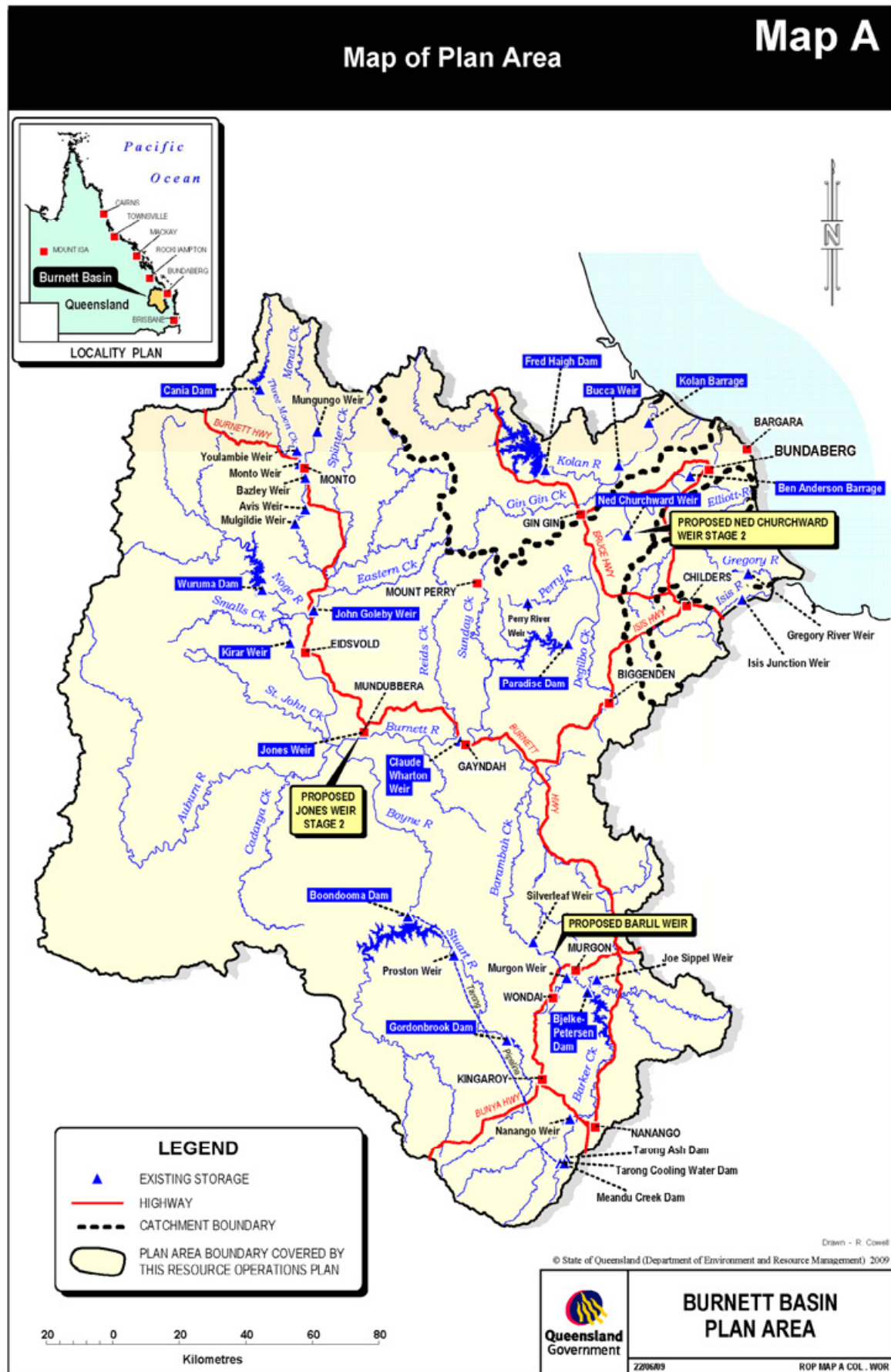
Section 98 of the Water Act provides for the ROP to include an implementation schedule setting out arrangements for progressive implementation of the requirements of the plan over a period of five years.

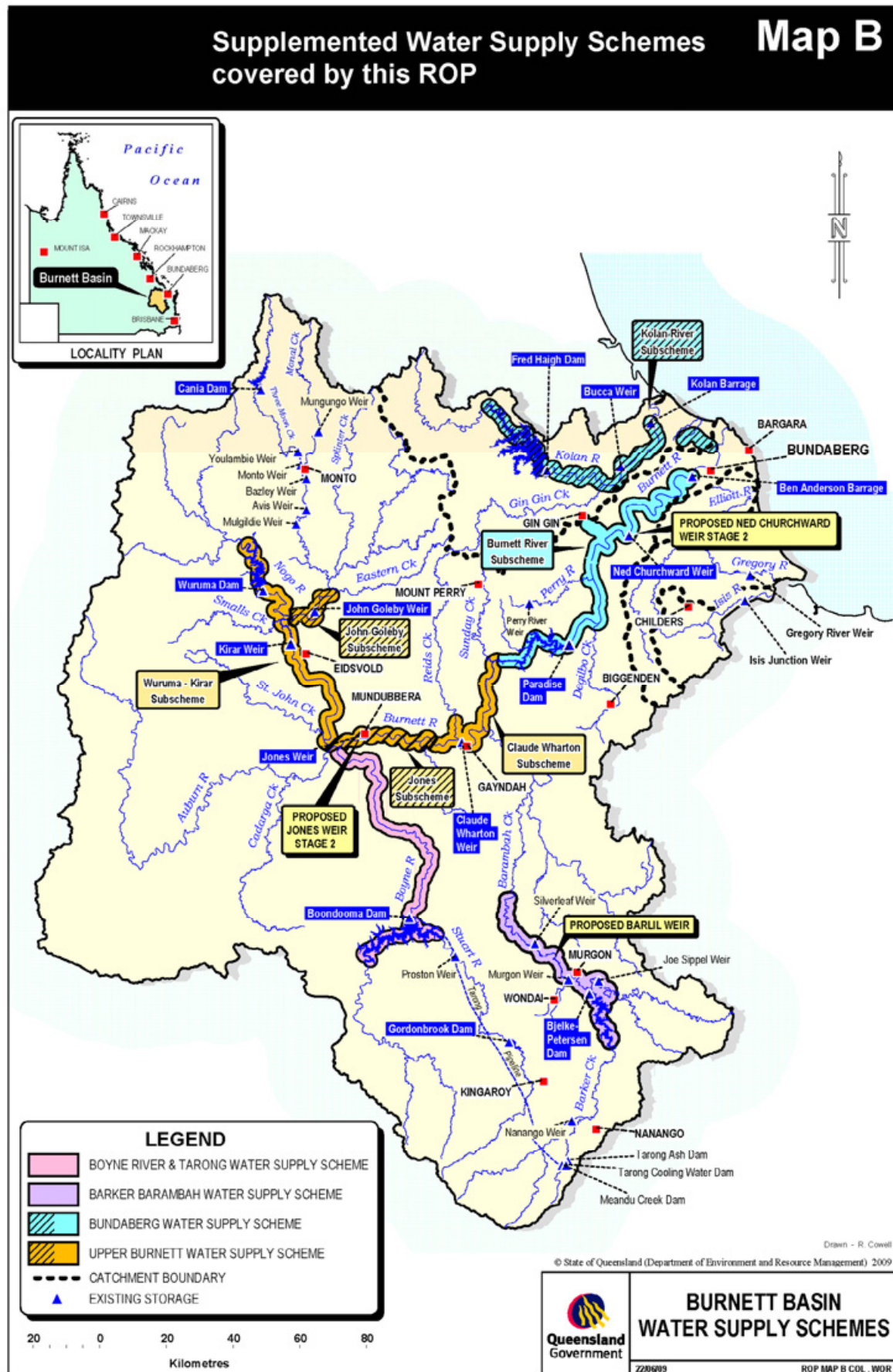
9.1 Implementation schedule for the ROP

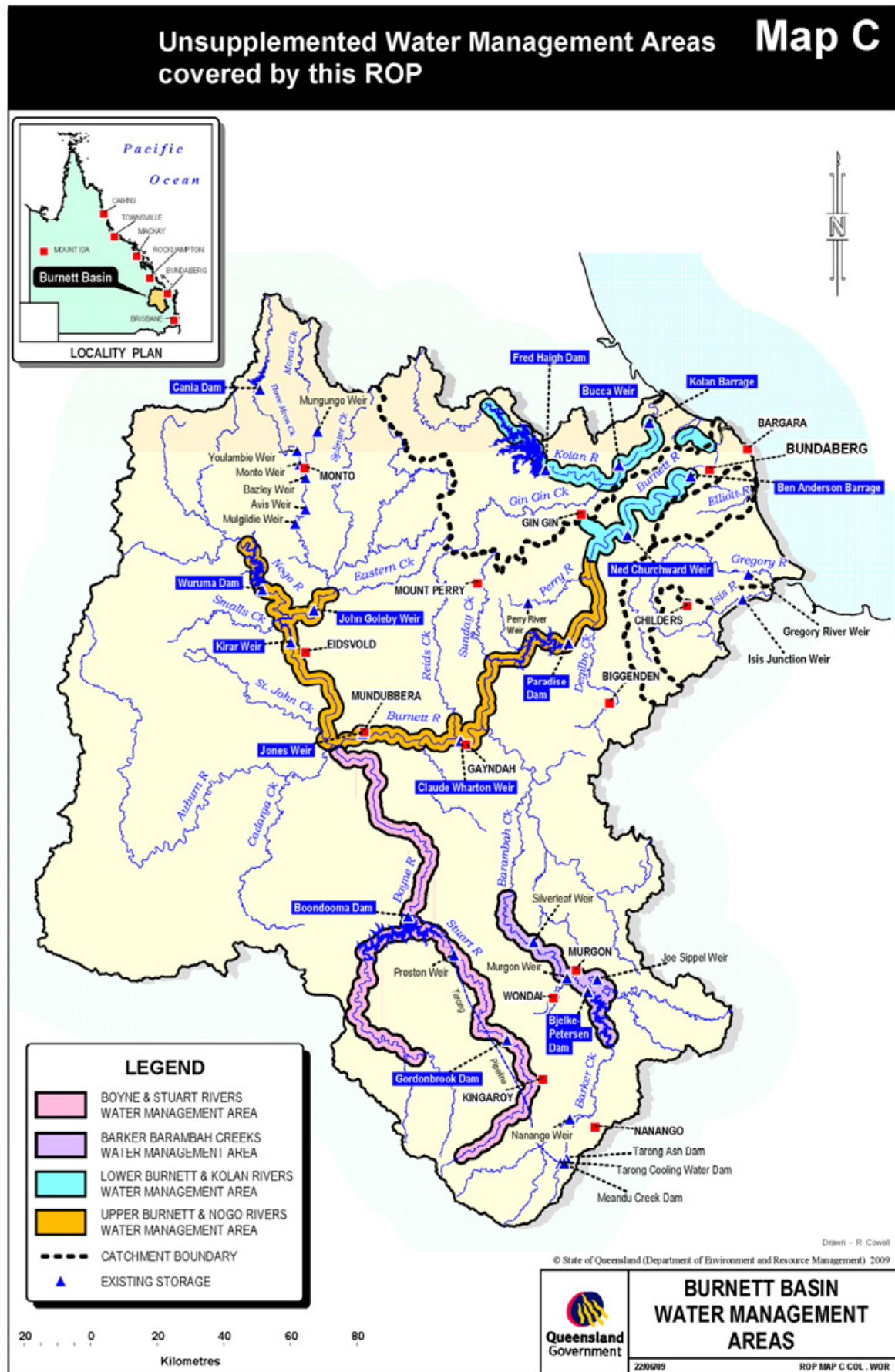
Details of how the ROP will be implemented are specified in the implementation schedule in Attachment 9.1.

9.2 Amendments to the ROP

Details of amendments to the ROP are specified in Attachment 9.2.







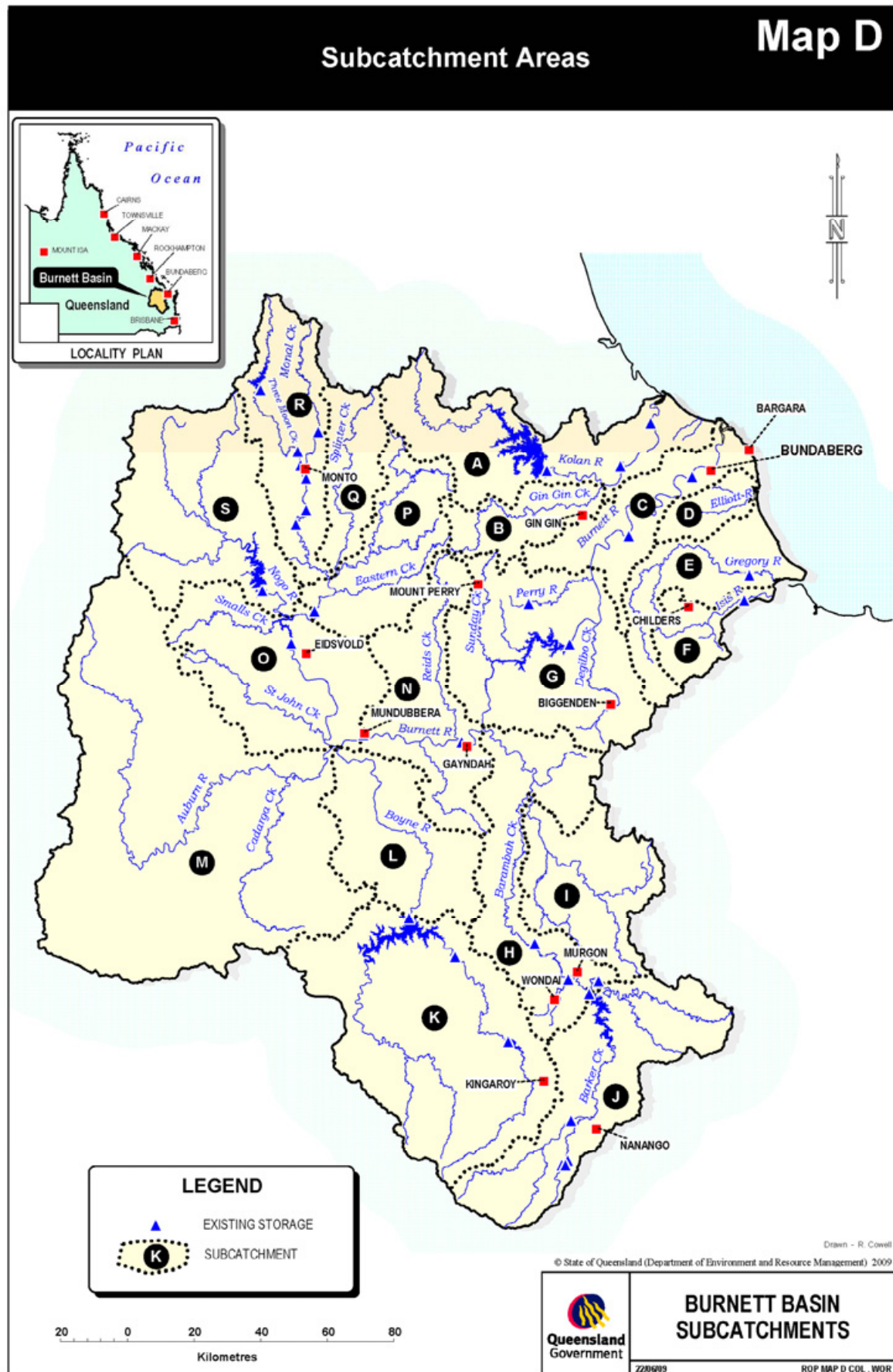


Table 1: Zones for Bundaberg, Upper Burnett, Barker Barambah and Boyne River and Tarong Water Supply Schemes

Zone	AMTD	Location	Sheet Number
BUNDABERG WATER SUPPLY SCHEME			
Kolan River Zones			
AA	14.7–30.8	Kolan River Barrage to AMTD 30.8. Includes Gooburrum scheme and Avondale Water Board.	2.1.1
AB	30.8–38	AMTD 30.8 to Bucca Weir. Includes Abbotsford scheme.	2.1.2
AC	38–52.9	Bucca Weir to AMTD 52.9.	2.1.2
AD	52.9–116	AMTD 52.9 to Fred Haigh Dam and the full supply storage limits of Fred Haigh Dam. Includes Bingera and Gin Gin schemes, and Gin Gin Town Water Supply (TWS).	2.1.3
Lower Burnett River Zones			
CA	25.9–65.6	Ben Anderson Barrage to AMTD 65.6. Includes Isis and Woongarra schemes and the Bundaberg and Burnett Shire TWS.	2.1.4
CB	65.6–97.9	AMTD 65.6 to St Agnes Creek confluence. Includes Wallaville TWS.	2.1.5
GZ	97.9–162.8	St Agnes Creek confluence to AMTD 162.8.	2.1.6b
UPPER BURNETT WATER SUPPLY SCHEME			
Upper Burnett River Zones			
GY	162.8–176	AMTD 162.8 to AMTD 176.	2.1.6b
GB	176–187.4	AMTD 176 to Barambah Creek confluence.	2.1.6a
NA	187.4–202.4	Barambah Creek confluence to Claude Wharton Weir. Includes Gayndah TWS.	2.1.7
NB	202.4–213.1	Claude Wharton Weir to AMTD 213.1.	2.1.7
NC	213.1–240.1	AMTD 213.1 to Jones Weir.	2.1.7
OA	240.1–253	Jones Weir to AMTD 253. Includes Mundubbera TWS.	2.1.8
OB	253–291.1	AMTD 253 to Eidsvold Gauging Station.	2.1.8
Zone	AMTD	Location	Sheet Number

Upper Burnett River Zones (cont)			
OC	291.1–311.8	Eidsvold Gauging Station to Nogo River confluence. Includes Eidsvold TWS.	2.1.9
OD	311.8–321.1	Nogo River confluence to Ceratodus Gauging Station.	2.1.9
PA	321.1–333.9	Ceratodus Gauging Station to AMTD 333.9.	2.1.9
Nogo River Zones			
SA	0–23	Burnett River confluence to Wuruma Dam.	2.1.10
SB	23–44.5	Wuruma Dam to AMTD 44.5.	2.1.10
Auburn River Zones			
MA	0–6	Burnett River confluence to AMTD 6.	2.1.8
BARKER BARAMBAH WATER SUPPLY SCHEME			
Barker and Barambah Creek Zones			
HB	85–120.4	Barambah Creek AMTD 85 to Silverleaf Weir.	2.1.11
HZ	120.4 -126.7	Silverleaf Weir storage limits.	2.1.11
HC	126.7–143.7	Barambah Creek from Silverleaf Weir storage limits to AMTD 143.7.	2.1.12
HD	143.7–159 0–38.2	Barambah Creek AMTD 143.7 to Barker Creek confluence. Barker Creek confluence to Barker Creek AMTD 38.2.	2.1.12
HE	159–179.4	Barambah Creek from Barker Creek confluence to Upper Redgate Pump Station.	2.1.13
JA	179.4–189.5	Barambah Creek from Redgate Pump Station to Francis Weir upstream storage limit.	2.1.13
BOYNE RIVER AND TARONG WATER SUPPLY SCHEME			
Boyne River Zones			
LA	0–86.7	Burnett River confluence to Boondooma Dam.	2.1.16
KA	86.7–110.5	Boondooma Dam full supply storage limits.	2.1.17

Zone	AMTD	Location	Sheet Number
Stuart River Zones			
KA	0–19.8	Boondooma Dam full supply storage limits.	2.1.17

- a) Zones are also depicted on the following sheet maps.
- b) Adopted Middle Thread Distance (AMTD) is the distance in kilometres along the middle of the stream from its mouth or confluence with the main river.
- c) Each zone includes those sections of tributaries where there is access to flow or pondage from regulated reaches.

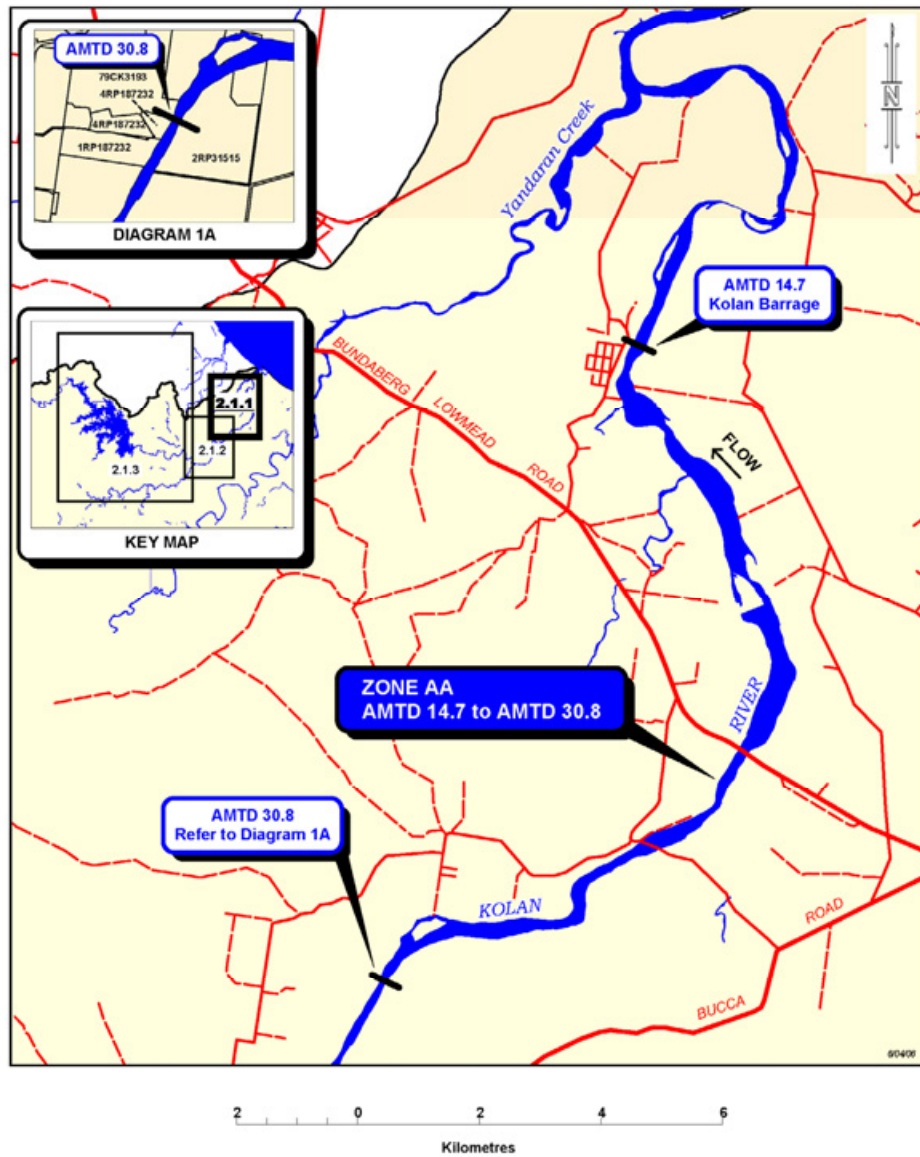
Table 1: Zones for Lower Burnett and Kolan Rivers, Upper Burnett and Nogo Rivers, Barker Barambah Creeks, and Boyne and Stuart Rivers Water Management Areas

Zone	AMTD	Location	Sheet Number
LOWER BURNETT AND KOLAN RIVERS WATER MANAGEMENT AREA			
Kolan River Zones			
AA	14.7–30.8	Kolan River Barrage to AMTD 30.8.	2.1.1
AB	30.8–38	AMTD 30.8 to Bucca Weir.	2.1.2
AC	38–52.9	Bucca Weir to AMTD 52.9.	2.1.2
AD	52.9–116	AMTD 52.9 to Fred Haigh Dam and the full supply storage limits of Fred Haigh Dam.	2.1.3
Lower Burnett River Zones			
CA	25.9–65.6	Ben Anderson Barrage to AMTD 65.6.	2.1.4
CB	65.6–97.9	AMTD 65.6 to St Agnes Creek confluence.	2.1.5
UPPER BURNETT AND NOGO RIVERS WATER MANAGEMENT AREA			
Upper Burnett River Zones			
GA	97.9–176	St Agnes Creek confluence to AMTD 176.	2.1.6a
GB	176–187.4	AMTD 176 to Barambah Creek confluence.	2.1.6a
NA	187.4–202.4	Barambah Creek confluence to Claude Wharton Weir.	2.1.7
NB	202.4–213.1	Claude Wharton Weir to AMTD 213.1.	2.1.7
NC	213.1–240.1	AMTD 213.1 to Jones Weir.	2.1.7
OA	240.1–253	Jones Weir to AMTD 253.	2.1.8
OB	253–291.1	AMTD 253 to Eidsvold Gauging Station.	2.1.8
OC	291.1–311.8	Eidsvold Gauging Station to Nogo River confluence.	2.1.9
OD	311.8–321.1	Nogo River confluence to Ceratodus Gauging Station.	2.1.9
PA	321.1–333.9	Ceratodus Gauging Station to AMTD 333.9.	2.1.9

Zone	AMTD	Location	Sheet Number
UPPER BURNETT AND NOGO RIVERS WATER MANAGEMENT AREA cont.			
Nogo River Zones			
SA	0–23	Burnett River confluence to Wuruma Dam.	2.1.10
SB	23–44.5	Wuruma Dam to AMTD 44.5.	2.1.10
Auburn River Zones			
MA	0–6	Burnett River confluence to AMTD 6.	2.1.8
BARKER BARAMBAH CREEKS WATER MANAGEMENT AREA			
Barambah Creek Zones			
HJ	85–120.4	AMTD 85 on Barambah Creek to Silverleaf Weir.	2.1.15
HK	120.4–141.6	Silverleaf Weir to Ficks Crossing Gauging Station.	2.1.15
HL	141.6–171.8	Ficks Crossing Gauging Station to Joe Sippel Weir.	2.1.15
JD	171.8–189.5	Joe Sippel Weir to Francis Weir upstream storage limit.	2.1.15
Barker Creek Zones			
JC	0–38.2	Barambah Creek confluence to AMTD 38.2 on Barker Creek.	2.1.14
BOYNE AND STUART RIVERS WATER MANAGEMENT AREA			
Boyne River Zones			
LA	0–86.7	Burnett River confluence to Boondooma Dam.	2.1.16
KA	86.7–110.5	Boondooma Dam full supply storage limits.	2.1.17
KB	110.5–181.8	Boondooma Dam upstream full supply storage limit to AMTD 181.8.	2.1.18
Stuart River Zones			
KA	0–19.8	Boondooma Dam full supply storage limits.	2.1.17
KC	19.8–83	Boondooma Dam upstream full supply storage limit to Gordonbrook Dam and Reedy Creek from AMTD 0.2 downstream to the confluence with the Stuart River.	2.1.19
KD	83–94.5	Gordonbrook Dam full supply storage limits.	2.1.19
KE	94.5–155.7	Gordonbrook Dam upstream full supply storage limit to AMTD 155.7 and Flagstone Creek from AMTD 0.9 downstream to the confluence with the Stuart River.	2.1.20

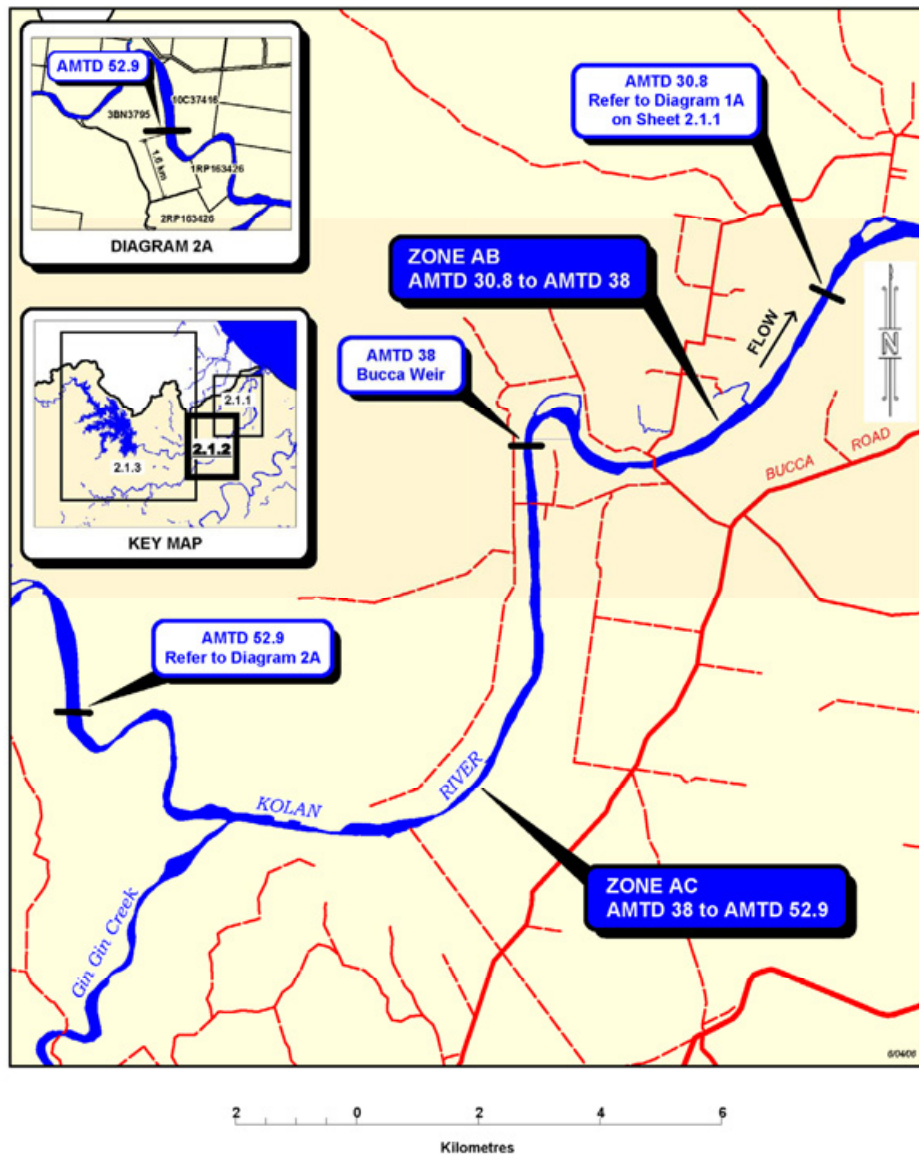
- a) Zones are also depicted on the following sheet maps.
- b) Adopted Middle Thread Distance (AMTD) is the distance in kilometres along the middle of the stream from its mouth or confluence with the main river.
- c) Each zone includes those sections of tributaries where there is access to flow or pondage from regulated reaches.

Kolan Zone AA



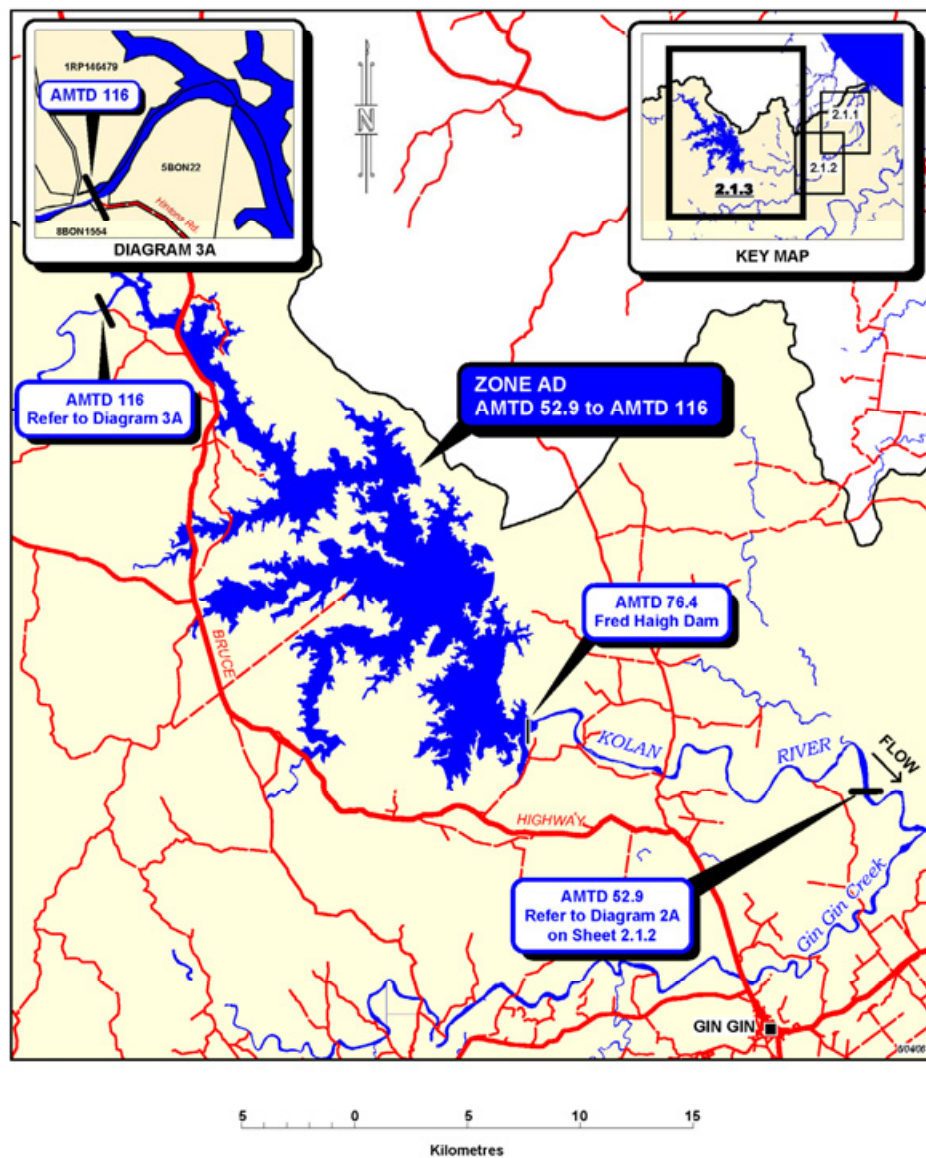
Sheet 2.1.1

Kolan Zones AB & AC



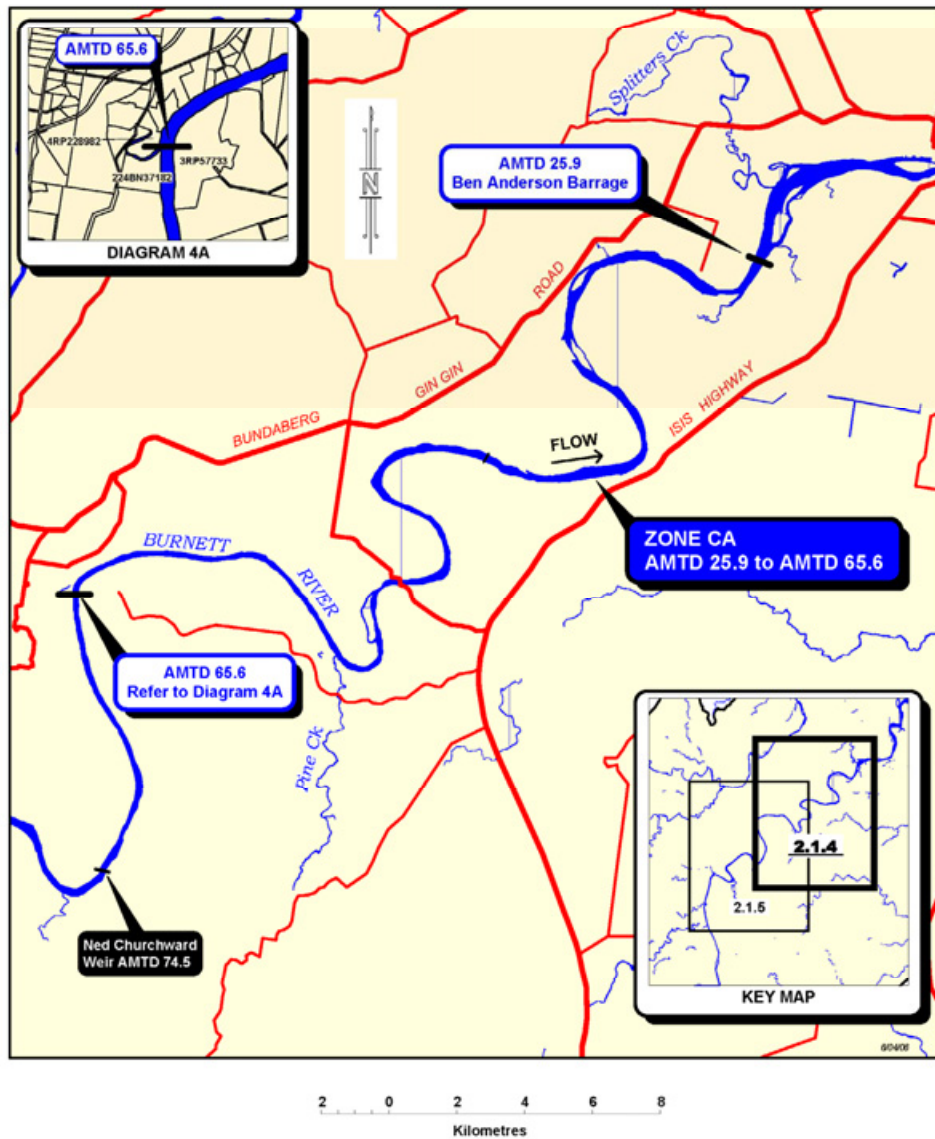
Sheet 2.1.2

Kolan Zone AD



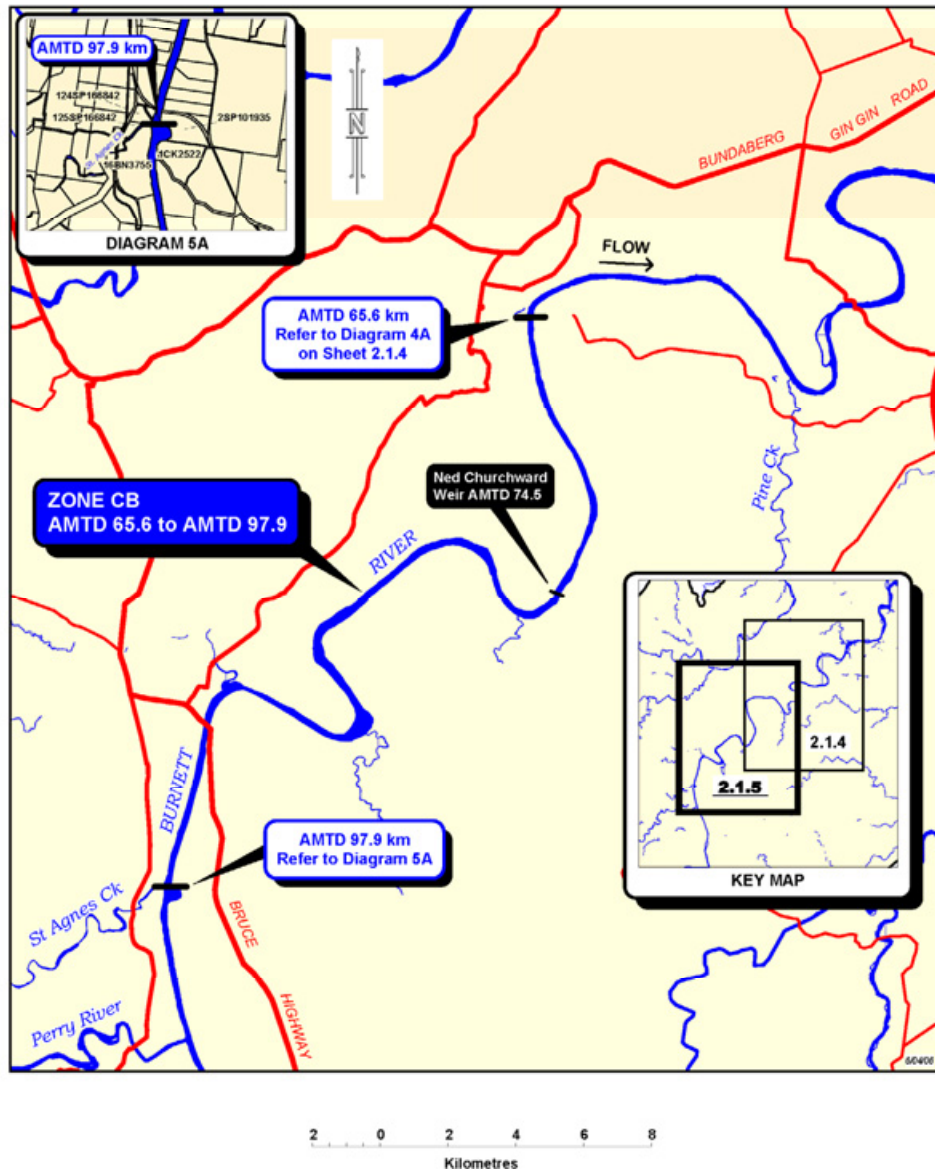
Sheet 2.1.3

Lower Burnett Zone CA



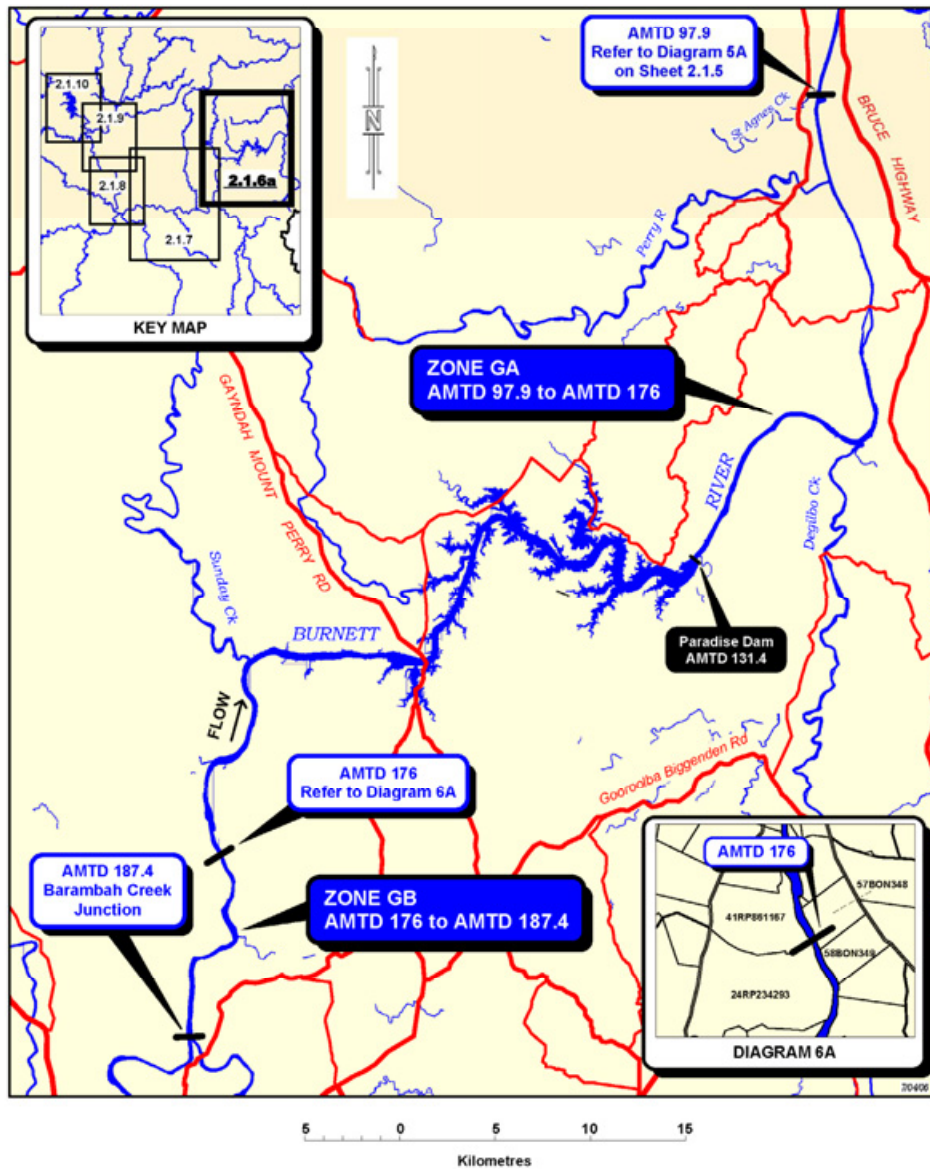
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Lower Burnett Zone CB



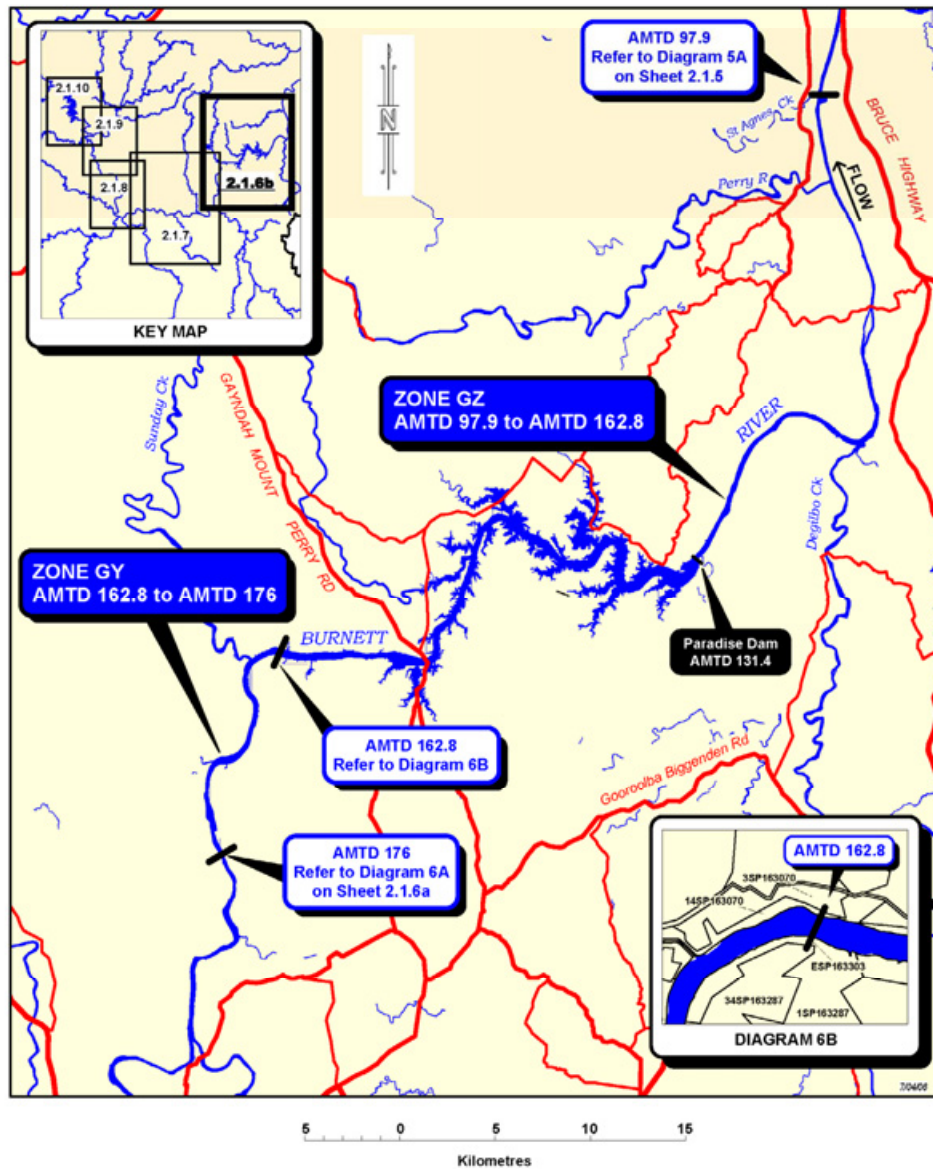
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Upper Burnett Zones GA & GB



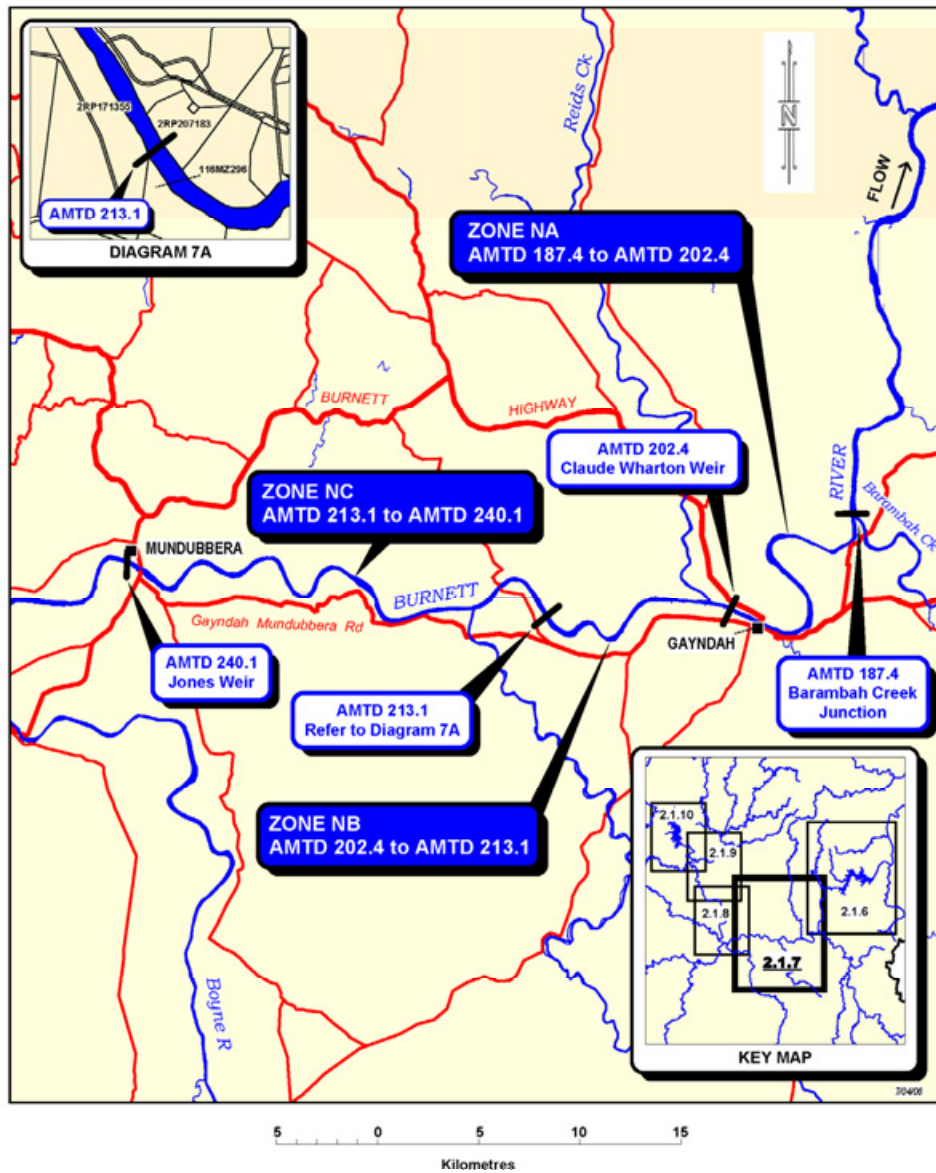
Sheet 2.1.6a

Upper Burnett Zone GY & Lower Burnett Zone GZ



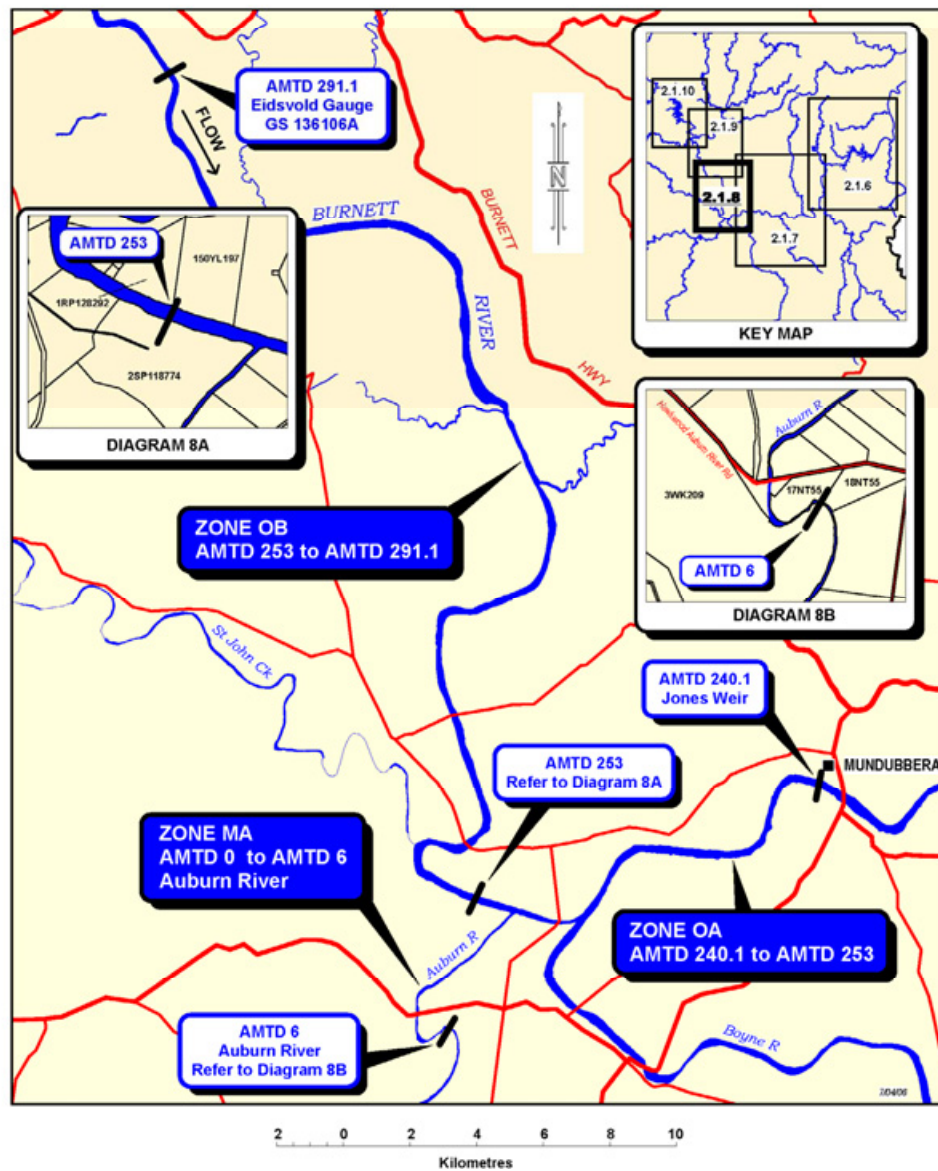
Sheet 2.1.6b

Upper Burnett Zones NA, NB & NC



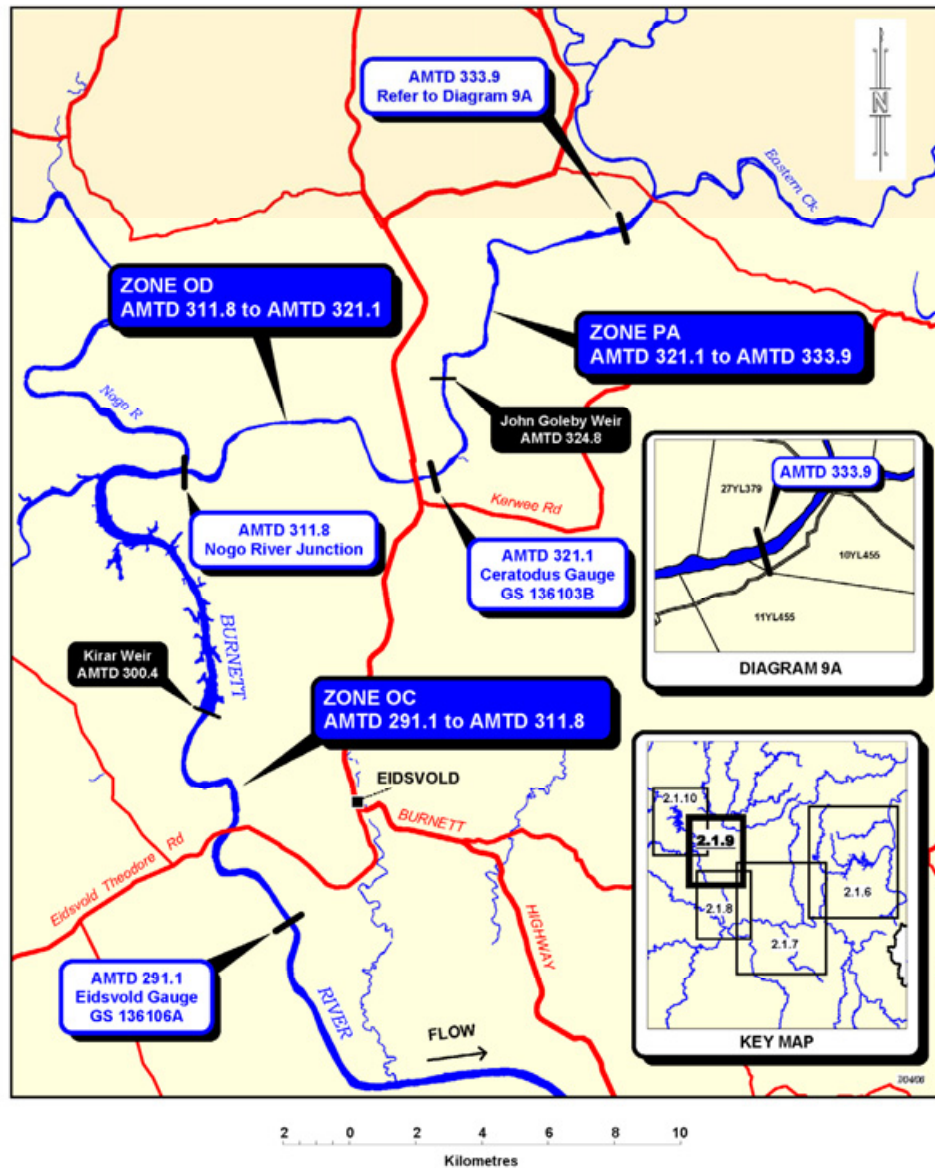
Sheet 2.1.7

Upper Burnett Zones OA, OB & MA



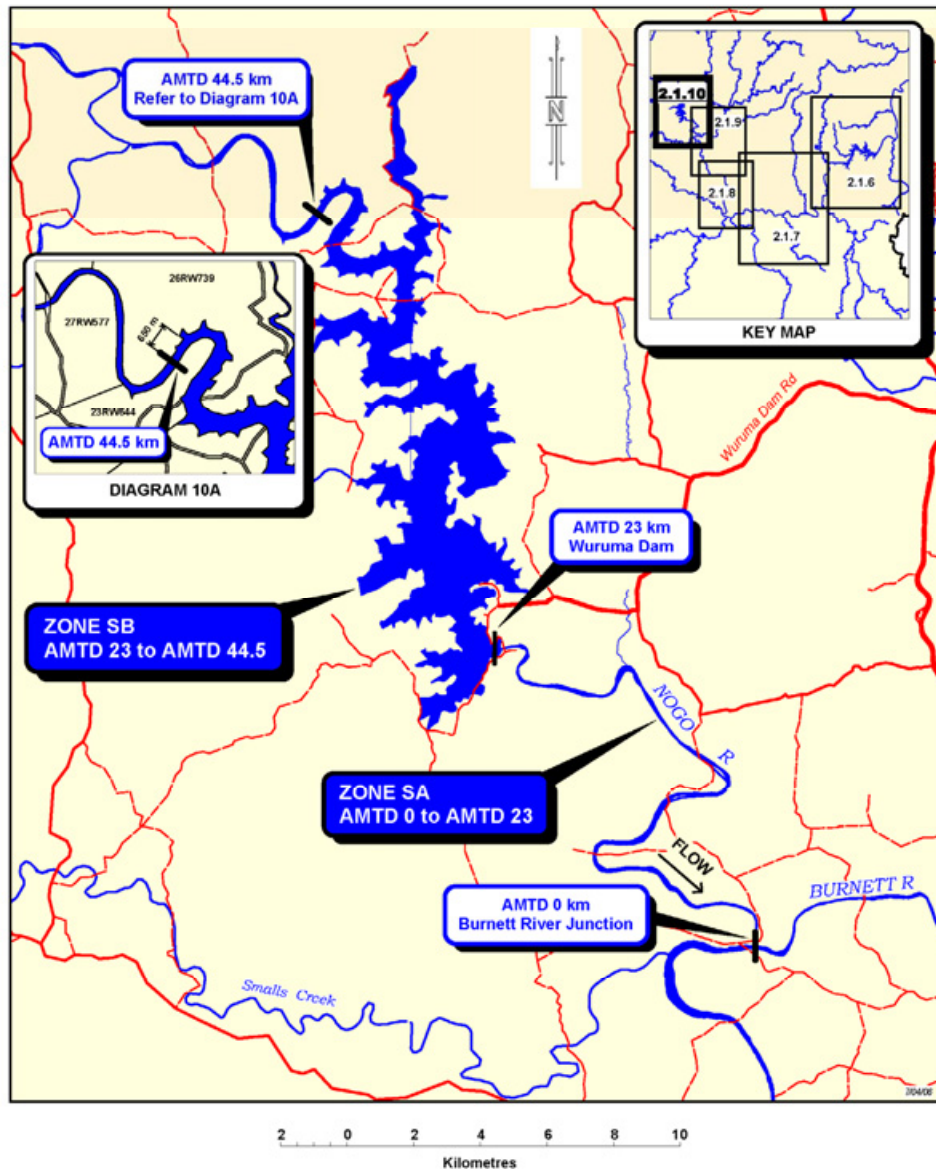
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Upper Burnett Zones OC, OD & PA



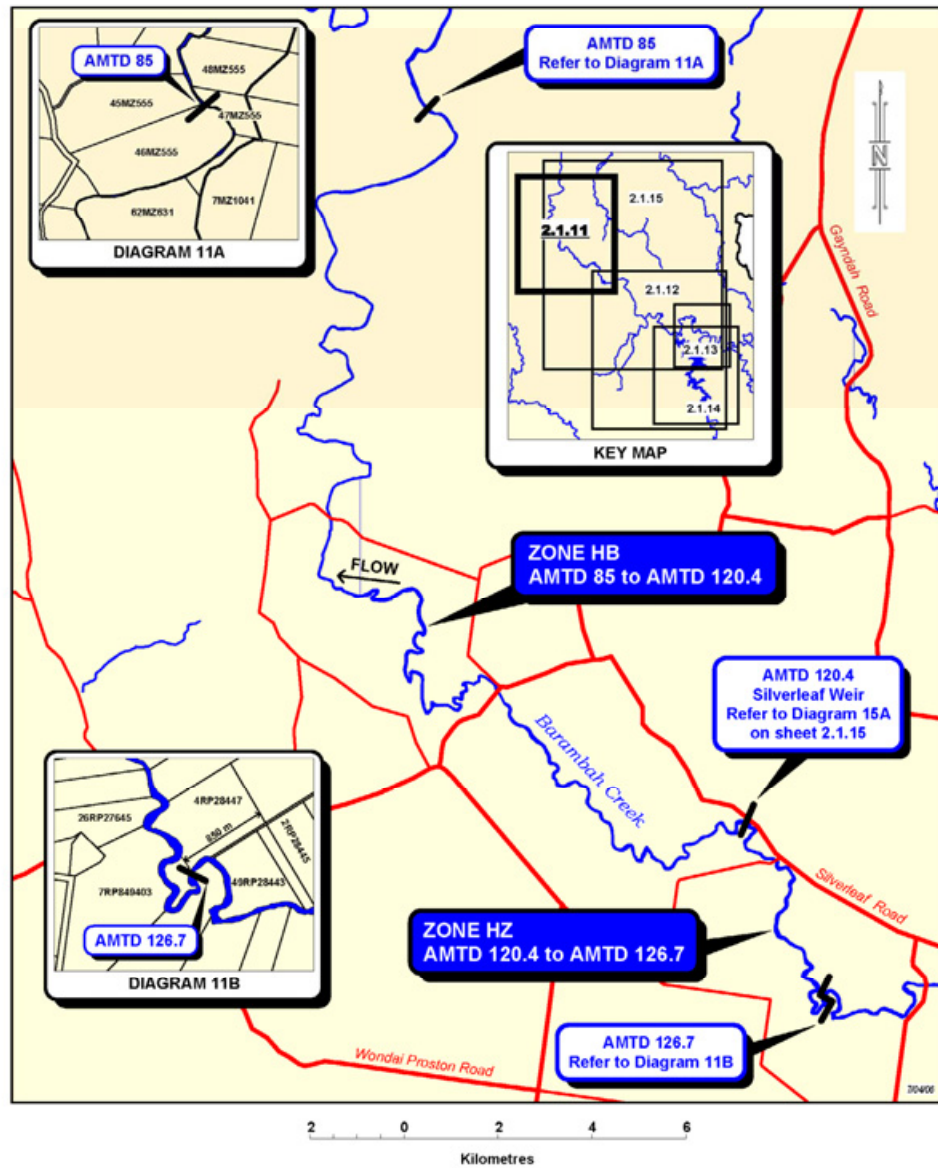
Sheet 2.1.9

Upper Burnett Zones SA & SB



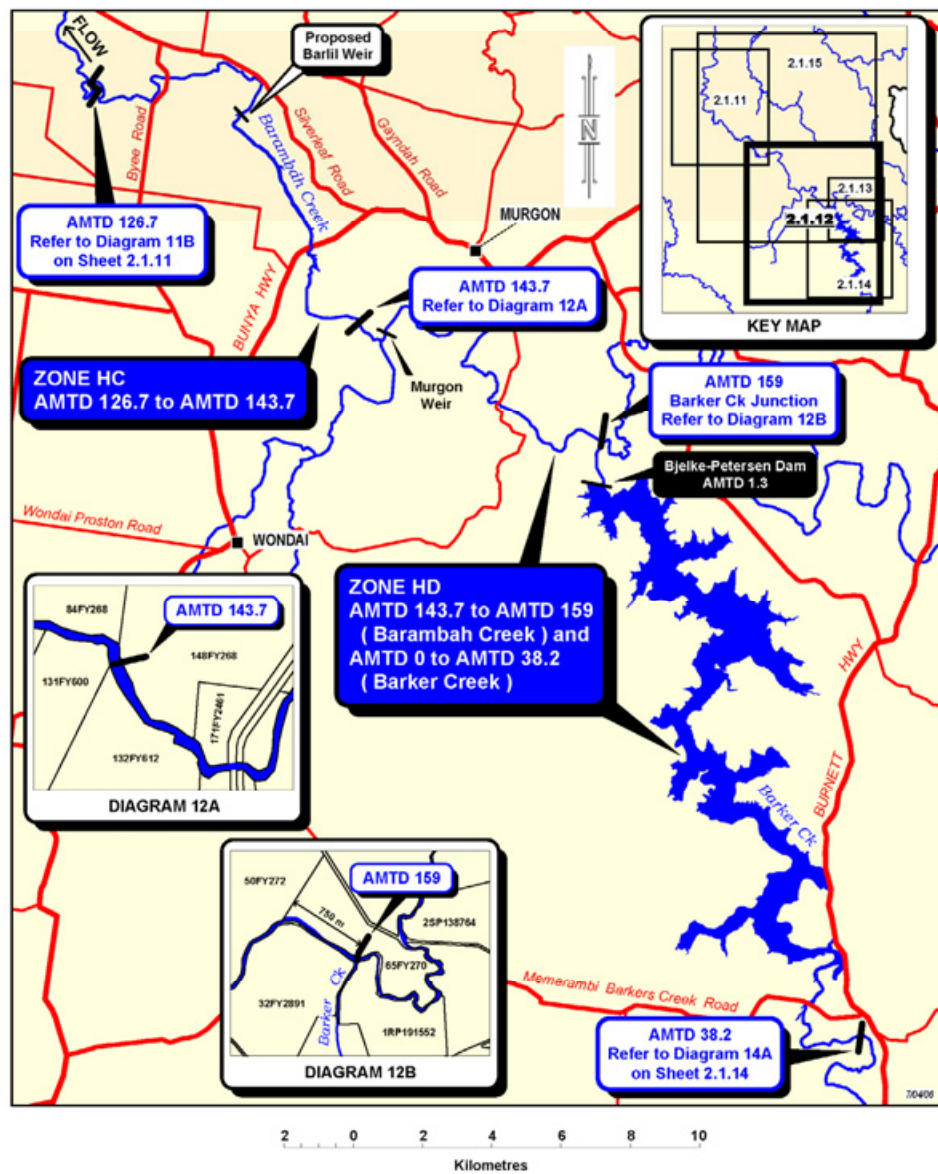
Sheet 2.1.10

Barker Barambah Zones HB & HZ



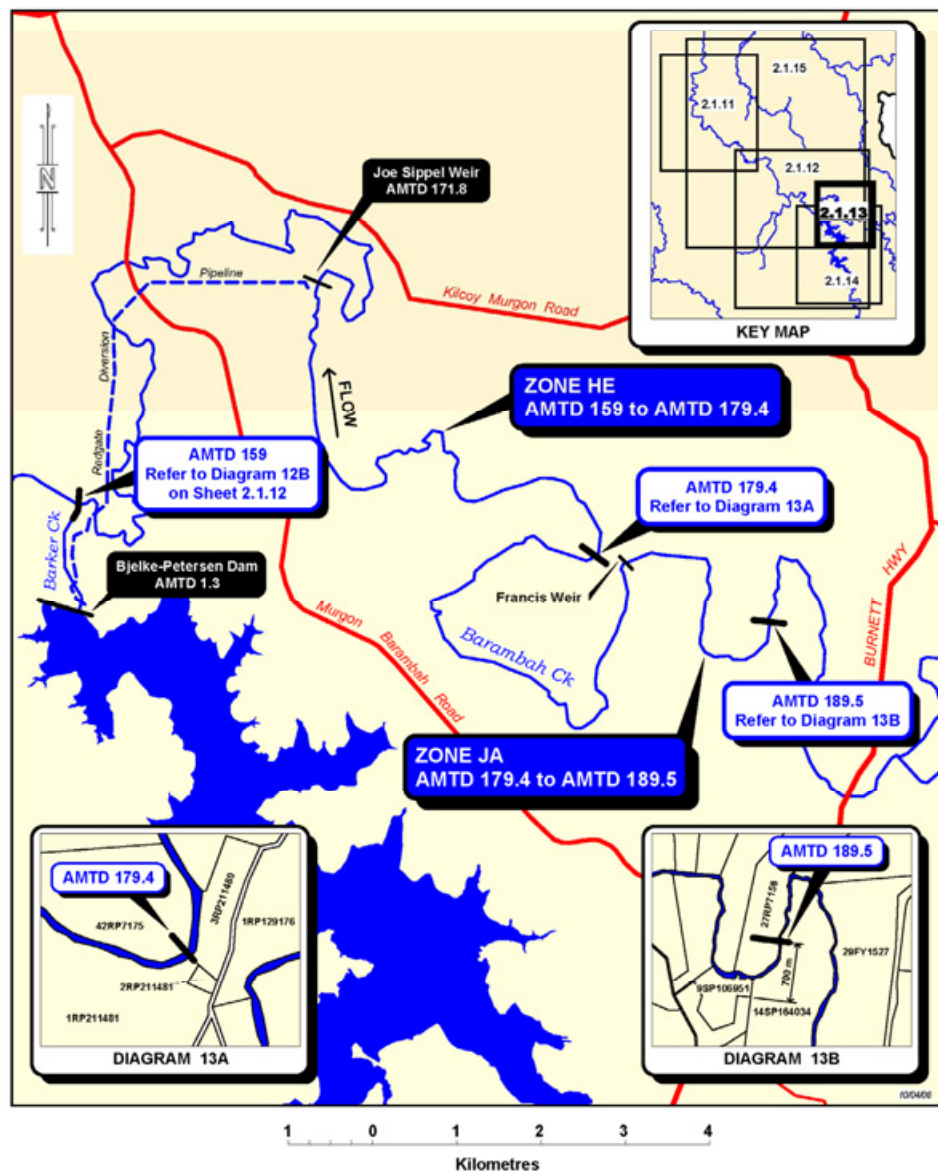
Sheet 2.1.11

Barker Barambah Zones HC & HD



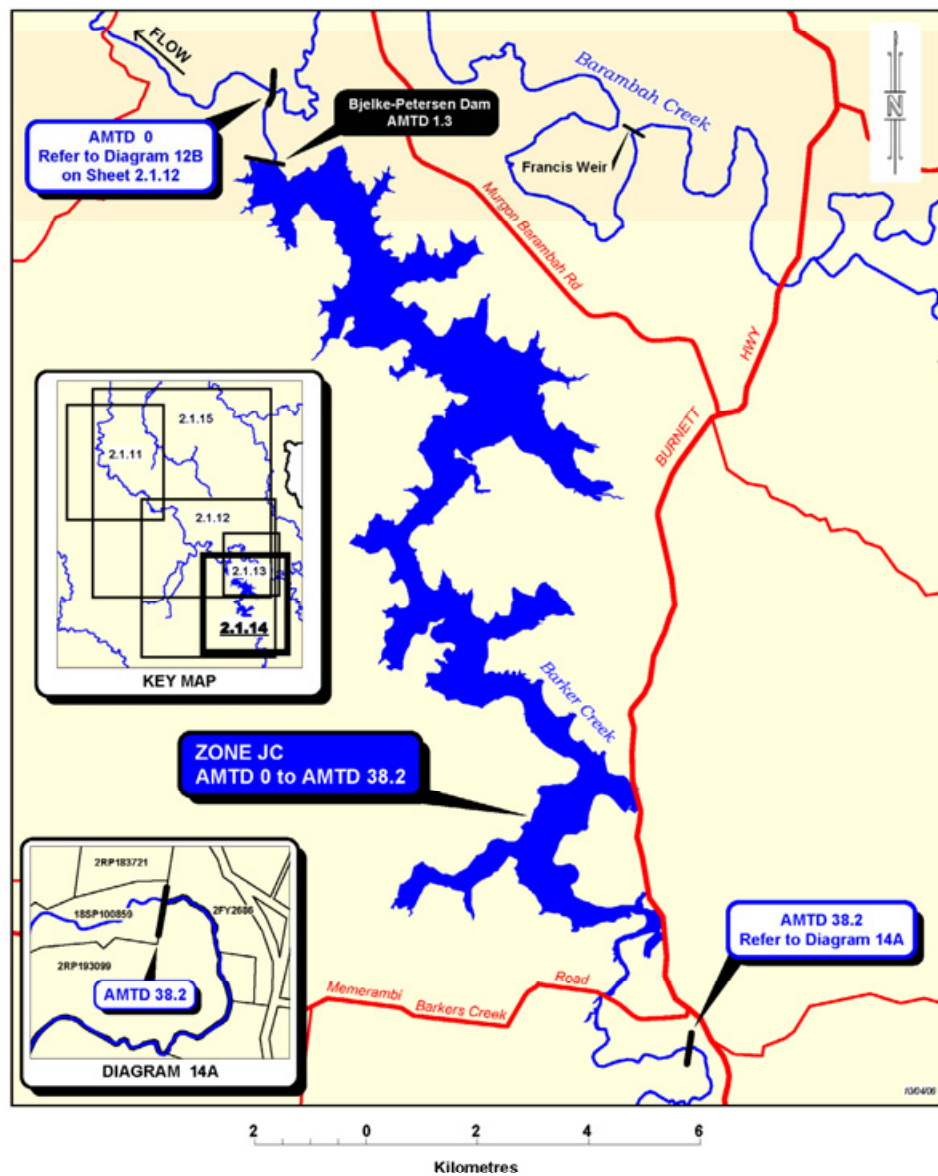
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Barker Barambah Zones HE & JA



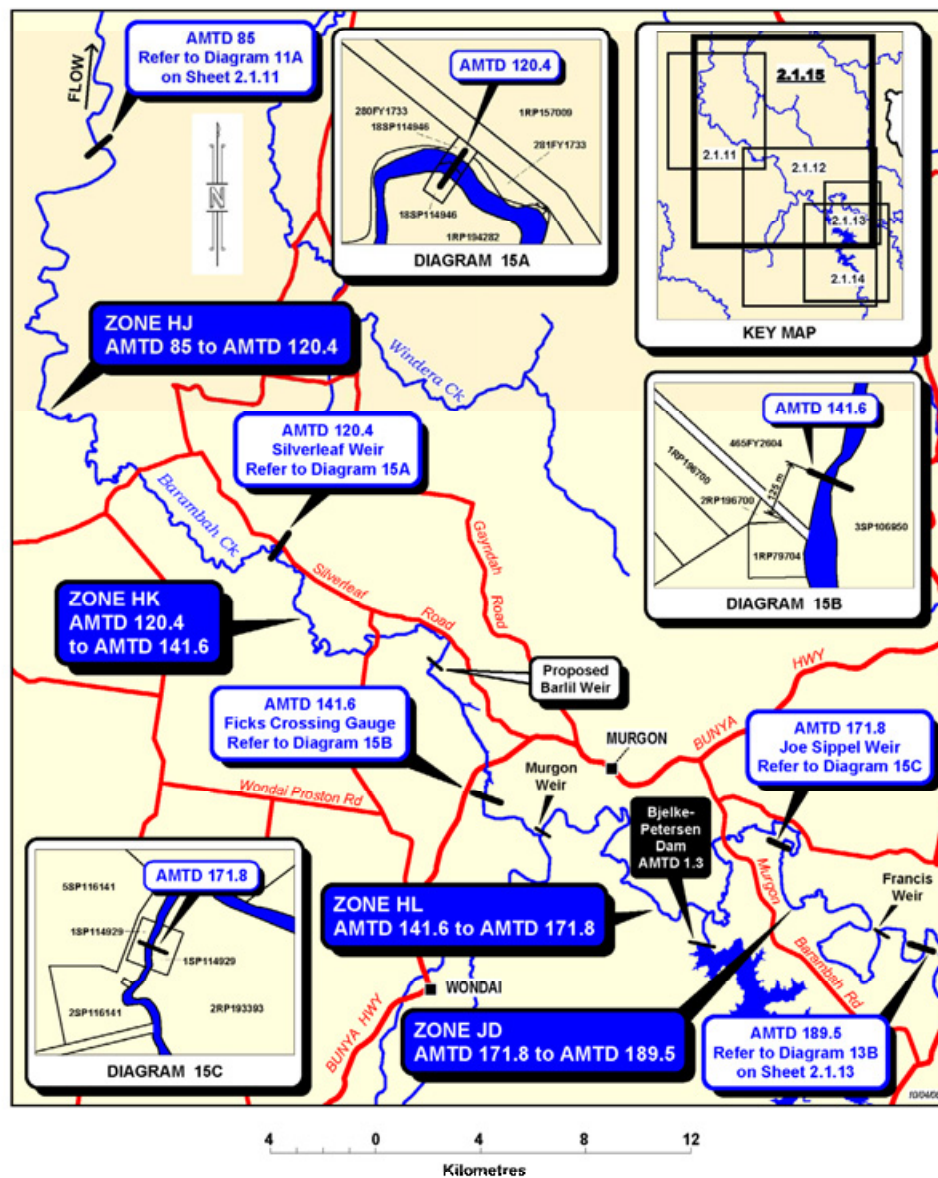
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Barker Barambah Zone JC



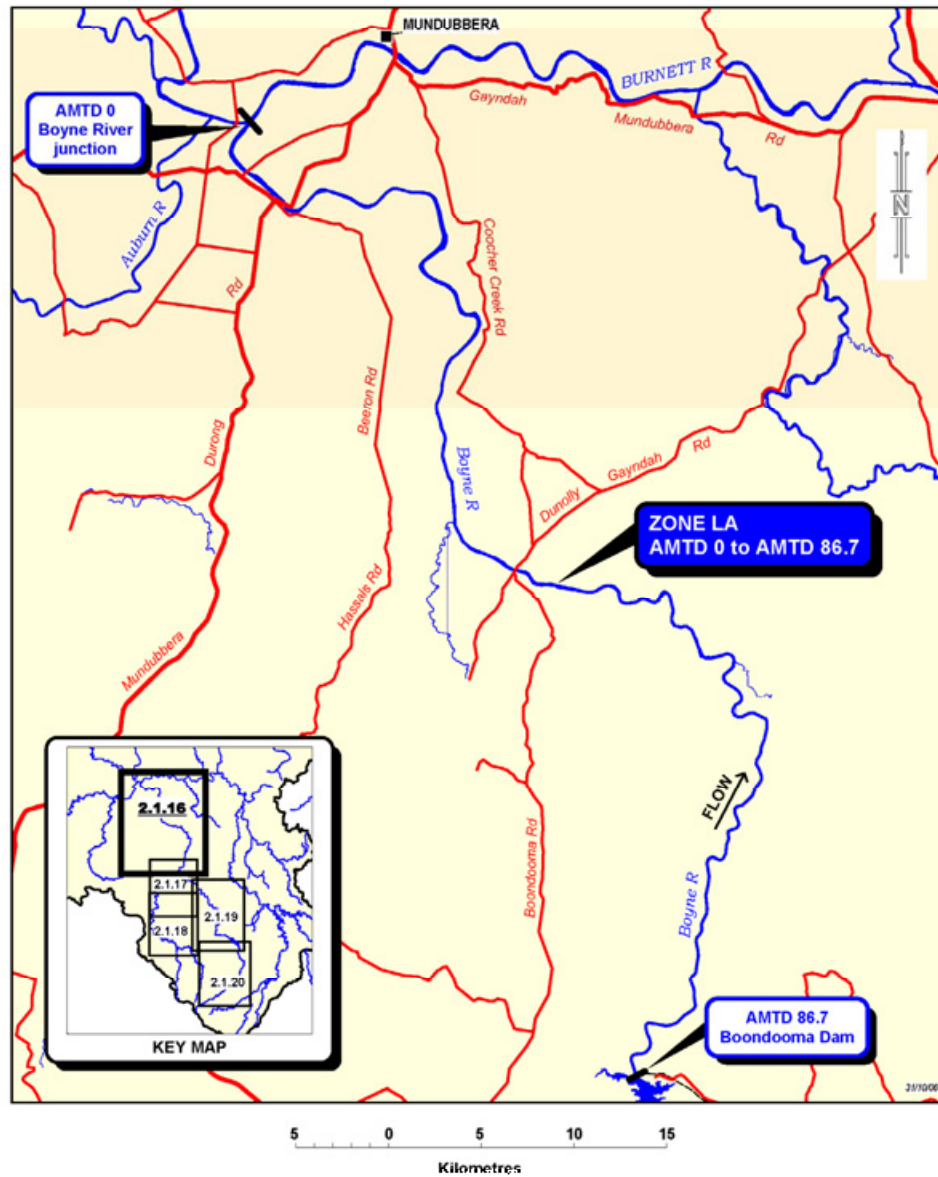
Sheet 2.1.14

Barker Barambah Zones HJ, HK, HL & JD



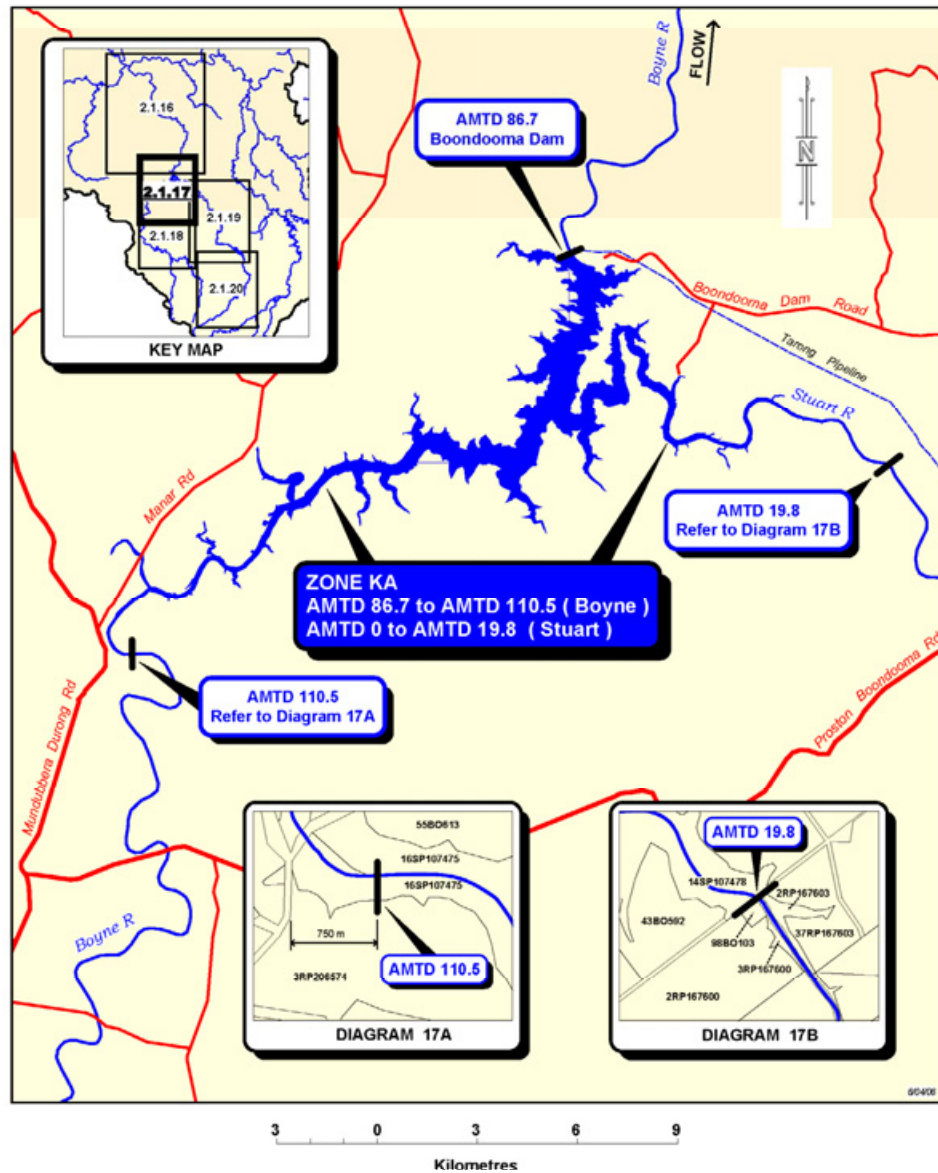
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Boyne Zone LA



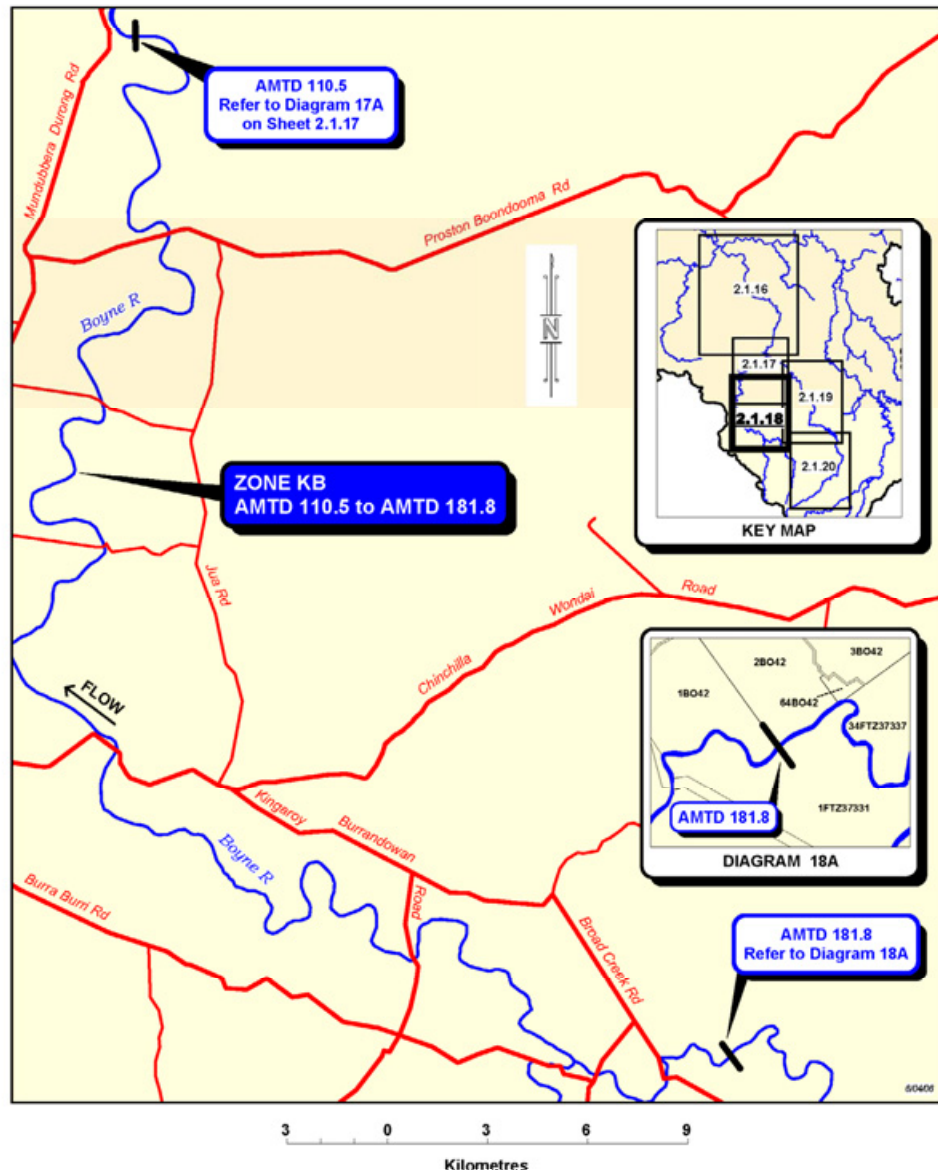
Sheet 2.1.16

Boyne Stuart Zone KA



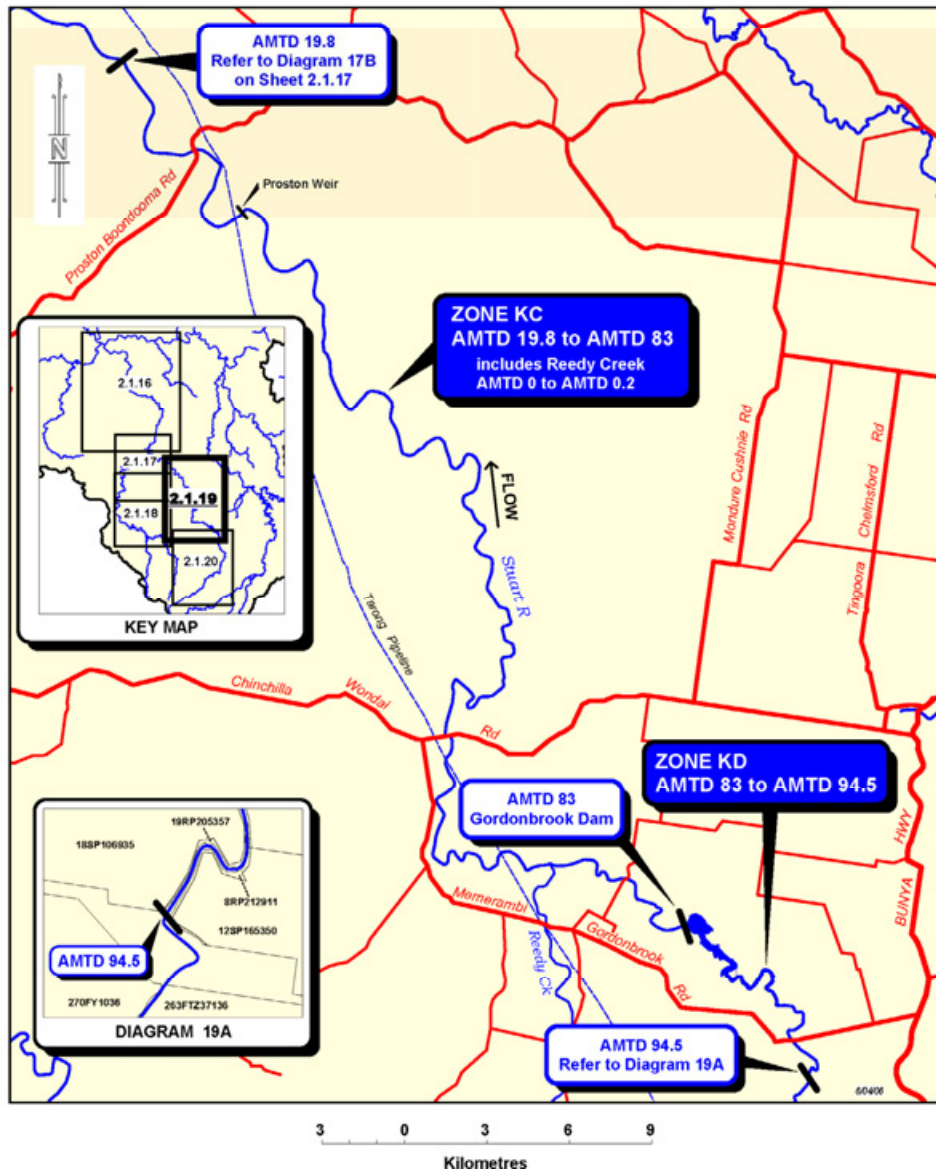
Sheet 2.1.17

Boyne Zone KB



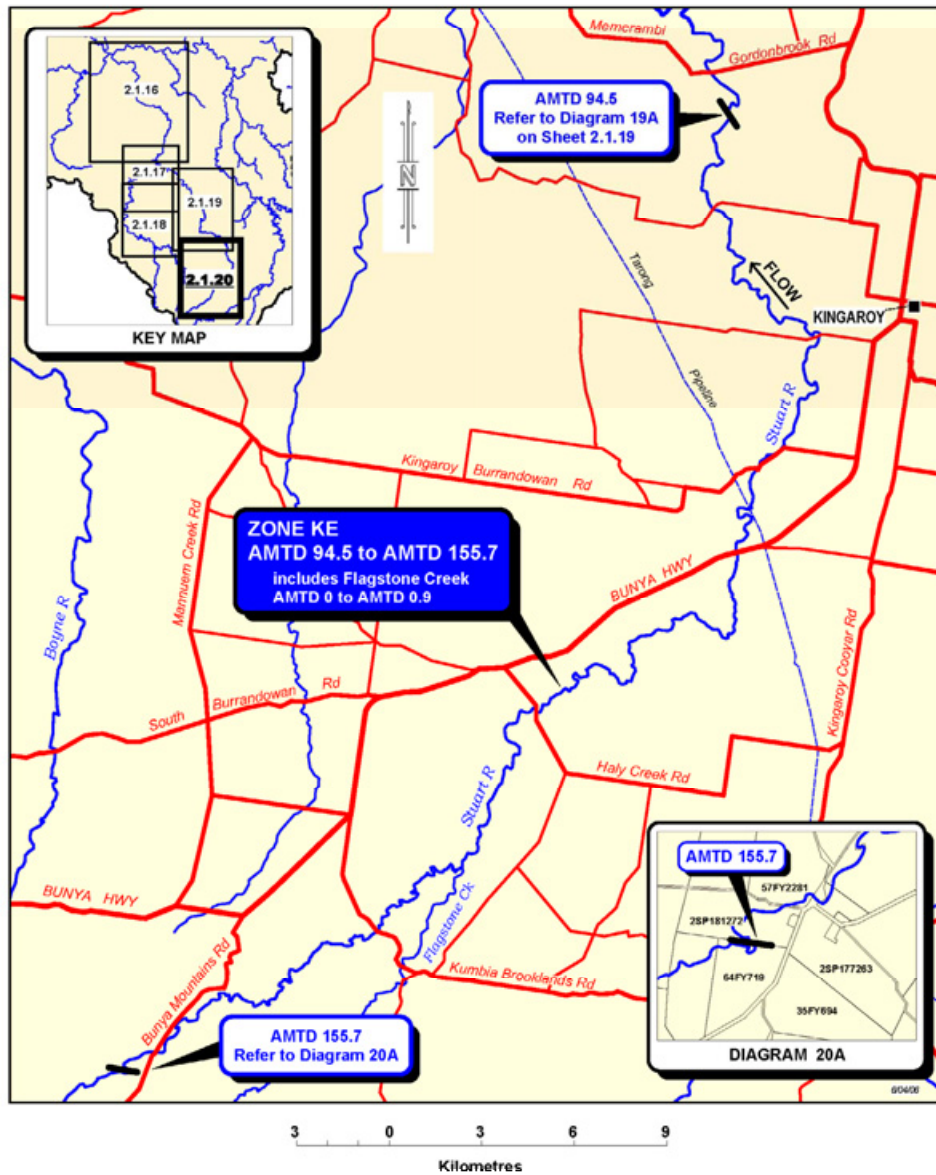
Sheet 2.1.18

Stuart Zones KC & KD



Sheet 2.1.19

Stuart Zone KE



Sheet 2.1.20

This attachment shows the linkages between the outcomes prescribed by the WRP and the relevant ROP rules that are to achieve the outcomes, and also lists examples of monitoring that will be undertaken to assess if the outcomes are being achieved.

General outcomes

6(a) *Water is to be managed and allocated to ensure a reliable and secure supply of water from the plan area during the time this plan is in force.*

ROP rules

Rules specified in the ROP allow available water to be shared among water allocation holders.

Monitoring

The State and the ROL holder will conduct monitoring to determine compliance with the rules.

Stream flow, water use, water loss and other factors can be modelled to assess whether parameters are within the expected range based on historical records.

6(b) *Water is to be managed and allocated to allow water to be taken for the following purposes:*

- *urban and industrial needs;*
- *agriculture and aquaculture;*
- *stock and domestic use; and*
- *small scale uses.*

ROP rules

Rules in the ROP allow water to be traded and used for 'any' purpose. Any new water allocations that are issued will be for 'any' purpose.

Monitoring

Existing and new water allocations will be registered on the water allocation register. Information contained within the register will assist in assessing this outcome.

- 6(c) *Water is to be managed and allocated to protect the probability of being able to obtain water under a water allocation.***

ROP rules

Together the rules specified in the ROP allow for the probability of being able to obtain water under a water allocation.

Monitoring

Over time, data collected regarding water use will assist in assessing this outcome.

- 6(d) *Water is to be managed and allocated to maintain access to unsupplemented water by holders of authorisations to take unsupplemented water.***

ROP rules

Rules specified in the ROP allow for the taking of water by holders of authorisations for taking unsupplemented (unregulated) water under specific conditions.

Monitoring

Water taken under water allocations will be metered.

- 6(e) *Water is to be managed and allocated to provide for community aspirations about –***
i) providing for future water requirements in the plan area;

ROP rules

Rules specified in the ROP will allow for the release of unallocated water.

Rules specified in the ROP allow for water trading. Water trading will promote highest value use, improve water use efficiency and create surpluses without any increase in extractions.

Monitoring

Information collected for the water allocation register will help assess this outcome.

- ii) maintaining areas of significant conservation values including, for example, the Auburn National Park and fish habitat areas; and***

ROP rules

Operating rules allow for improved environmental flows to reach the Kolan estuary.

Monitoring

Ecological outcome monitoring will support assessment of this outcome.

- iii) protecting species of significant conservation value, including, for example, lungfish and turtles.***

ROP rules

Operating rules require releases to be made in a way that supports a more natural flow regime.

Monitoring

Ecological outcome monitoring will support assessment of this outcome.

- 6(f) *Water is to be managed and allocated to reduce reliance on subartesian water in areas affected, or potentially affected, by saltwater intrusion.***

ROP rules

Rules specified in the ROP allow surface water to be allocated in these areas to reduce the demand on groundwater.

Monitoring

Monitoring of groundwater levels and groundwater salinity will help assess this outcome.

- 6(g) *Water is to be managed and allocated to make water available for the environment.***

ROP rules

Operating rules require a more natural flow release regime for the environment.

Rules specified in the ROP limit the amount of, and access to, water taken during high flows.

Monitoring

Ecological outcome monitoring will support assessment of this outcome.

Ecological outcomes relevant to the whole Burnett Basin

- 7(a) *Water is to be managed and allocated to maintain pool habitats, and native plants and animals associated with the habitats, in watercourses.***

ROP rules

Rules specified in the ROP limit the level to which the water level in pools can be drawn down.

Monitoring

Monitoring will measure the condition of the pool habitat, and the associated plants and animals. Monitoring will include measuring macroinvertebrates, fish, riparian and aquatic vegetation, habitat and bank stability. Assessments will determine if the expected diversity and condition of the pool habitats are being maintained.

- 7(b) *Water is to be managed and allocated to maintain long-term water quality suitable for riverine and estuarine ecosystems.***

ROP rules

Operating rules require those storages with multilevel offtakes to be operated in a way that ensures that releases are of the best available quality.

Monitoring

Storage inflows, ponds and releases will be monitored for water quality. This will give an indication of how storages impact on water quality and of the effectiveness of storage operating practices.

- 7(c) *Water is to be managed and allocated to provide flow regimes that favour native plants and animals associated with watercourses and riparian zones.***

ROP rules

Operating rules require a more natural flow release regime for the environment.

Monitoring

Monitoring will involve measuring the general condition of habitat, plants and animals, and observing trends. Monitoring will include measuring macroinvertebrates, fish, riparian and aquatic vegetation, habitat and bank stability. Assessments will determine if the expected diversity and condition of the aquatic habitats are being maintained.

- 7(d) *Water is to be managed and allocated to reduce saltwater intrusions in –***
i) *the Gooburrum area groundwater system near Moore Park; and*
ii) *the Woongarra area groundwater system near Elliott Heads.*

ROP rules

The ROP provides for surface water to be allocated in these areas to reduce the demand on groundwater.

Monitoring

Groundwater levels and salinity will be measured in these groundwater areas. This will help establish whether saltwater intrusion is decreasing.

- 7(e) *Water is to be managed and allocated to provide wet season flow to benefit native plants and animals including, for example, fish and prawns in estuaries.***

ROP rules

Operating rules require the release of medium to high flows (wet season flows).

Monitoring

Stream flow data collected from gauging stations will be used to determine how much water passes each site from year to year compared with historical data.

Water quality measurements in the estuary will be used to determine changes in salinity during these flows. This information will help establish whether freshwater flows are reaching the estuary.

Inspection of riparian vegetation for regeneration on upper banks and scouring out of riparian vegetation, or scouring of coarse substrate on stream beds, will help assess whether medium to high flows are sufficient. Riparian vegetation community structure will also be assessed for the presence of exotic species and for any change from riparian to more terrestrial species.

Measurement of fish communities will help establish whether flows are sufficient to stimulate reproductive processes in fish.

- 7(f) *Water is to be managed and allocated to improve stream flow conditions to assist the movement of fish along watercourses.***

ROP rules

Operating rules state the requirements for the meeting of EFOs and the operation of fishways.

Monitoring

Records detailing periods of fishway operation will help assess if fishways are being operated at the appropriate time of year and long enough for fish to move upstream. Fish community structure monitoring will help determine if the movement of fish is occurring throughout the basin.

Ecological outcomes relevant to specific rivers

Barambah Creek and Stuart River

- 9 *Water in the Barambah Creek and Stuart River catchments is to be managed and allocated to maintain and improve existing riverine habitats that sustain native plants and animals, in the catchments.*

ROP rules

Operating rules require the release of medium to high flows.

Monitoring

Measuring the condition and trend of the aquatic ecosystem (i.e. aquatic and riparian vegetation, macroinvertebrates, fish) and observing any increase or decrease in exotic species and the abundance and diversity of native species will help determine whether existing riverine habitats are being maintained.

Boyne River catchment

- 10 *Water in the Boyne River catchment is to be managed and allocated:*
- i) *to maintain existing riverine habitats upstream of AMTD 5.0 km that sustain native plants and animals: and*
 - ii) *to maintain and improve existing river forming process upstream of AMTD 5.0 km.*

ROP rules

Operating rules require the release of medium to high flows.

Monitoring

Measuring the condition and trend of the aquatic ecosystem (i.e. aquatic and riparian vegetation, macroinvertebrates, fish, geomorphology) and observing any increase or decrease in exotic species and the abundance and diversity of native species will help determine whether existing riverine habitats and river forming processes are being maintained.

Burnett River Basin and Burnett River

- 11(1) *Water in the Burnett River basin is to be managed and allocated to, if practicable, minimise the frequency and duration of marine conditions in the estuary of the Burnett River.*

ROP rules

Operating rules are designed to meet EFOs for the Burnett estuary.

Monitoring

Records of the volumes released from Ben Anderson Barrage will be used to compare how much water reaches the estuary from year to year with historical data.

Water quality measurements in the Burnett estuary will help assess salinity within the estuary. This information will help establish whether freshwater flows are reaching the estuary.

- 11(2) *Water in the Burnett River is to be managed and allocated to provide for lungfish habitat in the river particularly lungfish habitats downstream of Gayndah at AMTD 200 km.***

ROP rules

Operating rules for Ned Churchward Weir require that water levels suitable to promote aquatic vegetation (macrophytes) survival are maintained, so that they are available for lungfish breeding.

Monitoring

The extent of aquatic vegetation (macrophytes) in the ponded area of Ned Churchward Weir will be measured. The water level in Ned Churchward Weir will be recorded daily.

Kolan River Basin

- 13(a) *To maintain and improve existing riverine habitats, that sustain native plants and animals, in the basin.***

ROP rules

Operating rules require the release of medium to high flows.

Monitoring

Measuring the condition and trend of the aquatic ecosystem (i.e. aquatic and riparian vegetation, macroinvertebrates and fish) and observing any increase or decrease in exotic species and the abundance and diversity of native species will help determine whether existing riverine habitats are being maintained.

- 13(b) *To maintain and improve existing estuarine habitats, particularly in fish habitat areas that:***

i) sustain native plants and animals; and

ROP rules

Operating rules require medium to high flow releases to increase flows to the Kolan estuary.

Monitoring

Monitoring will involve measuring the condition of habitat and plants in the estuarine zone and observing trends. Monitoring will include measuring mangroves and habitat. Assessment will determine if the expected diversity and condition of estuarine habitats are being maintained.

ii) are dependent on estuarine processes

ROP rules

Operating rules require medium to high flow releases to increase flows to the Kolan estuary.

Monitoring

Records of releases from the Kolan Barrage will be used to assess how much water reaches the estuary from year to year compared to historical data.

Water quality measurements in the Kolan estuary will help assess estuarial salinity.

13(c) To maintain and improve river-forming processes in the basin.

ROP rules

Operating rules require the release of medium to high flows.

Rules specified in the ROP limit the volume of water and access to high flow events to allow for river-forming processes to occur.

Monitoring

Stream flow data collected from gauging stations will determine the magnitude of high flow events.

Geomorphic assessment of the river will determine the river-forming processes that are under way. Due to the natural variability of high flow events, a high flow event may occur only once, if at all, during the life of this plan.

Water quality and quantity monitoring will consist of data collected by the chief executive.

1 Flow measurement

The chief executive will implement and maintain a water quantity monitoring program in accordance with, or to a higher standard than, that prescribed in the Water Monitoring Data Collection Standards, which can be found on the department's website. The program will measure and record continuous time series stream flow data at sites listed in Table 1. Figure 3.2.1 shows the location of stream flow sites for the chief executive and the ROL holder.

2 Water quality

Water quality monitoring in water management areas will be undertaken as part of the department's water quality program's Surface Water Ambient Network. Ambient water quality network sites are indicated in Table 1. Parameters measured on site include water temperature, pH, electrical conductivity, dissolved oxygen and turbidity. Water sample parameters analysed in a laboratory include general parameters and nutrients (e.g. total nitrogen and total phosphorus).

Table 1: Queensland Government gauging station locations

Stream	Location	Stream Flow	Water Quality	AMTD	Site Identifier
Auburn River	Glenwood No 2	✓	✓	37.9	GS 136305A
Burnett River	Figtree Creek	✓	✓	119	GS 136007A
Burnett River	Mount Lawless	✓		184	GS 136002D
Burnett River	Gayndah Flume	✓	✓	201.3	GS 136017B
Burnett River	Jones Weir tailwater	✓		240	GS 136094A
Burnett River	Jones Weir headwater	✓		240.1	GS 136004A
Burnett River	Eidsvold	✓	✓	291.1	GS 136106A
Burnett River	Ceratodus	✓		321.1	GS 136103B
Burnett River	Yarrol	✓		380.8	GS 136112A
Cadarga Creek	Brovinia Station	✓		41.7	GS 136306A
Degilbo Creek	Coringa	✓		13	GS 136011A
Eastern Creek	Lands End	✓		8.9	GS 136118A
Gin Gin Creek	Dam site	✓	✓	21.1	GS 135004A
Kolan River	Springfield	✓	✓	135	GS 135002A
Reids Creek	Dam site	✓	✓	48.8	GS 136006A
Barambah Creek	Ban Ban	✓	✓	35.2	GS 136207A
Barambah Creek	Litzows	✓		186.1	GS 136202D
Barambah Creek	West Barambah	✓	✓	192.8	GS 136213A
Barker Creek	Glenmore	✓	✓	43.5	GS 136209A
Barker Creek	Brooklands	✓	✓	104.6	GS 136203A
Boonara Creek	Ettiewyn	✓	✓	22.6	GS 136208A
Boyne River	Derra	✓		4.6	GS 136318A

Stream	Location	Stream Flow	Water Quality	AMTD	Site Identifier
Boyne River	Cooranga	✓		31.8	GS 136319A
Boyne River	Carters	✓		120.9	GS 136315A
Stuart River	Proston Rifle Range	✓	✓	24.1	GS 136304A
Stuart River	Weens Bridge	✓		97.1	GS 136301B

✓ denotes that this monitoring occurs at this location

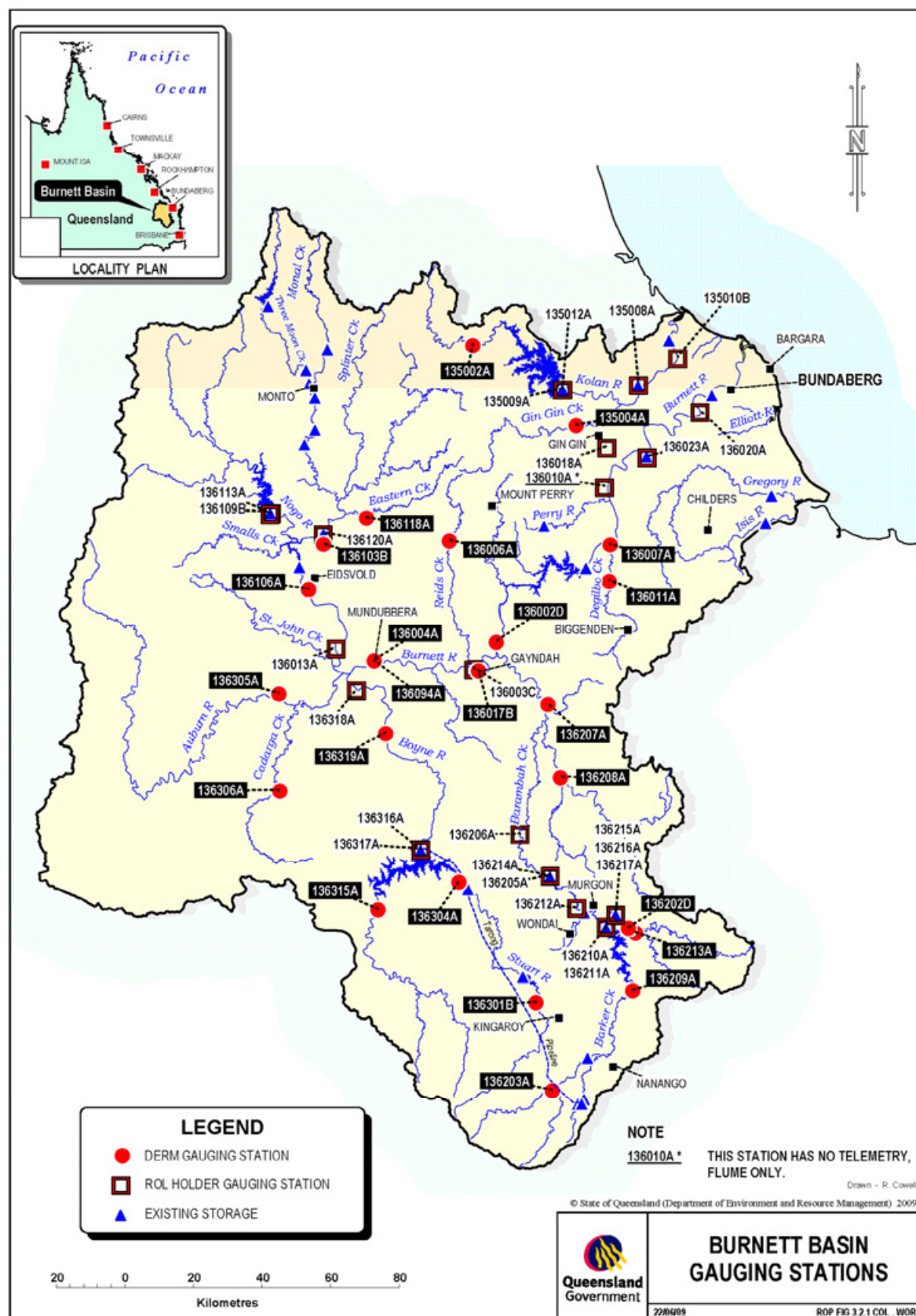
3 Groundwater

The management of the Bundaberg Groundwater Management Area includes water quality monitoring at strategic bore sites every four to six weeks. This monitoring includes measuring salinity profiles at each site. This information allows the determination of the level of saltwater intrusion in this area.

4 Entitlement metering

1. Taking water under a water allocation must be metered.
2. Metering the take of unsupplemented water to which this plan applies must be in accordance with the arrangements prescribed by regulation made under the Water Act.
3. The ROL holder must meter, in accordance with National Standards, all water allocations managed under the ROL.
4. This section does not apply to water entitlements where the purpose is stated as stock and domestic.

Figure 3.2.1: Gauging Stations covered by this ROP



1 Introduction

The natural ecosystem monitoring has been based on information used by the Technical Advisory Panel¹ (TAP) to assess the current condition and trend in the project areas in the Burnett Basin. Data used by the TAP included information on fish, riparian and aquatic vegetation, macroinvertebrates, geomorphology, water quality, and hydrology. Collection of further information on indicators used by the TAP at similar sites will build knowledge and understanding of the Burnett Basin. The TAP information includes predicted changes in condition based on the adopted scenario in the WRP, therefore it is possible to determine if these changes have occurred. The indicators selected for the monitoring program have been based on the level of current scientific knowledge and understanding, and on the TAP reports.

A summary of the natural ecosystem monitoring is contained in Table 1 and the related ecological outcomes as defined in the WRP are identified. The type of assessment that will be performed, site names and frequency are contained in this table. Locations of sites are shown in Figure 3.3.1. Further details of parameters collected are listed in Section 2.

Table 1: Summary table of natural ecosystem monitoring

Assessment Type ²	Frequency	Ecological Outcomes ³
Geomorphology Field Survey	Spring Years 1, 4 and 8 ⁴	7(c), 10 (b), 13(c)
Geomorphic Assessment of Rivers	Years 1 and 8	7(c), 13(c)
Riparian Vegetation	Spring Years 1, 4 and 8	7(a), 7(c), 7(e), 9, 10(a), 11(2), 13(a)
Aquatic Vegetation	Spring and Autumn	7(a), 7(c), 7(e), 9, 10(a), 11(2), 13(a)
Aquatic Habitat	Spring and Autumn	7(a), 7(c), 7(f), 9, 10(a), 13(a)
Macroinvertebrates	Spring and Autumn	7(a), 7(c), 9, 13(a)
Water Quality	Spring and Autumn	7(b), 11(1), 13(b)
Fish	Annually	7(c), 7(e), 7(f), 9, 13(a)
Mangroves	Spring Years 1, 4 and 8	11(1), 13(b)

¹ The TAP was established by the department to assist with development of the WRP.

² Locations specified in Table 2.

³ Ecological outcomes are listed in full in Attachment 3.1.

⁴ To be completed in year after commencement of amended ROP and Year 8 of ROP for subcatchments included after release of initial ROP.

2 Natural ecosystem monitoring summary details

2.1 Geomorphology

A geomorphic assessment of the Burnett Basin will be conducted in years one and eight. This analysis will determine the behaviour and character of the rivers. This assessment will help determine if the behaviour of the streams has altered during the life of the plan.

A geomorphic survey will be conducted at sites and at times specified in Table 2 to determine:

- rates of aggradation (deposition); and
- rates of degradation.

If an event of five-year average recurrence interval (ARI) occurs at a site, a geomorphic survey will be conducted at that site within six months following the event. This 'event' monitoring may replace scheduled monitoring.

2.2 Riparian vegetation

A survey of riparian vegetation will be performed at sites specified in Table 2 in years one, four and eight in spring to determine:

- the diversity and abundance of plants;
- the community structure of the riparian zone (e.g. age range of plants, regeneration);
- projected foliage cover;
- the ratio of native and exotic species; and
- the level of disturbance within the zone (e.g. grazing, cropping, fire).

2.3 Aquatic vegetation

A survey of aquatic vegetation will be performed at sites specified in Table 2 twice each year in spring and in autumn to determine:

- diversity and abundance of plants;
- community structure;
- ratio of native and exotic species; and
- level of disturbance within the zone.

2.4 Water quality

Water quality will be collected at sites specified in Table 2 each time a site is visited. Water quality parameters include:

- temperature;
- pH;
- electrical conductivity; and
- dissolved oxygen.

Water quality data collected by the ROL holder, specified in Attachments 4.1G, 4.2G, 4.3G and 4.4G, and data collected by the department specified in Attachment 3.2, will be used to help with this assessment.

2.5 Aquatic habitat

Collection of aquatic habitat data will occur at sites specified in Table 2 twice each year in spring and in autumn to determine the diversity and condition of aquatic habitats available under different flows. Aquatic habitat data involves identifying the habitats present and the condition (e.g. substrate type, presence of large woody debris).

2.6 Macroinvertebrates

Collection of macroinvertebrates will occur at sites specified in Table 2 twice per year in spring and in autumn to determine:

- community structure.

This information can be used to determine:

- functional feeding groups;
- flow preference groups;
- SIGNAL index; and
- PET richness.

2.7 Fish

Collection of fish data will occur at sites specified in Table 2 annually to determine:

- fish community structure.

2.8 Estuarine monitoring

Monitoring for the Burnett and Kolan estuaries will consist of water quality profiles and mangrove community structure.

Monthly water quality profiles will be performed at the estuarine sites specified within Table 2. Water quality parameters will include:

- temperature;
- pH;
- electrical conductivity; and
- dissolved oxygen.

A survey of mangrove zones will be performed at the estuarine sites specified in Table 2 in years one, four and eight in spring to determine:

- the diversity and abundance of mangrove species;
- the community structure (e.g. age range of plants, regeneration); and
- the level of disturbance within the zone.

3 Sampling frequency

The frequency that parameters are sampled is based on the rate of change for each parameter. As geomorphic processes occur over large time frames, effects may take decades to appear. It is for this reason that geomorphic assessment is performed twice during the ten years of the WRP.

Fish are a relatively long-lived and mobile species; they therefore reflect conditions of ecosystem health over broad spatial and temporal scales. In determining if the management strategies within the WRP are having a positive effect on the fish community structure, a long-term analysis is required. Annual monitoring rather than seasonal monitoring will provide the Department with enough information to pick up long-term trends in fish community structure. To minimise the effects of seasonality within the sampling, it is a requirement that the fish sampling is carried out within the same season each year.

Riparian vegetation, including mangroves, also changes over time though more quickly than geomorphic processes and as a result data will be collected three times during the ten years of the WRP.

Aquatic vegetation, macroinvertebrates and habitat availability are more reliant on seasonal stream flow and so will change season to season. It is for this reason that aquatic vegetation is sampled twice each year in spring and autumn. Spring sampling, October to December, is the early wet when flow has been established for at least four weeks. Autumn sampling, May to July, is the late wet when flow has declined to a level suitable for sampling, without significant flood peaks.

Sampling during these seasons will show the natural variation of the riverine habitat between seasons. The spring sampling would find habitats of low flow with more 'stressed' plants following the winter. The autumn sampling would find habitats of higher flows, with vegetation showing regeneration and more vigour after the wet season.

4 Site locations

Information will be collected from the sites specified in Table 2. Locations of the sites are shown in Figure 3.3.1. Given the numerous types of monitoring and the specific habitats required at each site, monitoring will occur as close as possible to the specified AMTD. These sites identify a section of river reach rather than an exact location where monitoring will occur. Fish sampling, riparian vegetation and geomorphology monitoring will require suitable locations for monitoring to be effective, for example, representative pools for fish monitoring, appropriate riverbank locations for riparian vegetation monitoring and instream sites for geomorphology surveys. Once chosen, the specific monitoring sites will be identified and used for the remainder of the monitoring program. Natural ecosystem monitoring will occur within riverine sections, unless specific storage impoundment monitoring is required.

Table 2: Monitoring sites

River Reach Locations	Geomorphology Field Survey	Geomorphic Assessment	Riparian Vegetation	Aquatic Vegetation	Water Quality	Aquatic Habitat	Macroinvertebrates	Fish	Mangroves
Burnett River		✓							
Yarrol (AMTD 380.8)	✓		✓	✓		✓	✓	✓	
Eidsvold (AMTD 291.1)	✓		✓	✓	✓	✓	✓	✓	
Mundubbera (AMTD 240)	✓		✓	✓	✓	✓	✓	✓	
Gayndah (AMTD 203)	✓		✓	✓	✓	✓	✓	✓	
Figtree Creek (AMTD 119)	✓		✓	✓	✓	✓	✓	✓	
Ned Churchward Weir tailwater (AMTD 74.1)	✓		✓	✓	✓	✓	✓	✓	
Burnett Estuary (AMTD 0, 4.8, 8.5, 11.4, 14.7, 17.4, 20.3, 23.5)					✓				✓
Kolan River		✓							
Springfield (AMTD 135)	✓		✓	✓	✓	✓	✓	✓	
Bucca Weir tailwater (AMTD 38)	✓		✓	✓	✓	✓	✓	✓	
Kolan Estuary (AMTD 0, 2, 5.3, 8.1, 12)					✓				✓
Auburn River		✓							
Glenwood (AMTD 37.9)	✓		✓	✓	✓	✓	✓	✓	
Barambah Creek		✓							
Ban Ban (AMTD 35.1)	✓		✓	✓	✓	✓	✓	✓	
Stonelands (AMTD 90.3)	✓		✓	✓	✓	✓	✓	✓	
Litzows (AMTD 186.2)	✓		✓	✓	✓	✓	✓	✓	
Barker Creek		✓							
Brooklands (AMTD 104.6)	✓		✓	✓	✓	✓	✓	✓	
Boyne River		✓							
Cooranga (AMTD 31.8)	✓		✓	✓	✓	✓	✓	✓	
Boondooma Dam tailwater (AMTD 86.4)	✓		✓	✓	✓	✓	✓	✓	
Carters (AMTD 120.9)	✓		✓	✓	✓	✓	✓	✓	
Stuart River		✓							
Weens Bridge (AMTD 97.1)	✓		✓	✓	✓	✓	✓	✓	

5 Methods

Methods used for the natural ecosystem monitoring program will be consistent with best scientific knowledge and practice. The flexibility of the monitoring program allows for methods to be modified and updated without changing the ROP. Methods for natural ecosystem monitoring are listed within the Water Monitoring Data Collection Standards, which can be found on the department's website.

Figure 3.3.1: Natural ecosystem monitoring sites covered by this ROP

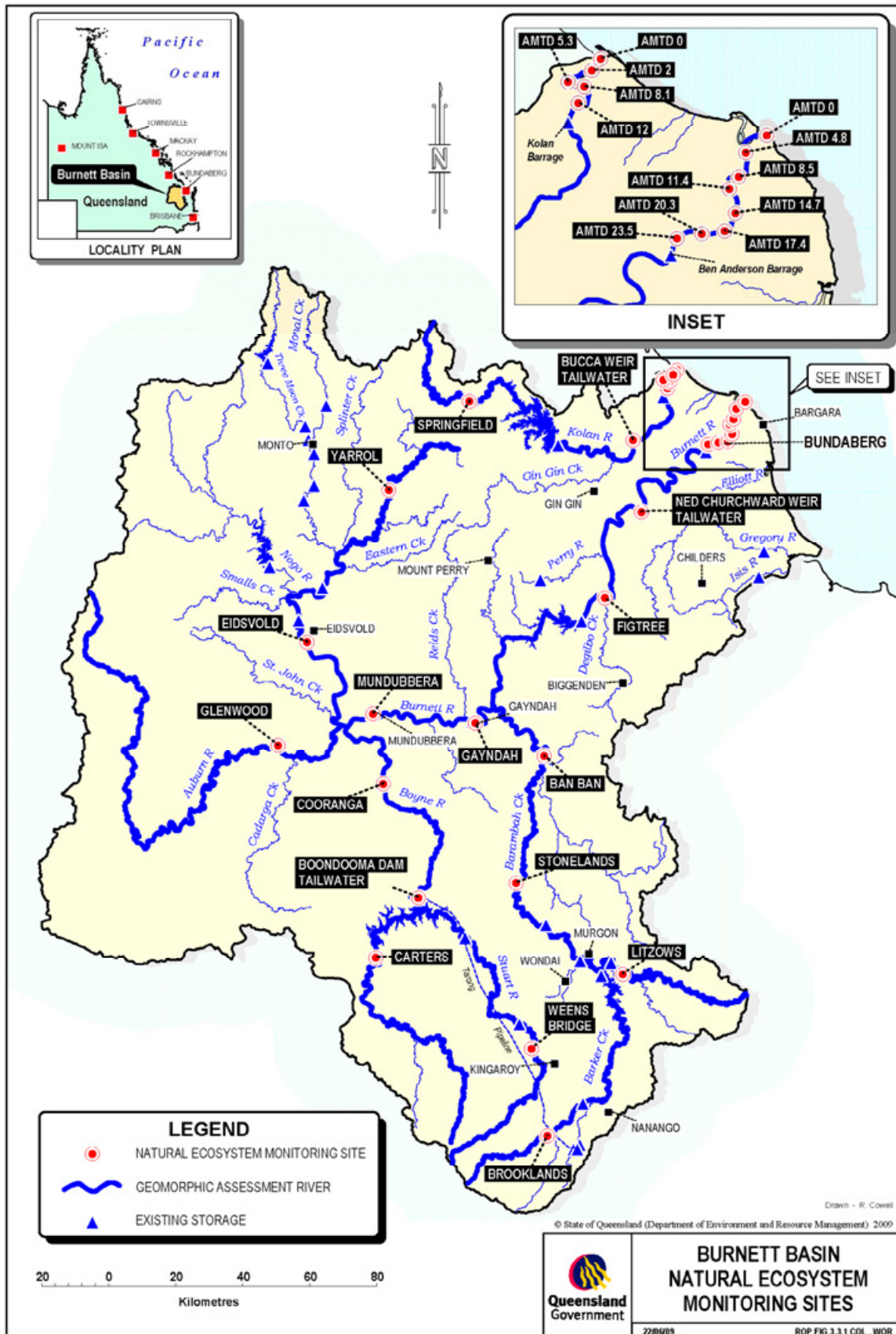


Table 1: Fred Haigh Dam – Kolan River – AMTD 76.4

Description of Water Infrastructure	
Main embankment	Earth and rock fill dam
Full supply level	75.56 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	562 000 ML
Dead storage volume	4 390 ML
Storage curves/tables	Drawing no: A3-208867
Spillway Arrangement	
Description of works	Reinforced concrete crest and chute
Spillway level	75.56 m AHD
Spillway width	47.24 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #82 for GS 135009A
River Inlet/Outlet Works	
Description of works	River outlet – A single 1 066 mm MS pipe with a bellmouth centreline 36.08 m AHD coming from the plug in the diversion tunnel. This pipe separates into two 915 mm MS pipes at the reinforced concrete valve house. The right-hand pipe (looking downstream) has a 305 mm offtake. Each of the 915 mm pipes has a butterfly valve and a 760 mm discharge regulator. The 305 mm pipe has a gate valve and a 305 mm discharge regulator.
Multilevel inlet	Single level inlet – Rectangular reinforced concrete inlet tower. Two RC slotted inlets for a 4.57 m diameter reinforced concrete diversion tunnel to outlet pipes at the valve and inlet pipe for the pump station. Two inlets 9.14 m high x 1.98 m wide on the upstream face with a sill 42.64 m AHD with two 1.3 m high x 2.36 m wide slotted openings on each side.
Cease to flow level	Sill of outlet tower is at 42.64 m AHD. Invert of diversion tunnel is 33.54 m AHD.
Discharge characteristics	The estimated maximum discharge capacity of the river outlet is 1 600 ML/day.
Fish Transfer System	
Description of works	Nil

Table 2: Bucca Weir – Kolan River – AMTD 38

Description of Water Infrastructure	
Main embankment	Roller compacted concrete
Full supply level	16.2 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	11 600 ML
Dead storage volume	930 ML
Storage curves/tables	Drawing no: A3-209007
Spillway Arrangement	
Description of works	130.8 m central section with embankments on either side
Spillway level	16.2 m AHD
Spillway width	130.8 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #1 for GS 135008A
River Inlet/Outlet Works	
Description of works	Reinforced concrete outlet box with a floor 4.45 m AHD and a sill of 5.3 m AHD.
Multilevel inlet	Three 2.25 m wide x 1.04 m high openings at each of three different levels on both left bank and right bank sides of the outlet structure.
Cease to flow level	Outlet works: Sill 5.3 m AHD, Sill 8.96 m AHD, Sill 11.96 m AHD, and Sill 14.96 m AHD.
Discharge characteristics	Estimated maximum discharge capacity of outlet 1 791 ML/day.
Fish Transfer System	
Description of works	Nil

Table 3: Kolan Barrage – Kolan River – AMTD 14.7

Description of Water Infrastructure	
Main embankment	Tidal barrage
Full supply level	2.32 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	4 020 ML
Dead storage volume	1 630 ML
Storage curves/tables	Drawing no: A3-216333
Spillway Arrangement	
Description of works	Central section with embankments on either side
Spillway level	2.32 m AHD
Spillway width	Approximately 305 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #90 for GS 135010A
River Inlet/Outlet Works	
Description of works	No inlet works. Fish ladder operation only.
Multilevel inlet	Nil
Cease to flow level	Nil
Discharge characteristics	No outlet. Pump down to 0.89 m AHD.
Fish Transfer System	
Description of works	Vertical slot fish ladder

Table 4: Ned Churchward Weir – Burnett River – AMTD 74.5

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	19 m AHD
Saddle dam(s)	One ancillary weir
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	29 500 ML
Dead storage volume	2 600 ML
Storage curves/tables	Drawing no: 106904
Spillway Arrangement	
Description of works	Full width weir mass concrete with crest 19 m AHD
Spillway level	Crest 19 m AHD
Spillway width	185.3 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #90 for GS 136023A
River Inlet/Outlet Works	
Description of works	Outlet works: Two outlet conduits 6 500 mm long x 5 000 mm wide x 3 900 mm high.
Multilevel inlet	Primary inlets: Double inlets each with four inlets (1.5 m vertical x 3 m horizontal) controlled by vertical bulkhead gates. Each inlet has a separate conduit controlled by a fixed wheel slide gate. Secondary inlets: Double inlets 1.5 m ² at 10.5 m AHD dropping vertical to 4.75 m AHD (1.5 m x 2 m) then horizontal (1.5 m ²) to separate outlet boxes.
Cease to flow level	Outlet works: Floor of outlet 4 m AHD. Sill of outlet 4.75 m AHD. Sill levels for primary inlets: 10.5 m AHD, 13.5 m AHD, 16.5 m AHD and 19.5 m AHD. Sill level for secondary inlets: 10.5 m AHD.
Discharge characteristics	Maximum design discharge capacity of single outlet is 778 ML/day. With both outlets = 1 555 ML/day
Fish Transfer System	
Description of works	Fish lock

Table 5: Ben Anderson Barrage – Burnett River– AMTD 25.9

Description of Water Infrastructure	
Main embankment	Tidal barrage
Full supply level	3.97 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Yes
Storage Volume and Surface Area	
Full supply volume	30 300 ML
Dead storage volume	6 650 ML
Storage curves/tables	Drawing no: A3-213264
Spillway Arrangement	
Description of works	110 shutter spillway 1.83 m high
Spillway level	3.97 m AHD
Spillway width	265 m
Discharge characteristics	Drawing no: to be advised
River Inlet/Outlet Works	
Description of works	Six 2.13 m x 2.13 m fixed wheel gates
Multilevel inlet	Nil
Cease to flow level	–0.03 m AHD
Discharge characteristics	Maximum derived discharge from the six sluice gates is 10 080 ML/day (the estimated maximum discharge from each gate is 1 680 ML/day).
Fish Transfer System	
Description of works	Vertical slot fish ladder

Table 6: Paradise Dam – Burnett River – AMTD 131.4 km

Description of Water Infrastructure	
Main embankment	RCC Gravity Dam
Full supply level	67.6 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	300 000 ML
Dead storage volume	13 390 ML
Storage curves/tables	Drawing no: 219168
Spillway Arrangement	
Description of works	Straight approach channel to a mass concrete ogee crest
Spillway level	67.6 m AHD
Spillway width	Primary: 315 m Secondary: 485 m
Discharge characteristics	Drawing no: to be advised
River Inlet/Outlet Works	
Description of works	River Inlet/Outlet: A multilevel intake tower. Gates for environmental releases.
Multilevel inlet	Shutters to allow variable level releases between FSL and EL 42 m AHD
Cease to flow level	River Outlet: EL 42 m AHD
Discharge characteristics	The estimated maximum discharge capacity of the outlets: Environmental flow outlet is 23 300 ML/day at EL 68 m AHD. Irrigation outlet is 1 550 ML/day at EL 46 m AHD
Fish Transfer System	
Description of works	Fish lift for upstream movement Fish lock for downstream movement

1 Rules for operation of storages and waterholes

1.1 Nominal operating levels of storages

The water level in a given storage must be maintained above that storage's nominal operating level by releasing water from the upstream storage. The operator is permitted to draw down below these levels for up to seven days per month:

- for operational reasons such as to allow for upstream releases to reach the storage; or
- in unseasonal conditions.

The ROL holder may submit a proposal detailing an alternative to the above requirement for the nominal operating levels of storages. This must be submitted to the chief executive for approval within 12 months of the commencement of the ROP.

Nominal operating levels for each of the storages in the scheme are given in Table 1.

Table 1: Nominal operating levels for storages

Storage	Bucca Weir	Kolan Barrage	Ned Churchward Weir	Ben Anderson Barrage
Month	Operating Level (m AHD)			
January	15.32	2	13	1
February	13.57	2	13	1
March	13.57	2	13	1
April	12.2	2	13	1
May	12.2	2	13	1
June	12.2	2	13	1
July	12.2	2	13 ¹	1
August	12.2	2	13 ¹	1
September	12.2	2	13 ¹	1
October	12.2	2	13 ¹	1
November	13.57	2	13	1
December	15.32	2	13	1

Note 1: Storage level should be maintained above 13 m AHD for fishway operation, but the Ned Churchward Weir operation rules described in Section 2.4 take precedence over levels specified in Table 1.

1.2 Minimum operating level for storages

The minimum operating level for each storage in the scheme is the level associated with the dead storage volume for that storage, as specified in Table 2.

Table 2: Minimum operating levels for storages

Storage	Minimum Operating Level (m AHD)
Fred Haigh Dam	42.63
Bucca Weir	8.95
Kolan Barrage	0.94
Ned Churchward Weir	10.8
Ben Anderson Barrage	0
Paradise Dam	42.0 ¹

Note1: Minimum level at which nominated discharge rate can be maintained through the outlet is EL 46 m.

An objective of setting the minimum operating level is to provide refuge habitat.

Water must not be released or supplied from a given storage when the water level in that storage is at or below its minimum operating level, unless otherwise authorised by the chief executive.

The ROL holder may apply to the chief executive for authorisation to operate a given storage below its minimum operating level. The chief executive may authorise, with or without conditions, the ROL holder to operate that storage below its minimum operating level.

1.3 Minimum levels in waterholes not within the ponded area of a storage

This section applies to waterholes within the extent of the Bundaberg Water Supply Scheme that are not located within the ponded area of a storage where drawdown of the waterhole may be desired for supply of water allocations.

The water level in any waterhole should, where possible, be maintained at or near the cease to flow level for that waterhole. Where the outlet discharge capacity of the storage upstream of the waterhole is insufficient to maintain the water level in the waterhole at or near its cease to flow level, the waterhole may be drawn down to 0.5 m below its cease to flow level. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

1.4 Critical water supply arrangements

Critical water supply arrangements make provision for the supply of water during periods of critical water shortage (e.g. periods when high priority water cannot be supplied).

The ROL holder must submit, within 12 months of commencement of the ROP (November 2005), a proposal for critical water supply arrangements for the

Bundaberg Water Supply Scheme to the chief executive for approval.

A proposal for the critical water supply arrangements must be supported by details of:

- proposed triggers for commencement and cessation of operation under the arrangements;
- proposed arrangements for the supply of water, if any, for essential purposes under the arrangements;
- assessment of the effects of the arrangements on natural ecosystems and the physical integrity of the watercourse and the proposed monitoring under the arrangements;
- consultation during the development of the critical water supply arrangements with water users and local communities for the sustainable management of local water; and
- any other information that will enable the chief executive to decide the proposal.

The chief executive must consider the following when approving the critical water supply arrangements:

- the proposal and supporting information submitted by the ROL holder;
- any information about the effects of the arrangements on natural ecosystems and the physical integrity of the watercourse; and
- the public interest.

The chief executive may approve the critical water supply arrangements with or without conditions.

The chief executive may amend the critical water supply arrangements or require the ROL holder to review the critical water supply arrangements at any time. The ROL holder may submit a proposal for changes to the critical water supply arrangements to the chief executive at any time.

Without limiting what may be included in the critical water supply arrangements, the arrangements must state the following:

- triggers for commencement and cessation of operation;
- arrangements for the supply of water, if any, for essential purposes; and
- monitoring arrangements.

When the commencement triggers in the critical water supply arrangements are activated, the critical water supply arrangements apply, and relevant sections in the ROP cease to apply for the critical water supply arrangement period. When the cessation triggers in the critical water supply arrangements are activated, the ROP fully applies.

2 Rules for releases of water from storages

2.1 General rules

When determining releases to make from a storage, the ROL holder must have regard to the following:

- the volume of water to meet the demand;
- the likely contribution of inflows from tributaries that could assist the supply of demand;
- the likely transmission and operational losses, including riparian use;
- the time required for water to travel to the water allocation holder;
- the volume of water required to be released to maintain nominal operating levels in downstream storages and to maintain levels in waterholes;
- the requirements specified in the environmental management rules;
- the physicochemical attributes of the water being released and the possible impact on downstream aquatic ecosystems;
- the change rate in the reduction of releases that may cause downstream bank slumping or fish stranding; and
- the maximum release rate to minimise in-storage bank slumping.

The ROL holder may incorporate provisions in supply contracts for circumstances when release capacity of a storage is insufficient to meet demand.

2.2 Release rules

Water may be released from a storage up to the maximum discharge capacity of the outlet works to meet downstream demand or passing environmental flows as required.

2.2.1 Releases from Fred Haigh Dam to supply demands in the Kolan River between Fred Haigh Dam and the Kolan Barrage

Releases are to be made from Fred Haigh Dam (including direct pumping from Monduran Pump Station) to meet downstream demands until the dam is at dead storage level of 42.64 m AHD. This release includes the volume required to maintain nominal operating levels of storages in the Kolan River downstream of Fred Haigh Dam.

2.2.2 Releases from Fred Haigh Dam to supply demands in the Burnett River

Releases are to be made from Fred Haigh Dam to meet demands in the Burnett River downstream of the junction of the Burnett River and Sheepstation Creek. The release includes the volume required to maintain the water level in storages above nominal operating level. However:

- If Fred Haigh Dam is at or below 59.13 m AHD, no water may be released from Fred Haigh Dam to the Burnett River;
- When Fred Haigh Dam is above 59.13 m AHD and Paradise Dam is above 52.8 m AHD, no water may be released from Fred Haigh Dam to the Burnett River;
- When Fred Haigh Dam is above 59.13 m AHD and Paradise Dam is between 52.8 m AHD and 46.3 m AHD, the first 760 ML/day demand on the Burnett River downstream of the confluence of Sheepstation Creek less the volume required for the Gin Gin–Bingera system, is to be supplied from Fred Haigh Dam; and

- When Fred Haigh Dam is above 59.13 m AHD and Paradise Dam is below 46.3 m AHD, water may be released from Fred Haigh Dam to meet the demand on the Burnett River downstream of the confluence of Sheepstation Creek.

2.2.3 Releases from Paradise Dam to supply demands in the Burnett River

Releases are to be made from Paradise Dam to meet downstream demands in the Burnett River. The release includes the volume required to maintain the water level in storages above nominal operating level. However:

- If Paradise Dam is between 46.3 m AHD and 42 m AHD, no water may be released from the dam to meet demands or maintain the water level of storages downstream of the junction of the Burnett River and Sheepstation Creek; and
- If Paradise Dam is below 42 m AHD, no water may be released from the dam to meet downstream demands or maintain the water level of storages.

2.3 Rate of release

The ROL holder must minimise the occurrence of adverse environmental impacts (e.g. fish stranding and bank slumping) by ensuring that any change in the rate of release of water from storages occurs incrementally.

2.4 Ned Churchward Weir Operations

The water level in Ned Churchward Weir is to be stabilised within plus or minus 0.5 m of the level determined at the beginning of July as far as practicable, from early July to the end of October each year. Monitoring of existing macrophyte populations within the storage is required to be conducted to determine optimum levels.

If releases from Paradise Dam or inflows into the weir are not sufficient to hold the level in Ned Churchward Weir stable, water will be transferred from Fred Haigh Dam to maintain stable storage levels during this period provided the level in Fred Haigh Dam is above 59.13 m AHD.

2.5 Ben Anderson sluice gate and shutter operations

The collapsible shutters and sluice gates are to be operated in the following manner:

- the collapsible shutters drop automatically when stream flow reaches 4.26 m AHD (i.e. 0.3 m above the shutters in the vertical position);
- the shutters are restored to the vertical position after the flood has passed;
- the shutters may be returned to the vertical position when the stream flow has reduced to 1 m over the fixed crest; and
- sluice gates may be operated at any time to manage levels in the barrage.

2.6 Environmental management rules

2.6.1 Low flow objectives

Low flow releases should be within the constraints of existing infrastructure and are required to minimise deviations from values specified in Schedule 5, Part 1 of the WRP for the Burnett River at the river mouth, the Kolan River at the river mouth and Bucca Weir tailwater.

The performance indicators for low flow EFOs are:

- the percentage of the number of days in the simulation period when flow is less than 2 ML;
- 50 per cent daily exceedence stated for each month;
- 90 per cent daily exceedence stated for each month;
- low flow exceedence duration (10 cm above cease to flow) at Bucca Weir tailwater;
- low flow exceedence duration (30 cm above cease to flow) at Bucca Weir tailwater; and
- the number of no flow periods for one, three, six and nine months.

Bucca Weir releases

For Bucca Weir the minimum passing flows shown in Table 3 are to be made during the specified month. These passing flows may be used to meet the requirements of entitlement holders.

Table 3: Bucca Weir minimum passing flows

Month	Inflow to Bucca Weir (ML/day)	Minimum passing flows at Bucca Weir (ML/day)
May	Greater than or equal to 158	158

Paradise Dam releases

For Paradise Dam, the minimum passing flows shown in Table 4 are to be made during the specified month. These passing flows may be used to meet the requirements of entitlement holders.

Table 4: Paradise Dam minimum releases

Month	Inflow to Paradise Dam (ML/day)	Minimum passing flows at Paradise Dam (ML/day)
July	Greater than or equal to 20	20
December	Greater than or equal to 75	75

Ned Churchward Weir releases

Whenever possible, low flow is to be provided from Ned Churchward Weir to maintain the downstream pool and riffle sequence such that the 'river health' in the

pool section between Ned Churchward Weir and Ben Anderson Barrage is maintained. This is important especially during critical periods such as September and October each year during the breeding phase of aquatic insects that have an aerial phase.

There are no additional restrictions on supplemented entitlement holders when low flows are released.

Strategy for low flow releases

A maximum of one day of reaction time is allowed between the trigger conditions for a low flow release occurring, and the low flow release commencing. However should the conditions for a low flow release be exceeded on a weekend or public holiday then the low flow release need not commence until the next work day.

2.6.2 Medium to high flow objectives

Medium to high flow EFOs must be complied with at the Burnett River at the river mouth, Kolan River at the river mouth and Bucca Weir tailwater for the values specified in Schedule 5, Part 2 of the WRP. The performance indicators for the medium to high flow EFOs are:

- the annual proportional flow deviation;
- the mean annual flow;
- the 1.5 year ARI daily flow volume;
- the 5 year ARI daily flow volume;
- the 20 year ARI daily flow volume;
- the flow regime class; and
- the mean wet season flow at the Burnett River and Kolan River at the mouth.

The rules set out in this attachment comply with the EFOs for these performance indicators specified in the WRP.

Fred Haigh Dam releases

For Fred Haigh Dam, the minimum passing flows shown in Table 5 are to be made during the specified month. These releases may be used to meet the requirements of entitlement holders.

The ROL holder must implement the strategy shown in Table 5 for Fred Haigh Dam in the event of the specified trigger events occurrence.

Table 5: Fred Haigh Dam strategy

Month	Trigger Event	Strategy
All months	The storage level of Fred Haigh Dam is above EL 75.14 m AHD.	A flow equal to the previous days inflow to Fred Haigh Dam must be passed, subject to a maximum daily release volume of 1 600 ML.

Bucca Weir releases

The ROL holder must implement the strategy shown in Table 6 for Bucca Weir in the event of the specified trigger events occurrence.

Table 6: Bucca Weir strategy

Month	Trigger Event	Strategy
January to April	<ul style="list-style-type: none"> The storage level of Bucca Weir is less than EL 16.25 m AHD; and Kolan Barrage is spilling; and The storage in Fred Haigh Dam is greater than 53 m AHD. 	A minimum flow of 380 ML must pass Bucca Weir that day

Paradise Dam releases

The ROL holder must implement the strategies shown in Table 7 for Paradise Dam in the event of the specified trigger events occurrence.

Table 7: Paradise Dam strategies

Month	Trigger Event	Strategy
All months	<ul style="list-style-type: none"> The total volume of flow into the Paradise Dam in the previous 24 hours from 0600, is between 12 000 ML and 28 000 ML; and The rate of flow into the Paradise Dam at 0600 of the current day is between 160 and 300 cumecs; and The storage level of the Paradise Dam is above EL 67.92 m AHD; and A flow of 26 000 ML/day has not passed the Figtree Gauge on a previous day in the current water year¹. 	Paradise Dam outlet is to be fully opened until a total volume of 26 000 ML has passed GS136007A Burnett River at Figtree in the following 24 hours ² .
August to November	<ul style="list-style-type: none"> The total volume of flow into the Paradise Dam in the previous 24 hours from 0600 is less than 14 000 ML; and The storage level of the Paradise Dam is above EL 63.45 m AHD. 	The previous 24 hours volume of inflow to Paradise Dam must be released ² .

Note 1: If a daily flow volume at GS 136007A Burnett River at Figtree exceeds 26 000 ML with no release within a water year then the release strategy is not required until the following water year.

Note 2: If more than one condition is met then the maximum release requirement is required to be implemented.

Releases made from the storages for fishway operation or to supply allocation holders can contribute to the overall environmental release required.

The release strategies implementation time between the trigger conditions for a medium to high flow release occurring should be minimised with a maximum of 24 hours permitted between the trigger conditions for a medium to high flow release occurring and the medium to high flow release commencing, subject to normal working hours. However should the conditions for a medium to high flow release be exceeded on a weekend or public holiday then the medium to high flow release need not commence until the next business day.

2.6.3 Minimum levels for aquatic refuge and recreational purposes

The minimum storage volume in storages for aquatic and recreational purposes is the dead storage level listed in Section 1.2.

2.7 Storage inflow derivation methodology

The ROL holder is required to incorporate the approved storage inflow derivation methodology into the daily work schedule to determine storage inflows. The procedure must be applied on a daily basis to allow decisions about low, medium and high flow releases to be made in a timely manner.

2.8 Releases associated with fish transfer devices

The ROL holder must consult with QPI&F and submit a proposal detailing an alternative to the operating levels of storages to ensure effective fishway operation. This must be submitted to the chief executive for approval within 12 months of the commencement of the ROP.

2.8.1 Ned Churchward Weir

The Ned Churchward Weir fishway must be operated when the weir storage level is between 13.5m AHD and 19m AHD and releases of greater than 14 ML/day are being made or if the weir is overflowing up to a height of 20.1m AHD. The fishway may be operated at other times, such as when meeting the system operational requirements.

2.8.2 Ben Anderson Barrage

The Ben Anderson Barrage fishway must be operated when the barrage storage is between 2.2 m AHD and 3.97 m AHD. The releases must vary between 7 ML/day when at 2.2 m AHD and increase gradually to 13ML/day as water level rises to 3.97 m AHD. The fishway must be fully open when the storage level is above 3.97 m AHD. The fishway may be operated at other times, such as when meeting the system operational requirements.

2.8.3 Kolan Barrage

The Kolan Barrage fishway must be operated when the barrage storage is greater than 2 m AHD. The releases must vary between 10 ML/day when at 2 m AHD and increase gradually to 19 ML/day as water level rises to 2.7 m AHD. The fishway must

be fully open when the storage level is above 2.7 m AHD. The fishway may be operated at other times, such as when meeting the system operational requirements.

2.8.4 Paradise Dam

The Paradise Dam fishway must be operated when:

- The dam storage level is between 62 m AHD and 67.9 m AHD; and
- Releases or overflows of greater than 14 ML/day are being made from the dam.

The fishway may be operated at other times, when meeting the system operational requirements.

2.9 Other operational arrangements for environmental, social or cultural purposes

The ROL holder must adopt operational arrangements that comply with legislative requirements and may adopt additional arrangements on a voluntary basis.

3 Quality of water downstream of storages

Where infrastructure incorporates multilevel inlets, the ROL holder must draw water from the inlets that maximise the quality of the water released.

3.1 Use of watercourses for distribution of water

The ROL holder may use the following watercourses for the purposes of distribution of water:

- the Kolan River from the Kolan Barrage to Fred Haigh Dam, including the impounded area of the dam and Bucca Weir (AMTD 14.7 to 116);
- the Burnett River from Ben Anderson Barrage to Paradise Dam ponded area (AMTD 25.9 to AMTD 162.8);
- Sheepstation Creek from AMTD 0 to AMTD 8.6;
- St Agnes Creek from AMTD 0 to AMTD 1.3;
- Welcome Creek from outlet at Gooburrum Main Channel (Chainage 8557.84 to Fairymead Plantation); and
- sections of tributaries of these streams that contain water ponded behind the infrastructure in this scheme, or ponded from natural waterholes.

The ROL holder must not divert water to any watercourse other than those given above for distribution of water without the prior approval of the chief executive.

Water sharing rules must be used to determine:

- announced allocation percentages throughout the year;
- restrictions on the movement of water between water years; and
- seasonal water assignment of water allocations.

There are two types of water allocations proposed to be supplied to water users in the Bundaberg Water Supply Scheme, namely medium and high priority water allocations. The WRP specifies the performance indicators (WASOs) for the medium and high priority groups.

The water sharing rules specify the way the water resources of the Bundaberg Water Supply Scheme will be shared between each of the water allocation priority groups.

1 Announced allocation

The announced allocation percentage is the percentage of the water allocation's nominal volume that is announced from time to time by the ROL holder. This percentage sets a limit to the amount of supplemented water which a water allocation holder can divert during the water year as a proportion of the water allocation holder's nominal volume.

The ROL holder is required to calculate announced allocation percentages for each priority group through the use of formulas and associated parameters. Details for each parameter used (including those in brackets in the list of points below) are specified in Section 3.

The amount of water that can be apportioned to each of the priority groups at any given time is determined by taking into account factors such as:

- the time of year an assessment is made;
- the amount of water used by each priority group in the current water year up to the date of the assessment (HPD and MPD);
- the amount of water in the storages;
- allowance for evaporative and seepage losses from the storages;
- allowance for future inflows (IN);
- allowance for the requirements of high and medium priority water allocations in future water years, to ensure the required level of performance (RE);
- allowance for transmission and operational losses along the river (TOL); and
- the net amount of water allocation that has been moved into the current water year from the next or previous water year (VIWY).

The values given for the factors applied in the announced allocation formula should not be taken out of the context of their purpose as part of the overall package used to determine the announced allocation.

1.1 General rules

Announced allocation procedures must be used to determine the announced allocation percentages for medium and high priority water allocations.

The announced allocation percentage is the percentage of the water allocation volume that may be taken during the water year. The water year for the Bundaberg Water Supply Scheme is from 1 July to 30 June in the following year.

Separate assessment of announced allocation percentages must be made for each water allocation priority group.

The announcement at the start of the water year must be based on the following conditions:

- if Fred Haigh Dam is at or below 66.06 m AHD at the start of the water year, separate announced allocations are to be made for the Kolan River Subscheme and the Burnett River Subscheme; and
- if Fred Haigh Dam is above 66.06 m AHD at the start of the water year, the announced allocation is the same for the entire Bundaberg Water Supply Scheme.

The initial announced allocation percentage for a water year must be announced within ten business days after the start of that water year.

Announced allocation percentages must not be greater than 100 per cent.

Announced allocation percentages must be reviewed during the year within ten working days of when a major inflow occurs. If the announced allocation percentage would increase by more than five percentage points or be increased to 100 per cent, then the announced allocation percentage must be revised.

The announced allocation percentage must not be reduced during a water year. If the formula gives a value below what was previously announced in the same water year, then the previously announced allocation percentage is to be maintained.

If the announced allocation percentage is less than 100 per cent, the announced allocation percentage should be reviewed at intervals not greater than three months.

The ROL holder may revise an announced allocation as an interim value at any time provided the value is not greater than that which would be calculated using the formulas in Section 1.3.

1.2 Subschemes

Bundaberg Water Supply Scheme will split into two subschemes for announced allocation purposes if the storage level in Fred Haigh Dam is at or below 66.06 m AHD at the beginning of the water year.

Separate assessment and announced allocations are to be made for each subscheme and the following rules apply:

- No releases are to be made from Fred Haigh Dam to the Burnett River Subscheme to supply demands of users or to maintain storage operating

levels. This takes precedence over the requirements of Attachment 4.1E, Section 2.2.2.

- Releases are to be made from Fred Haigh Dam to supply users on the Kolan River when Fred Haigh Dam is above its dead storage level.
- Releases from Paradise Dam to supply Ned Churchward Weir to continue until Paradise Dam is less than EL 46.3 m AHD.

When Fred Haigh Dam level exceeds EL 66.46 m AHD at any time during the water year, the subschemes will rejoin to one system and the following rules apply:

- The announced allocation that applied immediately prior to rejoining to one system continues unchanged in each subscheme until sufficient water is available to increase both subschemes to a single announced allocation percentage.
- Releases from Fred Haigh Dam to Burnett River may commence when a single announced allocation percentage is made.

The Kolan River Subscheme extends from the upper end of Fred Haigh Dam ponded area (AMTD 116) to the Kolan Barrage (AMTD 14.7). It includes the following infrastructure:

- Fred Haigh Dam;
- Bucca Weir; and
- Kolan Barrage.

The Burnett River Subscheme extends from within the ponded area of Paradise Dam (AMTD 162.8) to Ben Anderson Barrage (AMTD 25.9). It includes the following infrastructure:

- Paradise Dam;
- Ned Churchward Weir; and
- Ben Anderson Barrage.

1.3 Calculation of announced allocation percentages

Medium priority water allocations

The announced allocation percentage for medium priority water allocations must be determined from the following relationship.

$$AABm * MPA = (UV + IN - HPA + HPD - RE - TOL + MPD - VIWY) * 100$$

Where:

AABm cannot be less than 0 per cent

$$AAKm = AABm$$

If the system is split into two subschemes, then

$$AABm * MPAB = (UVB + IN - HPAB + HPDB - REB - TOLB + MPDB - VIWYB) * 100$$

and

$$AAK_m * MPAK = (UVK + IN - HPAK + HPDK - REK - TOLK + MPDK - VIWYK) * 100$$

The parameters used in these relationships are defined in Section 3.

High priority water allocations

If the announced allocation determined for medium priority water allocations in each subscheme (AAK_m and AAB_m) is greater than zero, then the announced allocation percentage for high priority water allocations must be 100 per cent, otherwise the announced allocation percentage for high priority water allocations in each subscheme must be determined from the following relationship.

$$AAB_h * HPAB = (UVB + IN - TOLB + HPDB - VIWYB) * 100$$

and

$$AAK_h * HPAK = (UVK + IN - TOLK + HPDK - VIWYK) * 100$$

The parameters used in this relationship are defined in Section 3.

2 Restrictions on the taking of water

2.1 Movement of water across water years

The supply of all or part of the water available under an individual high priority water allocation must not be:

- carried over from the current water year to any future year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of the water available under high priority water allocation permitted to be brought forward to a water year must not exceed one per cent of the total volume of high priority water allocation in the Bundaberg Water Supply Scheme.

The supply of all or part of an individual medium priority water allocation must not be:

- carried over from the current water year to any future year, other than to the next water year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of the water available under medium priority water allocation permitted to be brought forward to a water year must not exceed one per cent of the total volume of medium priority water allocation in the Bundaberg Water Supply Scheme.

The total volume of the water available under medium priority water allocation permitted to be carried over to a water year must not exceed the lesser amount of the following volumes (calculated for the previous water year):

- two per cent of the total volume of medium priority water allocation in the Bundaberg Water Supply Scheme; and

- the unused portion of the announced allocation.

2.2 Seasonal assignment rules for a water allocation

The ROL holder may only give consent to a seasonal water assignment in relation to a water allocation located in any of the zones listed in Section 1.2 of Attachment 4.1H if:

- the water continues to be supplied from any of those zones; and
- from 1 July 2009 the resultant distribution of water supplied in a water year lies within the ranges shown in Tables 3 and 4 in Attachment 4.1H.

A water allocation may for the purposes of this section be managed as if it is a water allocation with the purpose of 'any'.

3 Parameters used in calculating announced allocation percentages

AABm = announced allocation percentage medium priority for the Burnett Subscheme

That is, AABm is the percentage of the nominal volume for a medium priority water allocation that may be taken for the current water year in the Burnett Subscheme.

AAKm = announced allocation percentage medium priority for the Kolan Subscheme

That is, AAKm is the percentage of the nominal volume for a medium priority water allocation that may be taken for the current water year in the Kolan Subscheme.

AABh = announced allocation percentage high priority for the Burnett Subscheme

That is, AABh is the percentage of the nominal volume for a high priority water allocation that may be taken for the current water year in the Burnett Subscheme.

AAKh = announced allocation percentage high priority for the Kolan Subscheme

That is, AAKh is the percentage of the nominal volume for a high priority water allocation that may be taken for the current water year in the Kolan Subscheme.

MPA = medium priority water allocations

That is, MPA is the volume of medium priority water allocations in the total Bundaberg Water Supply Scheme.

MPD = medium priority diversions

That is, the volume of medium priority water taken in the single Bundaberg Water Supply Scheme in the current water year up to the time of the assessment of the

announced allocation (excluding any medium priority water used in the current water year that had been carried over).

HPA = high priority water allocations

That is, the volume of high priority water allocations in the total Bundaberg Water Supply Scheme.

HPD = high priority diversions

That is, the volume of high priority water taken in the total Bundaberg Water Supply Scheme in the current water year up to the time of the assessment of the announced allocation (excluding any high priority water used in the current water year that had been carried over).

UV = useable volume

That is, UV is determined by summing the useable volume of each of the storages included in the assessment of the announced allocation as per the following equations: $UV = \sum (UV_{storage})$

$$UV_{storage} = (CV - DSV - SL)$$

$$UV_{storage} = 0 \text{ if } (CV - DSV - SL) \text{ is less than } 0$$

Where:

UV_{storage} is the useable volume of each storage.

CV is the current volume of the storage.

DSV is the dead storage volume of the storage (as contained in Attachment 4.1D).

SL is the storage losses (calculated using data in Tables 2 and 3).

SL = storage losses

That is, SL is the projected storage losses from the storage for the remainder of the water year. Storage losses include lake evaporation and seepage.

The storage loss depths to be used for each storage are given in Tables 1 and 2. The storage loss volume is calculated by using the value next to the current month multiplied by the current surface area of the storage.

Table 1: Storage loss depth

Fred Haigh Dam, Bucca Weir, Kolan Barrage, Ned Churchward Weir and Ben Anderson Barrage	
Month in which Announced Allocation is Calculated	Storage Loss Till the End of Water Year (mm)
July	1 727
August	1 643
September	1 541
October	1 415
November	1 241
December	1 046
January	841
February	633
March	464
April	297
May	168
June	75

Table 2: Storage loss depth

Paradise Dam	
Month in which Announced Allocation is Calculated	Storage Loss Till the End of Water Year (mm)
July	1 844
August	1 757
September	1 645
October	1 501
November	1 315
December	1 111
January	891
February	674
March	498
April	318
May	183
June	81

The useable volume of Fred Haigh Dam, Bucca Weir, Kolan Barrage, Paradise Dam, Ned Churchward Weir and Ben Anderson Barrage are included in the announced allocation calculation for the total Burnett Water Supply Scheme

IN = inflow

That is, IN is the allowance for inflows used in the announced allocation procedures. The inflows to be used for this system are given in Table 3. The number used in the

equation for inflows (IN) is the value in the table for the month in which the calculation is undertaken.

Table 3: Inflow allowances

Month	Inflow to (ML)
July	0
August	0
September	0
October	0
November	0
December	0
January	0
February	0
March	0
April	0
May	0
June	0

RE = reserve

That is, RE is the storage volume set aside for water supplies and associated losses in future water years. The reserve volumes for calculating the announced allocations are given in Table 4. The value for the current month at the time of the calculation is the value used.

Table 4: Reserve volumes

Month in which Announced Allocation is Calculated	Reserve (ML)
July	0
August	21 710
September	43 420
October	65 131
November	86 841
December	108 551
January	130 261
February	151 971
March	173 682
April	195 392
May	217 102
June	238 812

TOL = transmission and operational losses

That is, TOL is an allowance for the river transmission and operational losses expected to occur in running the system to the end of the current water year. TOL varies with the announced allocation for medium priority water allocations.

The transmission and operational loss allowance to be used is given in Table 5. TOL is to be linearly interpolated for intermediate values of medium priority announced allocation in the Burnett Subscheme.

Table 5: Transmission and operational losses

Month in which	Transmission and Operational Loss Allowance (ML)			
	At AABM = 0%	At AABM = 25%	At AABM = 75%	At AABM = 100%
July	4 929	15 757	68 651	132 375
August	4 523	14 775	64 898	125 275
September	4 107	13 294	58 190	112 272
October	3 685	11 513	49 701	95 717
November	3 270	9 640	40 640	78 010
December	2 855	7 671	30 992	59 128
January	2 436	5 793	21 922	41 409
February	2 436	5 793	21 922	41 409
March	2 436	5 793	21 922	41 409
April	2 436	5 793	21 922	41 409
May	2 436	5 793	21 922	41 409
June	2 436	5 793	21 922	41 409

VIWY = net total volume of water allocation moved into current water year

That is, VIWY is the net total volume of water allocation for the total Burnett Water Supply Scheme that is moved into a water year from the previous water year, taking into account:

- the volume of water carried over to the current water year from the previous water year;
- the volume of water brought forward from the current water year to the previous water year; and
- the volume of water carried over to the current water year that had been supplied in the current water year as at the date of the assessment of the announced allocation.

3.1 Parameters used in calculating announced allocation percentages for subschemes

MPAB = medium priority water allocations for the Burnett Subscheme

That is, MPAB is the volume of medium priority water allocations in the Burnett Subscheme.

MPAK = medium priority water allocations in the Kolan Subscheme

That is, MPAK is the volume of medium priority water allocations in the Kolan Subscheme.

MPDB = medium priority diversions for the Burnett Subscheme

That is, the volume of medium priority water taken in the Burnett Subscheme in the current water year up to the time of the assessment of the announced allocation (excluding any medium priority water used in the current water year that had been carried over).

MPDK = medium priority diversions for the Kolan Subscheme

That is, the volume of medium priority water taken in the Kolan Subscheme in the current water year up to the time of the assessment of the announced allocation (excluding any medium priority water used in the current water year that had been carried over).

HPAB = high priority water allocations for the Burnett Subscheme

That is, the volume of high priority water allocations in the Burnett Subscheme.

HPAK = high priority water allocations for the Kolan Subscheme

That is, the volume of high priority water allocations in the Kolan Subscheme.

HPDB = high priority diversions for the Burnett Subscheme

That is, the volume of high priority water taken in the Burnett Subscheme in the current water year up to the time of the assessment of the announced allocation (excluding any high priority water used in the current water year that had been carried over).

HPDK = high priority diversions for the Kolan Subscheme

That is, the volume of high priority water taken in the Kolan Subscheme in the current water year up to the time of the assessment of the announced allocation (excluding any high priority water used in the current water year that had been carried over).

UVB = useable volume of the Burnett Subscheme

That is, UVB is determined by summing the useable volume of each of the storages included in the assessment of the announced allocation as per the following equations:

$$UVB = \text{sum}(UVB_{\text{storage}})$$

$$UVB_{\text{storage}} = (CV - DSV - SL)$$

$$UVB_{\text{storage}} = 0 \text{ if } (CV - DSV - SL) \text{ is less than } 0$$

Where:

UVBstorage is the useable volume of each storage.

CV is the current volume of the storage.

DSV is the dead storage volume of the storage (as contained in Attachment 4.1D).

SL is the storage losses (calculated using data in Tables 2 and 3).

The useable volume of Paradise Dam, Ned Churchward Weir and Ben Anderson Barrage are included in the announced allocation calculation for the Burnett Subscheme.

UVK = useable volume for the Kolan Subscheme

That is, UVK is determined by summing the useable volume of each of the storages included in the assessment of the announced allocation as per the following equations:

$$UVK = \text{sum}(UVK_{\text{storage}})$$

$$UVK_{\text{storage}} = (CV - DSV - SL)$$

$$UVK_{\text{storage}} = 0 \text{ if } (CV - DSV - SL) \text{ is less than } 0$$

Where:

UVKstorage is the useable volume of each storage.

CV is the current volume of the storage.

DSV is the dead storage volume of the storage (as contained in Attachment 4.1D).

SL is the storage losses (calculated using data in Tables 2 and 3).

The useable volume of Fred Haigh Dam, Bucca Weir, and Kolan Barrage are included in the announced allocation calculation for the Kolan Subscheme.

REB = reserve for the Burnett Subscheme

That is, REB is the storage volume set aside in the Burnett Subscheme for water supplies and associated losses in future water years. The reserve volumes for calculating the announced allocations are given in Table 6. The value for the current month at the time of the calculation is the value used.

REK = reserve for the Kolan Subscheme

That is, REB is the storage volume set aside in the Kolan Subscheme for water supplies and associated losses in future water years. The reserve volumes for calculating the announced allocations are given in Table 6. The value for the current month at the time of the calculation is the value used.

Table 6: Reserved volumes for Burnett and Kolan Subschemes

Month in which Resource Assessment is made	Burnett Subscheme Reserve (ML)	Kolan Subscheme Reserve (ML)
July	0	0
August	18 127	3 583
September	36 254	7 166
October	54 382	10 749
November	72 509	14 332
December	90 636	17 915
January	108 763	21 498
February	126 890	25 081
March	145 018	28 664
April	163 145	32 247
May	181 272	35 830
June	199 399	39 413

TOLB = transmission and operational losses for the Burnett Subscheme

That is, TOL is an allowance for the river transmission and operational losses expected to occur in running the Burnett Subscheme to the end of the current water year. TOLB varies with the announced allocation for medium priority water allocations.

TOLK = transmission and operational losses for the Kolan Subscheme

That is, TOL is an allowance for the river transmission and operational losses expected to occur in running the Kolan Subscheme to the end of the current water year. TOLK varies with the announced allocation for medium priority water allocations.

The transmission and operational loss allowance to be used is given in Tables 7 and 8 for each subscheme. TOLB and TOLK are to be linearly interpolated for intermediate values of medium priority announced allocation in the subschemes.

Table 7: Transmission and operation loss allowances for Burnett Subscheme

Month in which Resource Assessment is Made	Transmission and Operation Loss Allowance (ML)			
	At AA _M = 0%	At AA _M = 25%	At AA _M = 75%	At AA _M = 100%
July	3 389	10 834	47 200	91 013
August	3 110	10 158	44 620	86 132
September	2 824	9 140	40 008	77 191
October	2 534	7 916	34 171	65 809
November	2 248	6 628	27 942	53 635
December	1 963	5 274	21 308	40 653
January	1 675	3 983	15 072	28 470
February	1 675	3 983	15 072	28 470
March	1 675	3 983	15 072	28 470
April	1 675	3 983	15 072	28 470
May	1 675	3 983	15 072	28 470
June	1 675	3 983	15 072	28 470

Table 8: Transmission and operation loss allowances for Kolan Subscheme

Month in which Resource Assessment is Made	Transmission and Operation Loss Allowance (ML)			
	At AAM = 0%	At AAM = 25%	At AAM = 75%	At AAM = 100%
July	1 540	4 923	21 451	41 362
August	1 413	4 617	20 278	39 143
September	1 283	4 154	18 182	35 081
October	1 151	3 597	15 530	29 908
November	1 022	3 012	12 698	24 375
December	892	2 397	9 684	18 475
January	761	1 810	6 850	12 939
February	761	1 810	6 850	12 939
March	761	1 810	6 850	12 939
April	761	1 810	6 850	12 939
May	761	1 810	6 850	12 939
June	761	1 810	6 850	12 939

VIWYB = net total volume of water allocation moved into current water year for the Burnett Subscheme

That is, VIWYB is the net total volume of water allocation that is moved into a water year from the previous water year for the Burnett Subscheme, taking into account:

- the volume of water carried over to the current water year from the previous water year;
- the volume of water brought forward from the current water year to the previous water year; and
- the volume of water carried over to the current water year that had been supplied in the current water year as at the date of the assessment of the announced allocation.

VIWYK = net total volume of water allocation moved into current water year for the Kolan Subscheme

That is, VIWYB is the net total volume of water allocation that is moved into a water year from the previous water year for the Kolan Subscheme, taking into account:

- the volume of water carried over to the current water year from the previous water year;
- the volume of water brought forward from the current water year to the previous water year; and
- the volume of water carried over to the current water year that had been supplied in the current water year as at the date of the assessment of the announced allocation.

4 Water Allocation Holders between AMTD 162.8 and AMTD 176

Water allocation holders within this river section are permitted to extract water from Paradise Dam when Paradise Dam storage level is at or above 62.92 m AHD (190 000 ML) if the announced allocation for the Claude Wharton Subscheme in the Upper Burnett WSS is greater than zero.

These allocation holders are not permitted to extract water from Paradise Dam when Paradise Dam elevation is below 62.92 m AHD.

1 Water quantity

1.1 Stream flow (storage inflow and tailwater flow) and storage water level

- (1) The ROL holder must record water level and volume, daily inflow and flow data in accordance with Table 1.
- (2) Tailwater flows may be obtained from gauging station data, or where there is no gauging station, tailwater flows may be calculated using the release curve developed for the discharge works and for the headwater discharge.

Table 1: Locations where data is required

Location	Gauging Station Site Identification	AMTD km	Water level and volume data	Daily Inflow data	Daily flow data
Fred Haigh Dam headwater	GS 135009A	76.7	✓	✓	
Fred Haigh Dam tailwater ²	GS 135012A	76.6			✓
Sheepstation Creek	GS 136018A	8.6			✓
Ned Churchward Weir headwater	GS 136023A	74.5	✓		
Ned Churchward Weir tailwater	GS 136008C	74.4			✓
Bucca Weir headwater	GS 135008A	38	✓	✓	
Bucca Weir tailwater	TBA	TBA			✓
Kolan River Barrage (Gooburrum Pump Station)	GS 135010B	20.8	✓		
Ben Anderson Barrage (Woongarra Pump Station)	GS 136020A	36.6	✓		
Paradise Dam headwater	GS 136024A	131.4	✓	✓	
Paradise Dam tailwater	TBA	TBA			✓

² This gauging station only measures release water. Total tailwater discharge will need to be calculated from headwater discharge data and any releases.

1.2 Reserved for future amendments

1.3 Releases from storages

- (1) This section applies to the following storages:
 - (a) Fred Haigh Dam;
 - (b) Ned Churchward Weir;
 - (c) Bucca Weir;
 - (d) Paradise Dam;
 - (e) Kolan Barrage; and
 - (f) Ben Anderson Barrage.
- (2) The ROL holder must record on a daily basis for each storage outlet:
 - (a) the volume released;
 - (b) the release rate, and for each change in release rate:
 - i. the date and time of the change; and
 - ii. the new release rate.
 - (c) The ROL holder must record for each storage outlet the reason for each release and the component volumes³ for each release.

1.4 Announced allocations

The ROL holder must record details of announced allocation determinations referred to in Section 1 of Attachment 4.1F, including:

- (a) the announced allocations for medium and high priority allocations;
- (b) the date announced allocations are determined; and
- (c) the value of each parameter applied for calculating the announced allocation.

1.5 Transfer of water between water years

The ROL holder must record details of the transfer of water between water years.

1.6 Water taken by water users

The ROL holder must record the volume of water taken by each water user per zone as follows:

- (a) the total volume of water taken each quarter;
- (b) the total volume of water entitled to be taken at any time;
- (c) the basis for determining the total volume of water entitled to be taken at any time; and

³ Component volumes comprise of the following;

- passing flows under the low flow management strategy, where applicable;
- passing flows under the medium to high flow management strategy, where applicable;
- volume released for water supply in the storage's local supply area;
- an estimate of the volume released to meet transmission and operating losses in the storage's local supply area;
- volume released to maintain the water level in the next downstream storage;
- volume released through fishways;
- total volume released from the storage; and
- for storages with a multilevel outlet, the water level from which the release was made.

- (d) the basis for determining the total volume of water entitled to be taken, including adjustments for volumes moved into or out of the water year and seasonal water assignments.

1.7 Seasonal water assignments

The ROL holder must record the details of seasonal water assignment arrangements including:

- (a) the name, volume and location of water seasonally assigned by individuals; and
- (b) the name, volume and location of individuals that received a seasonal assignment.

1.8 Reserved for future amendments

1.9 Water diversions

(1) The ROL holder must record the daily volume of water diverted to:

- Burnett River via St Agnes Creek;
- Abbotsford Surface Water Supply Subscheme via the Abbotsford Pump Station on the Kolan River;
- Gin Gin and Bingera Surface Water Supply Subscheme via the Monduran Pump Station at Fred Haigh Dam;
- Gooburrum Surface Water Supply Subscheme via the Gooburrum Pump Station on the Kolan River;
- Isis Surface Water Supply Subscheme via the Isis Pump Station on the Burnett River;
- Woongarra Surface Water Supply Subscheme via the Woongarra Pump Station on the Burnett River; and
- Welcome Creek via Gooburrum Channel.

(2) The methodology for determining the volume must be approved by the chief executive.

1.10 Critical water supply sharing arrangements

The ROL holder must record details of any restrictions on the supply of high priority water due to the application of critical water sharing arrangements including:

- (a) the dates of restrictions;
- (b) the nature of restrictions; and
- (c) the basis of the determination of restrictions including the minimum allocation for high priority users.

2 Impact of storage operation on aquatic ecosystems

The ROL holder must undertake the following to establish any impacts on aquatic ecosystems potentially related to the operation of storages.

2.1 Water quality

The ROL holder must monitor water quality in relation to relevant infrastructure in accordance with the Department's Water Monitoring Data Collection Standard.

2.2 Bank condition

- (1) The ROL holder must inspect banks for evidence of collapse and/or erosion within the ponded area and downstream of storages following instances of rapid water level changes or large flows through storages, or other occasions when collapse and/ or erosion of banks may be likely.
- (2) The distance downstream is the distance of influence of storage operations.

2.3 Fish stranding

The ROL holder must record and assess reported instances of fish stranding in watercourses and ponded areas associated with the operation of infrastructure of the ROL holder as listed in Attachment 4.1D to determine if any instance is associated with the operation of that infrastructure.

2.4 Ned Churchward Weir

The ROL holder is required to undertake monitoring in accordance with the original intent of the State and Federal agreement for the construction of Ned Churchward Weir as specified by the department as the lead agency for this agreement. Upon advice that the monitoring requirements have been satisfactorily fulfilled, the chief executive of the department will review this requirement.

3 Reporting

Reporting requirements

There are four levels of reporting for ROL holders:

- (1) Quarterly reports;
- (2) Annual reports for the previous water year;
- (3) Operational reports; and
- (4) Emergency reports.

Unless otherwise specified in the ROP, reporting must be consistent with the Department's Water Monitoring Data Reporting Standard.

3.1 Quarterly reporting

The ROL holder must submit a quarterly report to the chief executive after the end of each quarter, of every water year. The report should contain the following data or information:

- (a) verified stream flow, storage inflow and water level – all records referred to in Section 1.1;
- (b) releases from storages – the daily volumes released referred to in Section 1.3;
- (c) water diversions – daily totals of records referred to in Section 1.9;
- (d) water quality – all records referred to in Section 2.1; and

- (e) a summary of bank condition monitoring carried out in accordance with Section 2.2, which may include incidences of slumping.

3.2 Annual report

The ROL holder must submit an annual report to the chief executive after the end of each water year.

Water quantity reporting

- (1) The annual report must include a summary of:
 - (a) announced allocation determinations including:
 - (i) an evaluation of the announced allocation procedures and outcomes; and
 - (ii) the date and value for each announced allocation;
 - (b) instances where critical water supply sharing rules have been implemented, including:
 - (i) an evaluation of the effectiveness of the rules and outcomes; and
 - (ii) the commencement date(s) and time period(s) for which the rules were in effect;
 - (c) the total annual volume of water taken by all water users, specified by zone, namely:
 - (i) the total volume of supplemented water taken;
 - (ii) the total volume of supplemented water entitled to be taken; and
 - (iii) the basis for determining the volume entitled to be taken;
 - (d) seasonal water assignments, specified by scheme, namely:
 - (i) the total number of seasonal water assignment arrangements; and
 - (ii) the total volume of water seasonally assigned.
- (2) The annual report must include:
 - (a) all details of changes to the storage and delivery infrastructure, or the operation of storages and delivery infrastructure that may impact on compliance with rules in this plan; and
 - (b) details of any new monitoring devices used such as equipment to measure stream flow.
- (3) The annual report must include a discussion on any other issues that arose as a result of the implementation and application of the rules and requirements in this plan.
- (4) The annual report must include water taken by each water user as follows:
 - (a) the total volume of water taken for each zone;
 - (b) the total volume entitled to be taken for each zone; and
 - (c) the basis for determining the total volume of water entitled to be taken.

Impact of storage operation on water quality

- (1) The annual report must include:
 - (a) a summary of environmental considerations made by the ROL holder in making operational and release decisions; and

- (b) a summary of the environmental outcomes of the decision including any adverse environmental impacts.
- (2) The annual report must include a summary of bank condition and fish stranding monitoring and assessment including:
 - (a) results of investigations of bank slumping or erosion identified in ponded areas and/or downstream of storages;
 - (b) results of any investigations of fish stranding downstream of storages; and
 - (c) changes to operation of storages to reduce instances of bank slumping, erosion or fish stranding.
- (3) The annual report must include a discussion and assessment of the following water quality issues:
 - (a) water quality in each storage;
 - (b) thermal and chemical stratification in each storage;
 - (c) contribution of the storage and its management to the quality of water released;
 - (d) cumulative effect of successive storages on water quality;
 - (e) Cyanobacterial population changes in response to stratification in each storage; and
 - (f) any changes to the monitoring program as a result of evaluation of the data.

3.3 Operational report

- (1) The ROL holder must notify the chief executive within one business day:
 - (a) upon becoming aware of any of the following operational incidents:
 - (i) a non-compliance by the ROL holder with the rules given in this plan likely to affect the outcomes of the plan;
 - (ii) instances when a waterhole is drawn down 0.5 m below cease to flow level;
 - (iii) instances of fish stranding, blue-green algae growth or bank slumping within the ponded areas or downstream of storages associated with the operation of the Bundaberg Water Supply Scheme.
 - (b) upon making a decision relating to:
 - (i) an initial announced allocation and/or its revision;
 - (ii) any restrictions on the taking of medium priority water;
 - (iii) upon activation of critical water supply arrangements;
 - (iv) details of any arrangements for addressing circumstances where they are unable to supply water allocations.
- (2) The ROL holder must provide the chief executive with:
 - (a) a report on the occurrence of any of the operational incidents discussed in Subsection (1)(a). The report must include details of the incident, conditions under which the incident occurred and any responses or activities carried out as a result of the incident; and
 - (b) a summary of any other non-compliances by the ROL holder with the rules given in this plan; and
 - (c) relevant supporting information used in making a decision relating to:
 - (i) an initial announced allocation and/or its revision; and
 - (ii) any restrictions on the taking of medium priority water;

- (d) details of any seasonal water assignments approved by the ROL holder.
- (3) The ROL holder must provide within 10 business days the chief executive with a report of supplemented water being taken through a departmental water meter. The ROL holder must report the meter readings at the start and finish of the taking of water and the approved quantities of supplemented water taken.

3.4 Emergency report⁴

In an emergency where the licence holder cannot comply with the conditions of the ROP as a result of the emergency, the ROL holder must:

- (a) notify the chief executive; and
- (b) provide a report to the chief executive including:
 - (i) details of the emergency;
 - (ii) conditions under which the emergency occurred;
 - (iii) any responses or activities carried out as a result of the emergency; and
 - (iv) any rules specified in this plan that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

⁴ This does not preclude requirements for dam safety under the *Water Act 2000* and any other applicable legislation

1 Permitted changes

- (1) Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.
- (2) Despite subsection (1), the chief executive must not accept an application to change a water allocation during the first 10 business days following the commencement of revision 10 of this resource operations plan (the **period**), if—
- (a) the application is to change the location to Zone AA; and
 - (b) the total sum of the nominal volumes for the application and any other applications, that are—
 - (i) of the type described in subsection (2)(a); and
 - (ii) received from the same applicant; and
 - (iii) received during the period;

exceed 1000 megalitres.

1.1 Location

A water allocation holder may apply to change the location of the water allocation from one of the following zones to any other of those zones:

- between AA and AB, AC, AD, CA, CB and GZ;
- between AB and AA, AC, AD, CA, CB and GZ;
- between AC and AA, AB, AD, CA, CB and GZ;
- between AD and AA, AB, AC, CA, CB and GZ;
- between CA and CB and GZ;
- between CB and CA and GZ; or
- between GZ and CA and CB.

The proposed change is not a permitted change if the proposed change would result in a distribution of medium or high priority water allocations not provided for in Tables 1 and 2 or would result in more than 8 000 ML of medium priority allocations changing from AA, AB, AC and AD to CA, CB and GZ.

Table 1: Permitted distributions of high priority water allocations in the Bundaberg Water Supply Scheme by zone

Zones	AA	AB	AC	AD	CA	CB	GZ
Minimum nominal volume of high priority water allocation(ML)	3 100	0	0	3 990	8 840	0	0
Maximum nominal volume of high priority water allocation (ML)	3 600	105	280	4 190	36 570	37 050	20 000

Table 2: Permitted distributions of medium priority water allocations in the Bundaberg Water Supply Scheme by zone

Zones	AA	AB	AC	AD	CA	CB	GZ
Minimum nominal volume of medium priority water allocation (ML)	36 025	2 785	0	46 750	64 325	4 450	2 855
Maximum nominal volume of medium priority water allocation (ML)	42 553	6 790	5 160	67 180	189 325	156 760	41 235

1.2 Seasonal assignment

A water allocation holder may apply to change the location of the water allocation from one of the following zones to any other of those zones:

- between AA and AB, AC, AD, CA, CB and GZ;
- between AB and AA, AC, AD, CA, CB and GZ;
- between AC and AA, AB, AD, CA, CB and GZ;
- between AD and AA, AB, AC, CA, CB and GZ;
- between CA and AA, AB, AC, AD, CB and GZ;
- between CB and AA, AB, AC, AD, CA and GZ; or
- between GZ and AA, AB, AC, AD, CA and CB.

The proposed change is not a permitted change if the proposed change would result in use of medium or high priority water allocations not provided for in Tables 3 and 4.

Table 3: Permitted use of high priority water allocations in the Bundaberg Water Supply Scheme by zone

Zones	AA	AB	AC	AD	CA	CB	GZ
Minimum nominal volume of high priority water use (ML)	3 100	0	0	3 990	8 840	0	0
Maximum nominal volume of high priority water use (ML)	3 600	105	280	4 190	36 570	37 050	20 000

Table 4: Permitted use of medium priority water allocations in the Bundaberg Water Supply Scheme by zone

Zones	AA	AB	AC	AD	CA	CB	GZ
Minimum nominal volume of medium priority water use (ML)	36 025	2 785	0	46 750	64 325	4 450	2 855
Maximum nominal volume of medium priority water use (ML)	42 553	6 790	5 160	67 180	189 325	156 760	41 235

1.3 Purpose

A water allocation holder may apply to change the purpose from ‘any’ to ‘agriculture’ or from ‘agriculture’ to ‘any’.

1.4 Subdivision and amalgamation

A water allocation holder may apply to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into a single water allocation.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change to a location that is not mentioned in Tables 1, 2, 3 or 4.

2.2 Priority group

A change to a priority group that is not ‘medium’ or ‘high’.

2.3 Purpose

A change to a purpose that is not ‘agriculture’ or ‘any’.

2.4 Nominal volume

A change to the nominal volume other than a change that is a consequence of a change to another attribute of a water allocation.

2.5 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on other interests including entitlement holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

3.1 Purpose

Any application to change the purpose of a water allocation from 'distribution loss' to 'any' must be supported by information to substantiate to the satisfaction of the chief executive an efficiency gain within the distribution system.

4 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register. However, the registrar will not register the change until a supply contract has been entered into between the water allocation holder and the ROL holder (e.g. SunWater) for supply of the changed water allocation.

**Upper Burnett Water Supply Scheme:
Details of conversions to water allocations****Table 1: Details of conversions to water allocations**

Water Allocation Number	Family Name/ Company	Share of Water Allocation	Location	Purpose	Nominal Volume (ML/water year)	Priority	Converting Authorisation
4164	North Burnett Regional Council	1	OC	Any	200	High	102977
4165	SunWater	1	OC	Any	150	Medium	102974

Attachment

4.2D

Upper Burnett Water Supply Scheme:
Infrastructure details

Table 1: Wuruma Dam (including Saddle Dam) – Nogo River – AMTD 23

Description of Water Infrastructure	
Main embankment	Mass concrete dam
Full supply level	228.29 m AHD
Saddle dam(s)	Saddle dam
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	165 400 ML
Dead storage volume	2 430 ML
Storage curves/tables	Drawing no: A3-06900 & 106901
Spillway Arrangement	
Description of works	Reinforced concrete crest and chute
Spillway level	228.29 m AHD
Spillway width	91.4 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #70 for GS 136113A
River Inlet/Outlet Works	
Description of works	River Outlet: High level outlet works – The outlets to pass regulated supplies down the stream consist of two 900 mm steel pipes through the dam. Each outlet is fitted with a 900 mm diameter guard (butterfly) valve and a 750 mm diameter regulating (cone dispersion) valve operated from the valve house. Low level outlet works – Low level outlet works consist of a single 450 mm diameter pipe. Two 450 mm gate valves provide control. A 125 mm vent pipe comes from this pipe immediately downstream from the second valve and discharges on the downstream face of the dam.
Multilevel inlet	High level inlets – Rectangular reinforced concrete inlet tower with trash racks that cover inlets on the upstream side of the tower. Slotted inlets are on adjacent sides of the tower. The inlet works consist of two mild steel 900 mm diameter bellmouths. A bulkhead lowered through a guide assembly provides shut-off capability. Low level inlet – The inlet works consist of a single 450 mm mild steel bellmouth with trash rack.
Cease to flow levels	High level outlet: invert 204.14 m AHD Low level outlet: invert 192.78 m AHD High level inlet: invert 204.52 m AHD Low level inlet: invert 192.78 m AHD
Discharge characteristics	The estimated maximum discharge capacity of the outlet is 1 250 ML/day.
Fish Transfer System	
Description of works	Nil

Table 2: John Goleby Weir – Burnett River – AMTD 324.8

Description of Water Infrastructure	
Main embankment	Weir (steel sheet piling cascade)
Full supply level	167.8 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	1 690 ML
Dead storage volume	160 ML
Storage curves/tables	Drawing no: A3-72950F
Spillway Arrangement	
Description of works	Steel sheet piling cascade
Spillway level	167.8 m AHD
Spillway width	100 m
Discharge characteristics	Drawing no: A3-85350
River Inlet/Outlet Works	
Description of works	Outlet works consist of a single 1 750 mm diameter steel pipe, which reduces to a single 610 mm diameter steel pipe through an orifice plate. Control is provided at the outlet by a 600 mm diameter sluice valve.
Multilevel inlet	Single level inlet structure. A 750 mm diameter flap valve provides control. There is an inlet screen and provision for a bulkhead gate.
Cease to flow levels	Outlet works: invert 163 m AHD
Discharge characteristics	Estimated maximum discharge capacity of outlet 225 ML/day.
Fish Transfer System	
Description of works	Nil

Table 3: Jones Weir – Burnett River – AMTD 240.1

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	110.03 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	3 720 ML
Dead storage volume	10 ML
Storage curves/tables	Drawing no: A3-64663A
Spillway Arrangement	
Description of works	Ogee crest along width of weir
Spillway level	110.03 m AHD
Spillway width	157.3 m
Discharge characteristics	Drawing no: HYDSYS Rating Curve #30 for GS 136004A
River Inlet/Outlet Works	
Description of works	Outlet works consist of a single 900 mm square conduit through the concrete wall. This outlet is now the only outlet that is operated and replaces the original outlet works, which are on the left side of the weir. The outlet works on the right side of the weir have been completely silted up and are not operational.
Multilevel inlet	Single level inlet works consist of a concrete inlet chamber provided with trash screens and dropboard shut off facility. A vertical lift gate that is mechanically actuated and operated manually from the crest of the weir provides control.
Cease to flow levels	104.53 m AHD
Discharge characteristics	River Outlet – Estimated maximum discharge capacity of outlet is 330 ML/day. Drawing no: to be advised
Fish Transfer System	
Description of works	Nil

Table 4: Claude Wharton Weir – Burnett River – AMTD 202.4

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	94.4 m AHD
Saddle dam(s)	Nil
Fabridam	Inflatable rubber bags
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	12 800 ML
Dead storage volume	120 ML
Storage curves/tables	Drawing no: A3-213616
Spillway Arrangement	
Description of works	Mass concrete and inflatable bag
Spillway level	94.4 m AHD
Spillway width	166.5 m
Discharge characteristics	Drawing no: to be advised
River Inlet/Outlet Works	
Description of works	Outlet Works: High level outlet works – High level outlet works consist of two 1 524 mm x 1 524 mm outlets. Two vertical lift gates that are hydraulically actuated, electrically operated and manually controlled within a control building provide control. Interchangeable bulkhead gates provide shut off facility, for maintenance purposes. Low level outlet works – Low level outlet works consist of a single 1 800 mm diameter concrete pipe, which connects to a 2 100 mm x 2 100 mm conduit. Control is provided by a vertical lift gate, which is hydraulically actuated, electrically operated and manually controlled within a control building.
Multilevel inlet	The high and low level inlets are separate entities. High level inlet works – Inlet works consist of four 2 650 mm x 1 500 mm inlets. The inlets are provided with removable trash screens and shut off can be achieved by the placement of bulkhead gates. Low level inlet works – The inlet structure has two 2 650 mm x 3 665 mm inlets with removable trash screens and shut off capability provided by bulkhead gates.
Cease to flow levels	High level inlets/outlets: 90 m AHD Low level/outlet: 86.5 m AHD
Discharge characteristics	Estimated maximum discharge capacity of outlet is 3 380 ML/day. Drawing no: to be advised
Fish Transfer System	
Description of works	Fish Lock

Table 5: Kirar Weir – Burnett River – AMTD 300.4

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	153 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	9 540 ML
Dead storage volume	21 ML
Storage curves/tables	Drawing no: 219232
Spillway Arrangement	
Description of works	A 117 m central section between embankments
Spillway level	153 m AHD
Spillway width	117 m
Discharge characteristics	Refer to Appendix A – Staged development case submission 17 December 2004
River Inlet/Outlet Works	
Description of works	The outlet consists of a 10.8 m long, 1.5 m high and 1.2 m high rectangular outlet culvert. The outlet is a hydraulically controlled vertical lift gate with trashscreen and baffle dissipater.
Multilevel inlet	Variable level intake tower
Cease to flow levels	EL 142.5 m AHD
Discharge characteristics	Estimated maximum discharge capacity of outlet is 1 420 ML/day 80 per cent gate open – Normal operating operation is 1 470 ML/day 100 per cent gate open.
Fish Transfer System	
Description of works	Fish Lock

Attachment**4.2E****Upper Burnett Water Supply Scheme:
Rules for operation of infrastructure****1 Rules for operation of storages and waterholes****1.1 Nominal operating levels of storages**

The water level in a given storage must be maintained above that storage's nominal operating level by releasing water from the upstream storage in accordance with rules for releases between subschemes. The operator is permitted to draw down below these levels for up to seven days per month:

- for operational reasons to allow for upstream releases to reach the storage; or
- in unseasonal conditions.

The ROL holder may submit a proposal detailing an alternative to the above requirement for the nominal operating levels of storages. This must be submitted to the chief executive for approval within 12 months of the commencement of the ROP.

Nominal operating levels for each of the storages in the scheme are given in Table 1.

Table 1: Nominal operating levels for storages

Storage	Operating Level (ML)	Operating Level (m AHD)
Jones Weir	1 600	108.47
Kirar Weir	6 000	151
Claude Wharton Weir	4 100	91.12

1.2 Minimum operating level of storages

The minimum operating level for a given storage is the level associated with the dead storage volume for that storage, as specified in Table 2.

Table 2: Minimum operating levels for storages

Storage	Minimum Operating Level (m AHD)
Wuruma Dam	200.75
John Goleby Weir	163
Kirar Weir	142.5
Jones Weir	104.45
Claude Wharton Weir	86.5

An objective of setting the minimum operating level is to provide refuge habitat.

Water must not be released or supplied from a given storage when the water level in that storage is at or below its minimum operating level, unless otherwise authorised by the chief executive.

The ROL holder may apply to the chief executive for authorisation to operate a given storage below its minimum operating level. The chief executive may authorise, with or without conditions, the ROL holder to operate that storage below its minimum operating level.

1.3 Minimum levels in waterholes not within the ponded area of a storage

This section applies to waterholes within the extent of the Upper Burnett Water Supply Scheme that are not located within the ponded area of a storage where drawdown of the waterhole storage may be desired for supply of water allocations.

The water level in any waterhole should, where possible, be maintained at or near the cease to flow level for that waterhole. Where the outlet discharge capacity of the storage upstream of the waterhole is insufficient to maintain the water level in the waterhole at or near its cease to flow level, the waterhole may be drawn down to 0.5 m below its cease to flow level. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

1.4 Critical water supply arrangements

Critical water supply arrangements make provision for the supply of water during periods of critical water shortage. When the commencement triggers in the critical water supply arrangements are activated, the critical water supply arrangements apply and relevant sections in the ROP cease to apply for the critical water supply arrangement period. When the cessation triggers in the critical water supply arrangements are activated, the relevant sections of the ROP fully applies.

The ROL holder must submit within 12 months of the commencement of the ROP a proposal for critical water supply arrangements for the Upper Burnett Water Supply Scheme to the chief executive for approval.

A proposal for the critical water supply arrangements must be supported by details of:

- proposed triggers for commencement and cessation of operation under the arrangements;
- proposed arrangements for the supply of water, if any, for essential purposes under the arrangements;
- assessment of the effects of the plan on natural ecosystems and the physical integrity of the watercourse and the proposed monitoring under the arrangements;
- consultation during the development of the critical water supply arrangements with water users and local communities for the sustainable management of local water; and
- any other information that will enable the chief executive to decide the proposal.

The chief executive must consider the following when approving critical water supply arrangements:

- the proposal and supporting information submitted by the ROL holder;

- any information about the effects of the arrangements on natural ecosystems and the physical integrity of the watercourse; and
- the public interest.

The chief executive may approve the critical water supply arrangements with or without conditions.

The chief executive may amend the critical water supply arrangements or require the ROL holder to review the critical water supply arrangements at any time. The ROL holder may submit a proposal for changes to the critical water supply arrangements to the chief executive at any time.

Without limiting what may be included in the critical water supply arrangements, the arrangements must state the following:

- triggers for commencement and cessation of operation under the arrangements;
- provision for the supply of water, if any, for essential purposes under the arrangements; and
- monitoring arrangements.

2 Rules for releases of water from storages

2.1 General rules

When determining releases to make from a storage, the ROL holder must have regard to the following:

- the total volume of water to meet the demand;
- the likely contribution of inflows from tributaries that could assist the supply of demand;
- the likely transmission and operational losses including riparian use;
- the time required for water to travel to the water allocation holder;
- the volume of water required to be released to maintain nominal operating levels in downstream storages and to maintain levels in waterholes;
- the requirements specified in the environmental management rules;
- the physicochemical attributes of the water being released and the possible impact on downstream aquatic ecosystems;
- the change rate in the reduction of releases that may cause downstream bank slumping or fish stranding; and
- the maximum release rate to minimise in-storage bank slumping.

The ROL holder may incorporate provisions in supply contracts for circumstances when the release capacity of a storage is insufficient to meet demand.

2.2 Release rules

Water may be released from a storage up to the maximum discharge capacity of the outlet works to meet downstream demand or pass environmental flows as required.

2.2.1 Releases between subschemes

- No releases are to be made from John Goleby Subscheme to supply demands from any other subscheme.
- Releases are to be made from the Wuruma–Kirar Subscheme to the Jones Subscheme to supply demands unless Wuruma Dam is at or below 206.8 m AHD and Kirar Weir is at or below 151 m AHD.
- Releases are to be made from the Jones Subscheme to the Claude Wharton Subscheme to supply demands unless Wuruma Dam is at or below 206.8 m AHD and Jones Weir is at or below 108.47 m AHD.

2.2.2 Releases within subschemes

- Releases are to be made from Jones Weir to meet downstream demands unless Jones Weir is at or below 107.4 m AHD.
- Medium priority allocation holders in Jones Weir pond cannot extract water when the storage level is at or below 106.1 m AHD.
- Medium priority releases are to be made from Claude Wharton Weir to meet downstream demands unless Claude Wharton Weir is at or below 89.67 m AHD.

2.3 Rate of release

The ROL holder must minimise the occurrence of adverse environmental impacts (e.g. fish stranding and bank slumping) by ensuring that any change in the rate of release of water from storages occurs incrementally.

2.4 Reserved for future amendments

2.5 Claude Wharton Weir: Operation of fabridam

The fabridam on Claude Wharton Weir is to be operated such that:

- the bags must be completely deflated when the storage level reaches 94.7 m AHD;
- the bags are to be reinflated as the flood recedes; and
- outlet valves may be operated at any time to manage water levels in Claude Wharton Weir.

2.6 Environmental management rules

2.6.1 Low flow objectives

Low flow releases should be within the constraints of existing infrastructure and are required to minimise deviation from values specified in Schedule 5, Part 1 of the WRP for the Burnett River at Gayndah, Eidsvold and Figtree Creek gauging stations.

The performance indicators for low flow EFOs are:

- the percentage of the total number of days in the simulation period when the daily flow is less than 2 ML;
- 50 per cent daily flow exceedence stated for each month;
- 90 per cent daily flow exceedence stated for each month;
- low flow exceedence duration (10 cm above cease-to-flow);

- low flow exceedence duration (30 cm above cease-to-flow); and
- the number of no flow periods for one, three, six and nine months.

Claude Wharton Weir releases

For Claude Wharton Weir the minimum releases shown in Table 3 are to be made during the specified months if the water level is greater than 91.12 m AHD.

These releases are subject to outlet restrictions and may be used to meet the requirements of entitlement holders.

Table 3: Claude Wharton Weir minimum releases

Month	Inflow to Claude Wharton Weir (ML/day)	Releases from Claude Wharton Weir (ML/day)
June	Greater than 74	74
November	Greater than 109	109
December	Greater than 305	305

Reaction time for low flow releases

A maximum of one day of reaction time is allowed between the trigger conditions for a low flow release occurring, and the low flow release commencing. However, should the conditions for a low flow release be exceeded on a weekend or public holiday, then the low flow release need not commence until the next business day.

2.6.2 Medium to high flow objectives

Medium to high flow EFOs must be complied with at the Burnett River at Gayndah, Eidsvold and Figtree Creek gauging stations for the EFOs specified in Schedule 5, Part 2 of the WRP. The performance indicators for the medium to high flow EFOs are:

- the annual proportional flow deviation;
- the mean annual flow;
- the 1.5 year ARI daily flow volume;
- the 5 year ARI daily flow volume;
- the 20 year ARI daily flow volume; and
- the flow regime class.

The rules set out in this attachment comply with the EFOs for these performance indicators specified in the WRP.

2.6.3 Minimum levels for aquatic refuge and recreational purposes

The minimum storage volume in storages for aquatic and recreational purposes is the dead storage level listed in Section 1.2.

2.7 Storage inflow derivation methodology

The ROL holder is required to incorporate the approved storage inflow derivation methodology into the daily work schedule to determine storage inflows. The procedure must be applied on a daily basis to allow decisions about low, medium and high flow releases to be made in a timely manner.

2.8 Releases associated with Kirar Weir

The operations of the upstream and downstream fishways at Kirar Weir are subject to the Fishway Management Plan as administered by Queensland Primary Industries and Fisheries.

2.9 Other operational arrangements for environmental, social or cultural purposes

The ROL holder must adopt operational arrangements that comply with legislative requirements and may adopt additional arrangements on a voluntary basis.

3 Quality of water downstream of storages

Where infrastructure incorporates multilevel inlets, the ROL holder must draw water from the inlets that maximise the quality of the water released.

3.1 Use of watercourses for distribution of water

The ROL holder may use the following watercourses for the purposes of distribution of water:

- the part of the Burnett River extending from within the ponded area of Paradise Dam upstream to John Goleby Weir ponded area (AMTD 162.8 to AMTD 333.9);
- the part of the Nogo River between the confluence of the Nogo and Burnett Rivers and Wuruma Dam, including the impounded area of the dam (AMTD 0 to 44.5); and
- sections of inflowing watercourses of these rivers which contain ponded water from infrastructure in the scheme, or ponded from waterholes.

The ROL holder must not divert water to any watercourse other than those given above for distribution of water without the prior approval of the chief executive.

Attachment**4.2F****Upper Burnett Water Supply Scheme:
Water sharing rules**

Water sharing rules must be used to determine:

- announced allocation percentages throughout the year;
- restrictions on the movement of water between water years; and
- seasonal water assignment of water allocations.

There are two types of water allocations proposed to be supplied to water users in the Upper Burnett Water Supply Scheme, namely medium and high priority water allocations. The WRP specifies the performance indicators (WASOs) for the medium and high priority groups.

The water sharing rules specify the way the water resources of the Upper Burnett Water Supply Scheme will be shared between each of the water allocation priority groups.

1 Announced allocation

The announced allocation percentage is the percentage of the water allocation nominal volume that is announced from time to time by the ROL holder. This percentage sets a limit to the amount of supplemented water which a water allocation holder can divert during the water year as a proportion of the water allocation holder's nominal volume.

The ROL holder is required to calculate announced allocation percentages for each priority group through the use of formulas and associated parameters. Details for each parameter used (including those in brackets in the list of points below) are specified in Section 3.

The amount of water that can be apportioned to each of the priority groups at any given time ($A_{Am} * MPA$ and $A_{Ah} * HPA$) is determined by taking into account factors that include:

- the time of year an assessment is made;
- the amount of water used by in the current water year up to the date of the assessment (HPD and MPD);
- the amount of water in the storages;
- allowance for evaporative and seepage losses from the storages;
- allowance for future inflows (IN);
- allowance for the requirements of high and medium priority water allocations in future water years, to ensure the required level of performance (RE);
- allowance for transmission and operational losses along the river (TOL); and
- the net amount of water allocation that has been moved into the current water year from the next or previous water year (VIWY).

The values given for the factors applied in the announced allocation formula should not be taken out of the context of their purpose as part of the overall package used to determine the announced allocation.

1.1 Subschemes

The following subschemes are to be used for the purposes of announced allocation procedures in the Upper Burnett Water Supply Scheme.

John Goleby Subscheme (JG)

- This subscheme extends from AMTD 333.9 on the Burnett River to the confluence of the Burnett and Nogo Rivers AMTD 311.8 and includes John Goleby Weir.

Wuruma–Kirar Subscheme (WE)

- This subscheme extends from AMTD 44.5 on the Nogo River to AMTD 253 on the Burnett River and includes Wuruma Dam and Kirar Weir.

Jones Subscheme (J)

- This subscheme extends from AMTD 253 to AMTD 213.1 on the Burnett River and includes Jones Weir.

Claude Wharton Subscheme (CW)

- This subscheme extends from AMTD 213.1 of the Burnett River to the upper limit of the Bundaberg Water Supply Scheme at AMTD 162.8 and includes Claude Wharton Weir.

1.2 General rules for Wuruma–Kirar, Jones and Claude Wharton Subschemes

An announced allocation procedure must be used to determine the announced allocation percentages for medium and high priority water allocations.

The announced allocation percentage is the percentage of the water allocation volume that may be taken during the water year. The water year for Wuruma–Kirar, Jones and Claude Wharton Subschemes is from 1 July to 30 June in the following year.

Separate assessment of announced allocation percentages must be made for each water allocation priority group.

The initial announced allocation percentage for a water year must be announced within ten business days after the start of that water year.

Announced allocation percentages must not be greater than 100 per cent.

Announced allocation percentages must be reviewed during the year within ten business days of when a major inflow occurs. If the announced allocation percentage increases by more than five percentage points or would be increased to 100 per cent, then a revised announced allocation percentage must be announced.

The announced allocation percentage must not be reduced during a water year. If the formula gives a value below what was previously announced in the same water year, then the previously announced allocation percentage is to be maintained. If the announced allocation percentage is less than 100 per cent, the announced allocation

percentage should be reviewed at intervals not greater than three months.

The ROL holder may revise an announced allocation as an interim value at any time provided the value is not greater than that which would be calculated using the formulas in Section 1.4. If a higher interim announced allocation is desired in the first year of implementation, prior approval of the chief executive of the Department of Natural Resources and Water is required.

The ROL holder must announce an interim announced allocation immediately prior to the commencement of a water year. The basis for the determination of the interim announced allocation for the start of the water year must take into account water user requirements and be available to water users.

When the ROL holder cannot supply any supplemented water, the holders of water allocations may take water from waterholes only if the water level in the waterhole is above the level that is 0.5 m below the level at which the waterhole naturally overflows or the chief executive is satisfied the taking of water will not adversely affect the cultural and environmental values of the waterhole. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

The *Water Regulation 2002*, made under s.1006(2) of the Water Act, declares water in the aquifer underlying the Burnett and Nogo Rivers within the Wuruma–Kinar, Jones and Claude Wharton Subschemes, to be water in the respective watercourses. When the ROL holder cannot supply any supplemented water, water allocation holders may take water from the bed sands of the respective watercourses. The volume of water taken in the relevant water year must not exceed the water holder's nominal volume.

Excavation work carried out to enhance the efficiency of access to water in the bed sands will require appropriate authorisation under the provision of the Water Act or the *Integrated Planning Act 1997*.

1.3 General rules for John Goleby Subscheme

The announced allocation procedure must be used to determine the announced allocation percentages for medium priority water allocations supplied from the John Goleby Subscheme.

The announced allocation percentage is the percentage of the nominal volume that may be taken during the current water period.

A water period is defined as the lesser of:

- the period from the start of the water year to the end of the water year or when the weir overflows; or
- the period from when the weir ceases to overflow to the end of the water year or when the weir next overflows; or
- the period from when the weir overflows until it ceases to overflow, provided the period is less than four months; or
- a four-month period when the weir continues to overflow.

The water year for John Goleby Subscheme is from 1 July to 30 June in the following year. It should be noted that more than one water period is possible during a water year.

The maximum amount of water that may be taken under a water allocation within a water year is limited to 2.5 times the nominal volume.

The initial announced allocation percentage for a water year must be announced within ten business days after the start of that water year.

Announced allocation percentages must not be greater than 100 per cent.

The announced allocation should be determined using the formula in Section 1.5, except under the following circumstances.

The ROL holder will announce the announced allocation to 100 per cent and will reset medium priority diversions (MPD) and carry-over volumes for the water period to zero when:

- the weir commences to overflow;
- the weir ceases to overflow; and
- the weir is overflowing continuously for a period of four months.

Because of the opportunistic nature of the subscheme, evaporation and transmission losses are considered to be a component of the announced allocation volume.

The announced allocation percentage should be reviewed at intervals not greater than three months.

Announced allocation percentages must be reviewed during the year within ten business days of when a major inflow occurs. If the announced allocation percentage increases by more than five percentage points or increases to 100 per cent, then a revised announced allocation percentage must be announced.

The announced allocation percentage must not be reduced during a water year. If the formula gives a value below what was previously announced in the same water year, then the previously announced allocation percentage is to be maintained.

1.4 Calculation of announced allocation percentages for Wuruma–Kirar, Jones and Claude Wharton Subschemes

Medium priority water allocations

The announced allocation percentage for medium priority water allocations for the Wuruma–Kirar Subscheme must be determined using the following formula.

$$AAm * MPA = (UV + IN - HPA + HPD - RE - TOL + MPD - VIWY - TO_W) * 100$$

The announced allocation percentage for medium priority water allocations for the Jones Subscheme must be determined using the following formula.

$$AAm * MPA = (UV + IN - HPA + HPD - RE - TOL + MPD - VIWY + TI_J) * 100$$

The announced allocation percentage for medium priority water allocations for the Claude Wharton Subscheme must be determined using the following formula.

$$AAm * MPA = (UV + IN - HPA + HPD - RE - TOL + MPD - VIWY + TI_{CW}) * 100$$

The parameters used in the above relationships are defined in Section 3.1.

High priority water allocations

If the announced allocation determined for medium priority water allocations is greater than zero, then the announced allocation percentage for high priority water allocations must be 100 per cent, otherwise the announced allocation percentage for high priority water allocations must be determined from the following relationship.

$$AAh * HPA = (UV - TOL + HPD - VIWY) * 100$$

The parameters used in this relationship are defined in Section 3.1.

1.5 Calculation of announced allocation percentages for John Goleby Subscheme

The announced allocation percentage for medium priority water allocations for the John Goleby Subscheme must be determined using the following formula.

$$AAm * MPA = (CV - DSV + MPD - VIWY) * 100$$

The parameters used in the above relationship are defined in Section 3.2.

2 Restrictions on the taking of water

2.1 Movement of water across water years

The supply of all or part of the water available under an individual high priority water allocation must not be:

- carried over from the current water year to any future year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of water available under high priority water allocation permitted to be brought forward to a water year must not exceed one per cent of the total volume of high priority water allocation in the Upper Burnett Water Supply Scheme.

The supply of all or part of an individual medium priority water allocation must not be:

- carried over from the current water year to any future year, other than to the next water year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of water available under medium priority water allocation permitted to be brought forward to a water year must not exceed one per cent of the total volume of medium priority water allocation in the Upper Burnett Water Supply

Scheme.

For the John Goleby Subscheme, the total volume of the water available under medium priority water allocation permitted to be carried over to a water year must not exceed the unused portion of the announced allocation volume determined for the previous water period.

For all other subschemes, the total volume of the water available under medium priority water allocation permitted to be carried over to a water year must not exceed the lesser amount of the following volumes (calculated for the previous water year):

- two per cent of the total volume of medium priority water allocation in the Upper Burnett Supply Scheme; and
- the unused portion of the announced allocation.

2.2 Seasonal water assignment rules for a water allocation

The ROL holder may only give consent to a seasonal water assignment in relation to a water allocation located in any of the zones listed in Section 1.2 of Attachment 4.2H if:

- the water continues to be supplied from any of those zones; and
- from 1 July 2009 the resultant distribution of water supplied in a water year lies within the scenario provided for in Tables 1 and 2 in Attachment 4.2H.

A water allocation may for the purposes of this section be managed as if it is a water allocation with the purpose of 'any'.

3 Parameters used in calculating announced allocation percentages

3.1 Parameters used in calculating announced allocation percentages for Wuruma–Kirar, Jones and Claude Wharton Subschemes

AAm = announced allocation percentage medium priority

That is, the percentage of the water allocation volume for a medium priority water allocation that may be taken for the current water year.

AAh = announced allocation percentage high priority

That is, the percentage of the water allocation volume for a high priority water allocation that may be taken for the current water year.

MPA = medium priority water allocations

That is, the volume of medium priority water allocations in the subscheme.

MPD = medium priority diversions

That is, the volume of medium priority water taken in the current water year up to the time of the assessment of the announced allocation (excluding any medium priority water used in the current water year that had been carried over).

HPA = high priority water allocations

That is, the volume of high priority water allocations in the subscheme.

HPD = high priority diversions

That is, the volume of high priority water taken in the current water year up to the time of the assessment of the announced allocation.

UV = useable volume

That is, determined by summing the useable volume of each of the storages included in the assessment of the announced allocation for each subscheme, as per the following equations:

$$UV = \text{sum}(UV_{\text{storage}})$$

$$UV_{\text{storage}} = (CV - DSV - SL)$$

$$UV_{\text{storage}} = 0 \text{ if } (CV - DSV - SL) \text{ is less than } 0$$

Where:

UV storage is the useable volume of each storage.

CV is the current volume of the storage.

DSV is the dead storage volume of the storage (see Attachment 4.2D).

SL is the storage losses (calculated using data in Table 1).

The volumes of Wuruma Dam, Kirar Weir, Jones Weir and Claude Wharton Weir are to be included in the announced allocation procedures in their respective subschemes.

SL = storage losses

That is, the projected storage losses from the storage for the remainder of the water year. Storage losses include lake evaporation and seepage.

The storage loss depths to be used for each storage are given in Table 1. The storage loss volume is calculated by using the value next to the current month multiplied by the current surface area of the storage.

Table 1: Storage loss depth

Month in which Announced Allocation is Calculated	Storage Loss till end of Water Year (mm)			
	Wuruma Dam	Kirar Weir	Jones Weir	Claude Wharton Weir
July	1 535	805	953	1 844
August	1 467	737	866	1 757
September	1 377	647	754	1 645
October	1 257	527	610	1 501
November	1 096	366	424	1 315
December	919	189	220	1 111
January	730	0	0	891
February	544	0	0	674
March	404	0	0	498
April	258	0	0	318
May	147	0	0	183
June	66	0	0	81

IN = inflow

That is, the allowance for inflows used in the announced allocation procedures. The inflows to be used for each subscheme are given in Table 2. The number used in the equation for inflows (IN) is the value in the table for the month in which the calculation is undertaken.

Table 2: Inflow allowances

Month in which Announced Allocation is Calculated	Inflows (ML)		
	Wuruma–Kirar Subscheme	Jones Subscheme	Claude Wharton Subscheme
July	0	957	1 270
August	0	114	1 000
September	0	549	700
October	0	107	500
November	0	500	928
December	0	700	646
January	0	163	0
February	0	29	0
March	0	16	0
April	0	2	0
May	0	0	0
June	0	0	0

RE = reserve

That is, the reserve volumes for calculating the announced allocations. These are given in Table 3. The value for the current month at the time of the calculation is the value used.

Table 3: Reserve volumes

Month in which Announced Allocation is Calculated	Reserve (ML)		
	Wuruma–Kirar Subscheme	Jones Subscheme	Claude Wharton Subscheme
July	360	320	1 000
August	360	320	1 000
September	360	320	1 000
October	360	320	1 000
November	360	320	1 000
December	360	320	1 000
January	360	320	1 000
February	360	320	1 000
March	360	320	1 000
April	360	320	1 000
May	360	320	1 000
June	360	320	1 000

TOL = transmission and operational losses

That is, an allowance for the river transmission and operational losses expected to occur in running the system to the end of the current water year. TOL varies with the announced allocation for medium priority water allocations.

The transmission and operational loss allowance to be used is given in Table 4. TOL is to be linearly interpolated for intermediate values of medium priority announced allocation.

Table 4: Transmission and operational losses

Announced Allocation (%)	Transmission and Operational Loss Allowance (ML)											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June
Wuruma–Kirar Subscheme												
0%	0	0	0	0	0	0	0	0	0	0	0	0
25%	1645	1562	1480	1382	1250	1102	921	740	559	362	230	115
75%	4934	4687	4441	4145	3750	3306	2763	2220	1678	1085	691	345
100%	6579	6250	5921	5526	5000	4408	3684	2960	2237	1447	921	461
Jones Subscheme												
0%	59	54	50	46	40	36	30	25	20	15	10	0
25%	894	848	802	748	675	596	498	426	353	281	208	63
75%	2566	2436	2307	2151	1945	1716	1434	1153	873	566	361	180
100%	3401	3230	3059	2853	2581	2275	1902	1529	1157	750	478	239
Claude Wharton Subscheme												
0%	0	0	0	0	0	0	0	0	0	0	0	0
25%	743	705	668	624	564	498	416	334	253	164	104	52
75%	2227	2116	2004	1871	1693	1492	1247	1002	757	490	312	156
100%	2969	2821	2673	2494	2257	1990	1663	1336	1010	653	416	208

VIWY = net total volume of water allocation moved into current water year

That is, the net total volume of water allocation that is moved into a water year from the previous water year, taking into account:

- the volume of water carried over to the current water year from the previous water year;
- the volume of water brought forward from the current water year to the previous water year; and
- the volume of water carried over to the current water year that had been supplied in the current water year as at the date of the assessment of the announced allocation.

TI_J = transfer volume into Jones Subscheme

That is, the volume to be transferred from Wuruma Dam to the Jones Subscheme for announced allocation procedures purposes. TI_J is determined by the following method.

- 1) Determine the desired volume available for the Jones Subscheme, DV_J, by interpolating from Table 5.
- 2) Determine the volume available in Jones Weir, VA_J, from the following equation.

$$VA_J = \max \{(CV_{JW} - DSV_{JW}), 0\}$$

Where:

CV_{JW} is the current volume of Jones Weir.

DSV_{JW} is the dead storage volume of Jones Weir.

- 3) Determine the transfer volume into the Jones Subscheme, TI_J, from the following equation.

$$TI_J = \max \{(DV_J - VA_J), 0\}$$

TI_{CW} = transfer volume into Claude Wharton Subscheme

That is, the volume to be transferred from Wuruma Dam to the Claude Wharton Subscheme for announced allocation procedures purposes, TI_{CW}, is determined by the following method.

1. Determine the desired volume available for the Claude Wharton Weir Subscheme, DV_{CW}, by interpolating from Table 5.
2. Determine the volume available in Claude Wharton Weir, VA_{CW}, from the following equation.

$$VA_{CW} = \max \{(CV_{CWW} - DSV_{CWW}), 0\}$$

Where:

CV_{CWW} is the current volume of Claude Wharton Weir.

DSV_{CWW} is the dead storage volume of Claude Wharton Weir.

3. Determine the transfer volume into the Claude Wharton Subscheme, TI_{CW} , from the following equation.

$$TI_{CW} = \max \{(DV_{CW} - VA_{CW}), 0\}$$

TO_W = transfer volume out of Wuruma Dam

That is, the volume to be transferred out of the Wuruma–Kirar Subscheme, TO_W , is equal to the sum of the volumes transferred to the other two subschemes. The following equation is to be used.

$$TO_W = TI_J + TI_{CW}$$

Table 5: Desired volume for Jones and Claude Wharton Subschemes

Current Storage Level of Wuruma Dam (m AHD)	Current Storage Volume of Wuruma Dam (ML)	DV _J (ML)	DV _{CW} (ML)
0	0	0	0
206.8	9 000	0	0
225.16	120 000	45 000	35 000
228.29	165 400	45 000	35 000

3.2 Parameters used in calculating announced allocation percentages for John Goleby Subscheme

A_{Am} = announced allocation percentage medium priority

That is, the percentage of the water allocation volume for a medium priority water allocation that may be taken for the current water year.

M_{PA} = medium priority water allocations

That is, the volume of medium priority water allocations in the John Goleby Subscheme.

C_V = current volume of John Goleby Weir at the time of the assessment of the announced allocation

D_{SV} = dead storage volume of John Goleby Weir as stated in Table 2, Attachment 4.2D

M_{PD} = medium priority diversions

That is, the volume of medium priority water taken in the current water year up to the time of the assessment of the announced allocation.

Attachment

4.2G

Upper Burnett Water Supply Scheme:
Monitoring program**1 Water quantity****1.1 Stream flow (storage inflow and tailwater flow) and storage water level**

- (1) The ROL holder must record water level and volume, inflow and flow data in accordance with Table 1.
- (2) Tailwater flows may be obtained from gauging station data, or where there is no gauging station, tailwater flows may be calculated using the release curve developed for the discharge works and for the headwater discharge.

Table 1: Locations where data is required

Location	Gauging Station Site Identification	AMTD km	Water level and volume data	Daily inflow data	Daily flow data
Wuruma Dam headwater	GS 136113A	22.8	✓		
Wuruma Dam tailwater	GS 136109B	22.3			✓
Kirar Weir headwater	GS 136121A	300.4	✓		
Kirar Weir tailwater	TBA	TBA			✓
John Goleby Weir headwater	GS 136120A	324.7	✓		
Claude Wharton Weir headwater	GS 136003D	202.4	✓	✓	

1.2 Reserved for future amendments**1.3 Releases from storages**

- (1) This section applies to the following storages:
- (a) Claude Wharton Weir
 - (b) Jones Weir
 - (c) Kirar Weir
 - (d) Wuruma Dam
 - (e) John Goleby Weir
- (2) The ROL holder must record on a daily basis for each storage outlet:
- (a) the volume released;
 - (b) the release rate, and for each change in release rate:
 - (i) the date and time of the change; and

- (ii) the new release rate;
 - (c) the ROL holder must record for each storage outlet the reason for each release and the component volumes⁵ for each release; and
 - (d) for storages with a multilevel outlet, the water level from which the release was made.
- (3) The ROL holder must record the operations of the Claude Wharton Weir fabridam as follows:
- (a) date and time the Claude Wharton Weir storage level reaches the specified trigger levels that initiate inflation and deflation of the fabridam; and
 - (b) provision of confirmation, including date and time, that the fabridam completed its full inflation or deflation cycle.

1.4 Announced allocations

The ROL holder must record details of announced allocation determinations referred to in Section 1 of Attachment 4.2F, including:

- (a) the announced allocations for medium and high priority allocations;
- (b) the date announced allocations are determined; and
- (c) the value of each parameter applied for calculating the announced allocation.

1.5 Transfer of water between water years

The ROL holder must record details of the transfer of water between water years.

1.6 Water taken by water users

The ROL holder must record the volume of water taken by each water user per zone as follows:

- (a) the total volume of water taken each quarter;
- (b) the total volume of water entitled to be taken at any time;
- (c) the basis for determining the total volume of water entitled to be taken at any time; and
- (d) the basis for determining the total volume of water entitled to be taken including adjustments for volumes moved into or out of the water year and seasonal water assignments.

1.7 Seasonal water assignments

The ROL holder must record the details of seasonal water assignment arrangements including:

⁵ Component volumes comprise of the following;

- passing flows under the low flow management strategy, where applicable;
- passing flows under the medium to high flow management strategy, where applicable;
- volume released for water supply in the storage's local supply area;
- an estimate of the volume released to meet transmission and operating losses in the storage's local supply area;
- volume released to maintain the water level in the next downstream storage;
- volume released through fishways;
- total volume released from the storage; and
- for storages with a multilevel outlet, the water level from which the release was made.

- (a) the name, volume and location of water seasonally assigned by individuals;
and
- (b) the name, volume and location of individuals that received a seasonal assignment.

1.8 Critical water supply sharing arrangements

The ROL holder must record details of any restrictions on the supply of high priority water due to the application of critical water sharing arrangements including:

- (a) the dates of restrictions;
- (b) the nature of restrictions; and
- (c) the basis of the determination of restrictions including the minimum allocation for high priority users.

2 Impact of storage operation on aquatic ecosystems

The ROL holder must undertake the following to establish any impacts on aquatic ecosystems potentially related to the operation of storages.

2.1 Water quality

The ROL holder must monitor water quality in relation to relevant infrastructure in accordance with the Department's Water Monitoring Data Collection Standard.

2.2 Bank condition

- (1) The ROL holder must inspect banks for evidence of collapse and/or erosion within the ponded area and downstream of storages following instances of rapid water level changes or large flows through storages, or other occasions when collapse and/ or erosion of banks may be likely.

- (2) The distance downstream is the distance of influence of storage operations.

2.3 Fish stranding

The ROL holder must record and assess reported instances of fish stranding in watercourses and ponded areas associated with the operation of infrastructure of the ROL holder as listed in Attachment 4.2D to determine if any instance is associated with the operation of that infrastructure.

3 Reporting

Reporting requirements

There are four levels of reporting for ROL holders:

- (1) Quarterly reports;
- (2) Annual reports for the previous water year;
- (3) Operational reports; and
- (4) Emergency reports.

Unless otherwise specified in the ROP, reporting must be consistent with the Department's Water Monitoring Data Reporting Standard.

3.1 Quarterly reporting

The ROL holder must submit a quarterly report to the chief executive after the end of each quarter, of every water year. The report should contain the following data or information:

- (a) verified stream flow, storage inflow and water level – all records referred to in Section 1.1;
- (b) releases from storages – the daily volumes released referred to in Section 1.3
- (c) water quality – all records referred to in Section 2.1; and
- (d) a summary of bank condition monitoring carried out in accordance with Section 2.2, which may include incidences of slumping.

3.2 Annual report

The ROL holder must submit an annual report to the chief executive after the end of each water year.

Water quantity reporting

- (1) The annual report must include a summary of:
 - (a) announced allocation determinations including:
 - (i) an evaluation of the announced allocation procedures and outcomes; and
 - (ii) the date and value for each announced allocation;
 - (b) instances where critical water supply sharing rules have been implemented, including:
 - (i) an evaluation of the effectiveness of the rules and outcomes; and
 - (ii) the commencement date(s) and time period(s) for which the rules were in effect;
 - (c) the total annual volume of water taken by all water users, specified by zone, namely:
 - (i) the total volume of supplemented water taken;
 - (ii) the total volume of supplemented water entitled to be taken; and
 - (iii) the basis for determining the volume entitled to be taken;
 - (d) seasonal water assignments, specified by scheme, namely:
 - (i) the total number of seasonal water assignment arrangements; and
 - (ii) the total volume of water seasonally assigned.
- (2) The annual report must include:
 - (a) all details of changes to the storage and delivery infrastructure, or the operation of storages and delivery infrastructure that may impact on compliance with rules in this plan; and
 - (b) details of any new monitoring devices used such as equipment to measure stream flow.
- (3) The annual report must include a discussion on any other issues that arose as a result of the implementation and application of the rules and requirements in this plan.
- (4) The annual report must include water taken by each water user as follows:
 - (a) the total volume of water taken for each zone;
 - (b) the total volume entitled to be taken for each zone; and

- (c) the basis for determining the total volume of water entitled to be taken.

Impact of storage operation on water quality

- (1) The annual report must include:
 - (a) a summary of environmental considerations made by the ROL holder in making operational and release decisions; and
 - (b) a summary of the environmental outcomes of the decision including any adverse environmental impacts.
- (2) The annual report must include a summary of bank condition and fish stranding monitoring and assessment including:
 - (a) results of investigations of bank slumping or erosion identified in ponded areas and/or downstream of storages;
 - (b) results of any investigations of fish stranding downstream of storages; and
 - (c) changes to operation of storages to reduce instances of bank slumping, erosion or fish stranding.
- (3) The annual report must include a discussion and assessment of the following water quality issues:
 - (a) water quality in each storage;
 - (b) thermal and chemical stratification in each storage;
 - (c) contribution of the storage and its management to the quality of water released;
 - (d) cumulative effect of successive storages on water quality;
 - (e) Cyanobacterial population changes in response to stratification in each storage; and
 - (f) any changes to the monitoring program as a result of evaluation of the data.

3.3 Operational report

- (1) The ROL holder must notify the chief executive within one business day:
 - (a) upon becoming aware of any of the following operational incidents:
 - (i) a non-compliance by the ROL holder with the rules given in this plan likely to affect the outcomes of the plan; and
 - (ii) instances when a waterhole is drawn down 0.5m below cease to flow level; and
 - (iii) instances of fish stranding, blue-green algae growth or bank slumping within the ponded areas or downstream of storages associated with the operation of the Upper Burnett Water Supply Scheme.
 - (b) upon making a decision relating to:
 - (i) an initial announced allocation and/or its revision;
 - (ii) any restrictions on the taking of medium priority water;
 - (iii) upon activation of critical water supply arrangements; and
 - (iv) details of any arrangements for addressing circumstances where they are unable to supply water allocations.
- (2) The ROL holder must provide the chief executive with:
 - (a) a report on the occurrence of any of the operational incidents discussed in Subsection (1)(a). The report must include details of the incident, conditions

- under which the incident occurred and any responses or activities carried out as a result of the incident;
- (b) a summary of any other non-compliances by the ROL holder with the rules given in this plan;
 - (c) relevant supporting information used in making a decision relating to:
 - (i) an initial announced allocation and/or its revision; and
 - (ii) any restrictions on the taking of medium priority water; and
 - (d) details of any seasonal water assignments approved by the ROL holder.
- (3) The ROL holder must provide within ten business days the chief executive with a report of supplemented water being taken through a departmental water meter. The ROL holder must report the meter readings at the start and finish of the taking of water and the approved quantities of supplemented water taken.

3.4 Emergency report⁶

In an emergency where the licence holder cannot comply with the conditions of the ROP as a result of the emergency, the ROL holder must:

- (a) notify the chief executive; and
- (b) provide a report to the chief executive including:
 - (i) details of the emergency;
 - (ii) conditions under which the emergency occurred;
 - (iii) any responses or activities carried out as a result of the emergency; and
 - (iv) any rules specified in this plan that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

⁶ This does not preclude requirements for dam safety under the *Water Act 2000* and any other applicable legislation

Attachment

4.2H

Upper Burnett Water Supply Scheme:
Water allocation change rules

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.

1.1 Location

A water allocation holder may apply to change the location of the water allocation within any zone; or:

- between GY, and GB, NA, NB, NC, OA, MA, OB, OC, SB;
- between GB, and GY, NA, NB, NC, OA, MA, OB, OC, SB;
- between NB, and GY, GB, NA, NC, OA, MA, OB, OC, SB;
- between NA, and GY, GB, NB, NC, OA, MA, OB, OC, SB;
- between NC, and GY, GB, NB, NA, OA, MA, OB, OC, SB;
- between OA, and GY, GB, NB, NA, NC, MA, OB, OC, SB;
- between MA, and GY, GB, NB, NA, OA, NC, OB, OC, SB;
- between SB, and GY, GB, NB, NA, OA, NC, MA, OC, OB;
- between OB, and GY, GB, NB, NA, OA, NC, MA, OC, SB;
- between OC, and GY, GB, NB, NA, OA, NC, OB, MA, SB; or
- between OD and PA.

The proposed change is not a permitted change if the proposed change would result in a distribution of medium and high priority water allocations not provided for in Tables 1 and 2.

Table 1: Permitted distributions of high priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone

Zone	GY	GB	MA	NA	NB	NC	OA	OB	OC	OD	PA	SA	SB
Minimum nominal volume of high priority water allocation (ML)	0	0	0	820	0	0	320	0	200	0	0	0	10
Maximum nominal volume of high priority water allocation (ML)	180	0	0	1 000	0	0	320	0	350	0	0	0	10

Table 2: Permitted distributions of medium priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone

Zone	GY	GB	NA	NB	NC	MA	OA	OB	OC	SA	SB	OD	PA
Minimum nominal volume of medium priority water allocation (ML)	960	913	1 951	3 488	2 411	883	5 863	6 405	0	0	0	0	0
Maximum nominal volume of medium priority water allocation (ML)	7 410	7 363	8 601	10 138	12 861	10 593	16 253	11 005	4 283	4 000	4 050	1 560	1 560
Maximum nominal volume of medium priority water allocation (ML) for combined zones	14 444				20 507			11 338				1 560	

1.2 Seasonal assignment

A water allocation holder may apply to change the location of the water allocation within any zone or:

- between GY, and GB, NA, NB, NC, OA, MA, OB, OC, SB;
- between GB, and GY, NA, NB, NC, OA, MA, OB, OC, SB;
- between NB, and GY, GB, NA, NC, OA, MA, OB, OC, SB;
- between NA, and GY, GB, NB, NC, OA, MA, OB, OC, SB;
- between NC, and GY, GB, NB, NA, OA, MA, OB, OC, SB;
- between OA, and GY, GB, NB, NA, NC, MA, OB, OC, SB;
- between MA, and GY, GB, NB, NA, OA, NC, OB, OC, SB;
- between SB, and GY, GB, NB, NA, OA, NC, MA, OC, OB;
- between OB, and GY, GB, NB, NA, OA, NC, MA, OC, SB;
- between OC, and GY, GB, NB, NA, OA, NC, OB, MA, SB; or
- between OD and PA.

The proposed change is not a permitted change if the proposed change would result in use of medium and high priority water allocations not provided for in Tables 3 and 4.

Table 3: Permitted use of high priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone

Zone	GY	GB	MA	NA	NB	NC	OA	OB	OC	OD	PA	SA	SB
Minimum nominal volume of high priority water allocation (ML)	0	0	0	820	0	0	320	0	200	0	0	0	10
Maximum nominal volume of high priority water allocation (ML)	180	0	0	1 000	0	0	320	0	350	0	0	0	10

Table 4: Permitted use of medium priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone

Zone	GY	GB	NA	NB	NC	MA	OA	OB	OC	SA	SB	OD	PA
Minimum nominal volume of medium priority water use (ML)	960	913	1 951	3 488	2 411	883	5 863	6 405	0	0	0	0	0
Maximum nominal volume of medium priority water use (ML)	7 410	7 363	8 601	10 138	12 861	10 593	16 253	11 005	4 283	4 000	4 050	1 560	1 560
Maximum nominal volume of medium priority water use (ML) for combined zones	14 444				20 507			11 338				1 560	

1.3 Purpose

A water allocation holder may apply to change the purpose from 'any' to 'agriculture' or from 'agriculture' to 'any'.

1.4 Subdivision and amalgamation

A water allocation holder may apply to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into a single water allocation.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change to a location that is not mentioned in Table 1, 2, 3 or 4.

2.2 Priority group

A change to a priority group that is not 'medium' or 'high'.

2.3 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.4 Nominal volume

A change to the nominal volume other than a change that is a consequence of a change to another attribute of a water allocation.

2.5 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the *Water Act 2000* for the change.

The chief executive will deal with any and all applications made under s.130 of the *Water Act 2000*, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on a range of interests including other entitlement holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

4 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register. However, the registrar will not register the change until a supply contract has been entered into between the water allocation holder and the ROL holder (e.g. SunWater) for supply of the changed water allocation.

Attachment

4.3A

**Barker Barambah Water Supply Scheme:
Reserved for future amendments**

Attachment
4.3B

**Barker Barambah Water Supply Scheme:
Reserved for future amendments**

Attachment
4.3C

**Barker Barambah Water Supply Scheme:
Reserved for future amendments**

Attachment
4.3D
**Barker Barambah Water Supply Scheme:
Infrastructure details**
Table 1: Bjelke-Petersen Dam – Barker Creek – AMTD 1.3

Description of Water Infrastructure	
Main embankment	Earth and Rockfill Dam
Full supply level	EL 307.3 m AHD
Saddle dam(s)	1
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	134 900 ML
Dead storage volume	1 000 ML
Storage curves/tables	Drawing no: 213617A
Spillway Arrangement	
Description of works	Ogee crest of mass concrete flanked by converging side walls, with a curved approach channel.
Spillway level	307.3 m AHD
Spillway width	80 m
Discharge characteristics	HYDSYS Rating Table #90 for GS 136210A (Bjelke-Petersen Dam Headwater Gauge).
River Inlet/Outlet Works	
Description of works	Outlet works consisting of a reinforced concrete inlet tower which is connected to a 2.4 m diameter reinforced concrete diversion tunnel. There are three outlets: <ul style="list-style-type: none"> • a single 900 mm diameter offtake for the Redgate pipeline; and • two 920 mm diameter outlets which discharge to Barker Creek controlled by 900 mm diameter cone dispersion valves.
Multilevel inlet	Inlet works consist of a reinforced concrete inlet tower with trash screens and a baulk arrangement that permits control over the level from which the water is drawn. A drop inlet bulkhead gate that is controlled by a hoist provides shut off.
Cease to flow level	Base of the inlet tower: EL 287 m AHD.
Discharge characteristics	The estimated maximum discharge capacity of the river outlet is 400 ML/day. The Redgate pipeline outlet has a maximum discharge of 78 ML/day.
Fish Transfer System	
Description of works	Nil

Table 2: Joe Sippel Weir – Barambah Creek – AMTD 171.8

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	EL 295 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	710 ML
Dead storage volume	96 ML
Storage curves/tables	Drawing no: A3-55954A
Spillway Arrangement	
Description of works	Top of sheet piling weir
Spillway level	295 m AHD
Spillway width	36.34 m
Discharge characteristics	HYDSYS Rating Table #90 for GS 136215A (Joe Sippel Weir Headwater Gauge).
River Inlet/Outlet Works	
Description of works	Outlet works consist of a 450 mm diameter outlet. Flow control is provided by a single 450 mm butterfly valve.
Multilevel inlet	Single level offtake: Inlet works consist of a reinforced concrete inlet chute provided with a trash screen and shut off facility by an aluminium drop board. There is also an offtake location in the backwater of the Joe Sippel Weir that is connected to the Upper Redgate pipeline.
Cease to flow level	Invert of outlet EL 291.32 m AHD corresponding to a storage volume of 96 ML.
Discharge characteristics	The maximum discharge of the outlet is estimated to be 75 ML/day.
Fish Transfer System	
Description of works	Nil

Table 3: Silverleaf Weir – Barambah Creek – AMTD 120.4

Description of Water Infrastructure	
Main embankment	Weir
Full supply level	EL 264.26 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	580 ML
Dead storage volume	26 ML
Storage curves/tables	Drawing no: A3-110875 and A3-110876
Spillway Arrangement	
Description of works	Full width timber, earth and rock weir
Spillway level	Crest 264.26 m AHD
Spillway width	31.09 m
Discharge characteristics	HYDSYS Rating Table #1 for GS 136205A (Silverleaf Weir Headwater Gauge).
River Inlet/Outlet Works	
Description of works	A 1 000 mm diameter outlet. Control is provided by a 750 mm x 750 mm slide gate.
Multilevel inlet	None
Cease to flow level	EL 261.84 m AHD. Storage capacity 174 ML.
Discharge characteristics	The maximum discharge capacity of the river outlet is estimated to be 346 ML/day.
Fish Transfer System	
Description of works	Nil

Attachment
4.3E
**Barker Barambah Water Supply Scheme:
 Rules for operation of infrastructure**

1 Rules for operation of storages and waterholes

1.1 Nominal operating levels of storages

The water level in a given storage must be maintained above that storage's nominal operating level by releasing water from an upstream storage or from Bjelke-Petersen Dam. The operator is permitted to draw down below these levels for up to seven days per month:

- for operational reasons such as to allow for upstream releases to reach the storage; or
- in unseasonal conditions.

Nominal operating levels for each of the storages in the scheme are given in Table 1.

Table 1: Nominal operating levels for storages

Storage	Operating Volume (ML)	Operating Level (m AHD)	Period
Joe Sippel Weir	710	295	Whole Year
Silverleaf Weir	300 500	262.76 263.76	April – September October – March

1.2 Minimum operating levels for storages

The minimum operating level for a storage is the level associated with the dead storage volume for that storage, as specified in Table 2.

Table 2: Minimum operating levels for storages

Storage	Minimum Operating Level (m AHD)
Bjelke-Petersen Dam	289.9
Joe Sippel Weir	291.06
Silverleaf Weir	259.86

An objective of setting the minimum operating level is to provide refuge habitat.

Water must not be released or supplied from a given storage when the water level in that storage is at or below its minimum operating level, unless otherwise authorised by the chief executive.

The ROL holder may apply to the chief executive for authorisation to operate a given storage below its minimum operating level. The chief executive may authorise, with or without conditions, the ROL holder to operate that storage below its minimum operating level.

1.3 Minimum levels in waterholes not within the ponded area of a storage

This section applies to waterholes within the extent of the Barker Barambah Water Supply Scheme that are not located within the ponded area of a storage where drawdown of the waterhole may be desired for supply of water allocations.

The water level in any waterhole should, where possible, be maintained at or near the cease to flow level for that waterhole. Where the outlet discharge capacity of the storage upstream of the waterhole is insufficient to maintain the water level in the waterhole at or near its cease to flow level, the waterhole may be drawn down to 0.5 m below its cease to flow level. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

1.4 Critical water supply arrangements

Critical water supply arrangements make provision for the supply of water during periods when the full volume for all water allocations cannot be supplied. When the commencement trigger in the critical water supply arrangements is activated, the critical water supply arrangements apply, and relevant sections in the ROP cease to apply for the critical water supply arrangement period.

- (1) The announced allocation percentages for high priority and medium priority water allocations will be calculated in accordance with attachment 4.3F of the ROP, unless otherwise stated.
- (2) A critical water supply situation is a period of time that starts and ends at such a time that the ROL holder notifies under section 15 of these critical water supply arrangements.
- (3) A critical water supply situation commences when the announced allocation percentage for medium priority water allocations, as calculated according to Attachment 4.3F of the ROP, is less than 100 per cent.
- (4) The formulae for determining the announced allocation during a critical water supply situation are as follows:
 - (a) The formula in attachment 4.3F of the ROP for calculating the announced allocation for medium priority water allocations is to be used with the following changes:

- i. UV = useable volume

UV is determined by summing the useable volume of each of the storages included in the assessment of the announced allocation as per the following equations:

$$\begin{aligned}
 UV &= UV_{BP} + UV_{JS} + UV_{SL} \\
 UV_{BP} &= AV - DSV && \text{(Bjelke-Peterson Dam)} \\
 UV_{JS} &= CV - DSV && \text{(Joe Sippel Weir)} \\
 UV_{SL} &= CV - DSV && \text{(Silverleaf Weir)}
 \end{aligned}$$

$UV_{BP} = 0$ if $(AV - DSV)$ is less than 0
 UV_{JS} or $UV_{SL} = 0$ if $(CV - DSV)$ is less than 0

Where:

UV_{XX} is the useable volume of each storage.

AV is the available volume in Bjelke-Petersen Dam which corresponds to the storage level calculated by subtracting the storage loss depth in Table 1 in Attachment 4.3F from the current storage level.

CV is the current volume in either Joe Sippel Weir or Silverleaf Weir.

DSV is the dead storage volume of the storage (as contained in Attachment 4.3D).

- ii. RE = the reserve volume
 The reserve volumes for calculating the announced allocations are given in Table 1 below.

Table 1: Reserve volumes

Reserve (ML)											
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
2000	2455	2909	3364	3818	4273	4747	5182	5636	6091	6545	7000

- (b) The formula in attachment 4.3F of the ROP for calculating the announced allocation for high priority water allocations is to be used with the following change:

UV = useable volume in Bjelke-Peterson Dam ONLY:

$UV = (AV - DSV)$

$UV = 0$ if $(AV - DSV)$ is less than 0

Where:

AV is the available volume which corresponds to the storage level calculated by subtracting the storage loss level in Table 1 in Attachment 4.3F from the current storage depth.

DSV is the dead storage volume of the storage (as contained in Attachment 4.3D).

- (5) A critical water supply situation can be either of two stages. The triggers for applying each stage of a critical water supply situation at the start of the water year or commencement of these critical water arrangements are as follows:
- Stage 1 applies when the announced allocation for medium priority water allocations as calculated under section 4a of the critical water supply arrangements is greater than or equal to five per cent.
 - Stage 2 applies when the announced allocation for medium priority water allocations as calculated under section 4a of the critical water supply arrangements is less than five per cent.

- (6) The following rules apply during a critical water supply situation:
- (a) If a critical water supply situation is announced it will continue for the entire water year.
 - (b) Stage 1 ceases and Stage 2 comes into effect if the volume contained in Bjelke-Peterson Dam drops below 1000 ML plus the reserve volume used in the most recent calculation of the announced allocation.
 - (c) Stage 2 ceases and Stage 1 comes into effect if the announced allocation for medium priority water allocations, as calculated under section 4a of the critical water supply arrangements, is greater than or equal to the larger of five per cent and the announced allocation for medium priority water allocations in effect at the time of the calculation.
 - (d) Stream flow access is authorised for water allocation holders as per section 10.
- (7) The additional arrangements that will be applied during Stage 1 are as follows:
- (a) The medium priority announced allocation will be calculated under section 4a of the critical water supply arrangements up to a maximum of 100 per cent.
 - (b) The high priority announced allocation will be 100 per cent.
- (8) The additional arrangements that will be applied during Stage 2 are as follows:
- (a) If Stage 2 commences at the start of the water year, the medium priority announced allocation will be 0 per cent.
 - (b) If Stage 2 commences at the start of the water year the high priority announced allocation will be as follows:
 - i.) If the high priority announced allocation calculated under section 4b of the critical water supply arrangements is greater than or equal to 50 per cent then the high priority announced allocation is the value calculated under section 4b of the critical water supply arrangements up to a maximum of 100 per cent.
 - ii.) If the high priority announced allocation calculated under section 4b of the critical water supply arrangements is less than 50 per cent then the high priority announced allocation is 50 per cent.
 - (c) Access to carry-over water will be suspended.
 - (d) Instream waterhole or specified weir pond access is authorised for medium priority water allocation holders as per section 9.
 - (e) Water may be taken from waterholes under high priority water allocations.
 - (f) Releases will not be made from Silverleaf Weir to meet compensation flow requirements.
 - (g) Releases will not be made to maintain storage nominal operating levels.
 - (h) Joe Sippel Weir can be drawn down below its minimum operating level.
- (9) During a Stage 2 critical water supply situation, medium priority water allocation holders may take water:
- (a) from waterholes within Zone HB, Zone HC downstream of AMTD 141.6 (Ficks Crossing) and Zone JA upstream of AMTD 182 (Dudley Sippel Weir), if the water level is more than 0.5 metres below the level at which the waterhole naturally overflows; or
 - (b) from the ponded areas of Dudley Sippel and Francis Weirs within Zone JA; or

- (c) from the ponded area of Silverleaf Weir up to a volume that is in proportion to the water allocation volumes within the zone and the water available above the nominal operating level of the weir, as calculated by the ROL holder.
- (10) During a critical water supply situation, the ROL holder may announce a stream flow period to permit water allocation holder access to water from the described locations, subject to the following requirements:
- (a) Zone HE and Zone JA:
- i.) The take of water may commence when the flow over Joe Sippel Weir is estimated to be at least 100 ML/day.
 - ii.) The take of water must cease when the flow over Joe Sippel Weir falls to 0 ML/day.
- (b) Zone HB, HZ, HC and HD:
- i) The take of water may commence when the following conditions are met:
 - (A) the storage level of Cherbourg waterhole is at or above full supply level; and
 - (B) the storage level of Murgon Weir is at or above full supply level; and
 - (C) stream flow at AMTD 141.6 is estimated to be at least 44 ML/day.
 - ii) The take of water must cease when:
 - (A) the stream flow at AMTD 141.6 falls below 20 ML/day and Silverleaf Weir is below full supply level; or
 - (B) Silverleaf Weir is at or below the nominal operating level.
- (11) The total volume of water taken under a water allocation in a water year must not exceed the nominal volume for the water allocation.
- (12) During a Stage 1 critical water supply situation; the volume of water taken under a medium priority water allocation, except water taken under section 10, must not exceed the nominal volume of the water allocation multiplied by the announced allocation percentage.
- (13) During a Stage 2 critical water supply situation; no water may be taken under a medium priority water allocation, except take which is authorised under section 9 or section 10.
- (14) For any assessment of the announced allocation during the year, water taken under either section 9 or section 10 shall not be accounted for when determining MPD and HPD as used in the formula in attachment 4.3F of the ROP.
- (15) Notification arrangements:
- (a) The ROL holder must notify the water allocation holders of:
- i) the commencement of a critical water supply situation and whether Stage 1 or Stage 2 applies;
 - ii) a transition from a Stage 1 to a Stage 2 critical water supply situation;
 - iii) a transition from a Stage 2 to a Stage 1 critical water supply situation; and

- iv) the commencement and cessation of a stream flow period.
 - (b) The ROL holder must notify the department, within one business day, upon becoming aware of:
 - i) the commencement of a critical water supply situation and whether Stage 1 or Stage 2 applies;
 - ii) a transition from a Stage 1 to a Stage 2 critical water supply situation;
 - iii) a transition from a Stage 2 to a Stage 1 critical water supply situation and;
 - iv) the commencement and cessation of a stream flow period.
 - (c) The ROL holder must provide an operational report to the department on commencement of a critical water supply situation.
- (16) Monitoring requirements when the commencement triggers are active, are as follows:
- (a) The ROL holder for the scheme must account for water taken in total under section (9) and section (10).
 - (b) The monitoring program in Attachment 4.3G of the Burnett Basin ROP, subject to the provisions in the approved implementation program for the Barker Barambah Water Supply Scheme.
 - (c) If the ROL holder becomes aware of impacts on aquatic biota, due to water extraction from waterholes or water levels in Bjelke-Petersen Dam, Silverleaf Weir or Joe Sippel Weir being below the minimum operating level in the ROP, the ROL holder will notify the chief executive accordingly.
- (17) These critical water supply arrangements commence on the first business day after the amendment to the ROP takes effect.

2 Rules for releases of water from storages

2.1 General rules

When determining releases to make from a storage, the ROL holder must have regard to the following:

- the volume of water to meet the demand;
- the likely contribution of inflows from tributaries that could assist the supply of demand;
- the likely transmission and operational losses;
- the time required for water to travel to the water allocation holder;
- the volume of water required to be released to maintain nominal operating levels in downstream storages and to maintain levels in waterholes;
- the requirements specified in the environmental management rules;
- the physicochemical attributes of the water being released and the possible impact on downstream aquatic ecosystems;
- the change rate in the reduction of releases that may cause downstream bank slumping or fish stranding; and
- the maximum release rate to minimise in-storage bank slumping.

The ROL holder may incorporate provisions in supply contracts for circumstances when release capacity of a storage is insufficient to meet demand.

2.2 Release rules

Water may be released from a storage up to the maximum discharge capacity of the outlet works to meet downstream demand or passing environmental flows as required.

2.3 Rate of release

The ROL holder must minimise the occurrence of adverse environmental impacts (e.g. fish stranding and bank slumping) by ensuring that any change in the rate of release of water from storages occurs incrementally.

2.4 Reserved for future amendments

2.5 Environmental management rules

2.5.1 Low flow objectives

Low flow releases should be within the constraints of existing infrastructure and are required to minimise deviations from values specified in Schedule 5, Part 1 of the WRP. These low flow releases relate to Barambah Creek at Stonelands and provide, as far as possible, for these flows at Ban Ban.

The performance indicators for low flow EFOs are:

- the percentage of the number of days in the simulation period when flow is less than 2 ML;
- 50 per cent daily exceedence stated for each month;
- 90 per cent daily exceedence stated for each month;
- low flow exceedence duration (10 cm above cease to flow) at Barambah Creek at Stonelands and to provide, as far as possible, these flows at Ban Ban;
- low flow exceedence duration (30 cm above cease to flow) at Barambah Creek at Stonelands and to provide, as far as possible, these flows at Ban Ban; and
- the number of no flow periods for one, three, six and nine months.

2.5.2 Medium to high flow objectives

Medium to high flow EFOs must be complied with for Barambah Creek at Stonelands and to provide, as far as possible, these flows at Ban Ban.

For the values specified in Schedule 5, Part 2 of the WRP the performance indicators for the medium to high flow EFOs are:

- the annual proportional flow deviation;
- the mean annual flow;
- the 1.5 year ARI daily flow volume;
- the 5 year ARI daily flow volume;
- the 20 year ARI daily flow volume; and
- the flow regime class.

The rules set out in this attachment comply with the EFOs for these performance indicators specified in the WRP.

2.5.3 Minimum levels for aquatic refuge and recreational purposes

The minimum storage volume in storages for aquatic and recreational purposes is the dead storage level listed in Section 1.2.

2.6 Reserved for future amendments

2.7 Compensation flow management rules

Flows at the end of the water supply scheme are to be maintained such that there are no more than five periods of at least three months in which flow for each day in the dry period is less than 2 ML a day and there must be no periods of six months or more in which the flow for each day in the dry period is less than 2 ML a day. This is based on hydrologic modelling used in the development of the WRP and the assumed full utilisation of entitlements.

Silverleaf Weir releases

For Silverleaf Weir the following minimum passing flows are to be maintained:

- If the flow at Stonelands is < 15 ML/day for 90 consecutive days, then a passing flow is to be maintained at Silverleaf Weir to ensure a minimum flow of 15 ML/day at Stonelands if flows at West Barambah are greater than 2 ML/day. The total number of days for this release is seven days; and
- If the flow at Stonelands is < 15 ML/day for 120 consecutive days, then a passing flow is to be maintained at Silverleaf Weir to ensure a minimum flow of 15 ML/day at Stonelands. The total number of days for this release is seven days.

There are no additional restrictions on supplemented entitlement holders when low flows are released.

Strategy for low flow releases

A maximum of one day of reaction time is allowed between the trigger conditions for a low flow release occurring and the low flow release commencing. However should the conditions for a low flow release be exceeded on a weekend or public holiday then the low flow release need not commence until the next work day.

2.8 Other operational arrangements for environmental, social or cultural purposes

The ROL holder must adopt operational arrangements that comply with legislative requirements and may adopt additional arrangements on a voluntary basis.

3. Quality of water downstream of storages

Where infrastructure incorporates multilevel inlets, the ROL holder must draw water from the inlets that maximise the quality of the water released.

3.1 Use of watercourses for distribution of water

The ROL holder may use the following watercourses for the purposes of distribution of water:

- Barker Creek from the upper ponded reaches of Bjelke-Petersen Dam to the confluence with Barambah Creek (AMTD 38.2 to AMTD 0); and
- Barambah Creek from AMTD 189.5 downstream to AMTD 85.

The ROL holder must not divert water to any watercourse other than those given above for distribution of water without the prior approval of the chief executive.

**Attachment
4.3F****Barker Barambah Water Supply Scheme:
Water sharing rules**

Water sharing rules must be used to determine:

- announced allocation percentages throughout the year;
- restrictions on the movement of water between water years; and
- seasonal water assignment of water allocations.

There are two types of water allocations proposed to be supplied to water users in the Barker Barambah Water Supply Scheme, namely medium and high priority water allocations. The WRP specifies the performance indicators (WASOs) for the medium and high priority groups.

The water sharing rules specify the way the water resources of the Barker Barambah Water Supply Scheme will be shared between each of the water allocation priority groups.

1 Announced allocation

The announced allocation percentage is the percentage of the water allocation's nominal volume that is announced from time to time by the ROL holder. This percentage sets a limit to the amount of supplemented water which a water allocation holder can divert during the water year as a proportion of the water allocation holder's nominal volume.

The ROL holder is required to calculate announced allocation percentages for each priority group through the use of formulas and associated parameters. Details for each parameter used (including those in brackets in the list of points below) are specified in Section 3.

The amount of water that can be apportioned to each of the priority groups at any given time is determined by taking into account factors such as:

- the time of year an assessment is made;
- the amount of water used by each priority group in the current water year up to the date of the assessment (HPD and MPD);
- the amount of water in the storages;
- allowance for evaporative and seepage losses from the storages;
- allowance for the requirements of high and medium priority water allocations in the current or in future water years, to ensure the required level of performance (RE);
- allowance for transmission and operational losses along the river (TOL); and
- the net amount of water allocation that has been moved into the current water year from the next or previous water year (VIWY).

The values given for the factors applied in the announced allocation formula should not be taken out of the context of their purpose as part of the overall package used to determine the announced allocation.

1.1 General rules

Announced allocation procedures must be used to determine the announced allocation percentages for medium and high priority water allocations.

The announced allocation percentage is the percentage of the water allocation volume that may be taken during the water year. The water year for the Barker Barambah Water Supply Scheme is from 1 July to 30 June in the following year.

Separate assessment of announced allocation percentages must be made for each water allocation priority group.

The initial announced allocation percentage for a water year must be announced within 10 business days after the start of that water year.

Announced allocation percentages must not be greater than 100 per cent.

Announced allocation percentages must be reviewed during the year within 15 working days of when a major inflow occurs. If the announced allocation percentage would increase by more than five percentage points or be increased to 100 per cent, then the announced allocation percentage must be revised.

The announced allocation percentage must not be reduced during a water year. If the formula gives a value below what was previously announced in the same water year, then the previously announced allocation percentage is to be maintained.

If the announced allocation percentage is less than 100 per cent, the announced allocation percentage should be reviewed at intervals not greater than three months.

The ROL holder may revise an announced allocation as an interim value at any time provided the value is not greater than that which would be calculated using the formulas in Section 1.2.

The ROL holder must announce an interim announced allocation immediately prior to the commencement of a water year. The basis/criteria for the determination of the interim announced allocation for the start of the water year must take into account water user requirements, and be made available to water users.

The ROL holder should advise water users of forecast announced allocations, including the details of the parameters used in determining the forecast values. The criteria for forecasting the announced allocations, including the timing, frequency and level of accuracy must take into account water user requirements, and be made available to water users.

The announced allocation percentage will not be increased if Bjelke-Petersen Dam has a storage volume of less than 4 000 ML.

When the ROL holder cannot supply any supplemented water, the holders of water allocations may take water from waterholes only if the water level in the waterhole is above the level that is 0.5 m below the level at which the waterhole naturally overflows or the chief executive is satisfied the taking of water will not adversely affect the cultural and environmental values of the waterhole. These conditions do

not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

1.2 Calculation of announced allocation percentages

Medium priority water allocations

The announced allocation percentage for medium priority water allocations must be determined from the following relationship.

$$AA_m = \left\{ \frac{UV - HPA + HPD - RE - TOL + MPD - VIWY}{MPA} \right\} \times 100$$

The announced allocation percentage determined according to the above formula should be applied equally to all medium priority water allocations. Each medium priority water allocation is receiving an announced allocation volume equal to the percentage multiplied by the water allocation volume.

The parameters used in this relationship are defined in Section 3.

High priority water allocations

Announced allocation percentage for high priority water allocations will be 100 per cent unless the announced allocation percentage for medium priority water allocations is zero, in which case the announced allocation percentage for high priority allocations must be determined using the following formula.

$$AA_h = \left\{ \frac{UV - TOL + HPD - VIWY}{HPA} \right\} \times 100$$

The announced allocation percentage determined according to the above formula should be applied equally to all high priority water allocations. Each high priority water allocation is receiving an announced allocation volume equal to the percentage multiplied by the water allocation volume.

The parameters used in this relationship are defined in Section 3.

2 Restrictions on the taking of water

2.1 Movement of water across water years

The supply of all or part of the water available under an individual high priority water allocation must not be:

- carried over from the current water year to any future year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of the water available under high priority water allocation permitted to be brought forward to a water year must not exceed 1 per cent of the total volume of high priority water allocation in the Barker Barambah Water Supply Scheme.

The supply of all or part of an individual medium priority water allocation must not be:

- carried over from the current water year to any future year, other than to the next water year; or
- brought forward from a future water year to the current water year, other than from the next water year.

The total volume of the water available under medium priority water allocation permitted to be brought forward to a water year must not exceed 1 per cent of the total volume of medium priority water allocation in the Barker Barambah Water Supply Scheme.

The total volume of the water available under medium priority water allocation permitted to be carried over to a water year must not exceed the lesser amount of the following volumes (calculated for the previous water year):

- 20 per cent of the total volume of medium priority water allocation in the Barker Barambah Water Supply Scheme; and
- the unused portion of the announced allocation.

The total volume of water carried over from the previous year must:

- be used before water allocated during the current year;
- be adjusted each month for evaporation loss; and
- set to zero after a nine month period from the commencement of the current water year, whenever Bjelke-Petersen Dam overflows or whenever the level in Bjelke-Petersen Dam falls below 10 000 ML storage capacity.

2.2 Seasonal assignment rules for a water allocation

The ROL holder may give consent to a seasonal water assignment only in relation to a water allocation located in any of the zones listed in Section 1.2 of Attachment 4.3H when the water continues to be supplied from the same zone or between zones within this water supply scheme. From 1 July 2008 the resultant distribution of water supplied in a water year between zones must lie within the ranges shown in Attachment 4.3H, Section 1.2 in Tables 3 and 4.

A water allocation may for the purposes of this section be managed as if it is a water allocation with the purpose of 'any'.

3 Parameters used in calculating announced allocation percentages

Bjelke-Petersen Dam, Joe Sippel Weir and Silverleaf Weir are included in the announced allocation calculation.

AA_m = announced allocation percentage medium priority

That is, the percentage of the nominal volume for a medium priority water allocation that may be taken for the current water year.

AA_h = announced allocation percentage high priority

That is, the percentage of the nominal volume for a high priority water allocation that may be taken for the current water year.

MPA = medium priority water allocations

That is, the volume of medium priority water allocations.

MPD = medium priority diversions

That is, the volume of medium priority water taken in the current water year up to the time of the assessment of the announced allocation (excluding any medium priority water used in the current water year that had been carried over).

HPA = high priority water allocations

That is, the volume of high priority water allocations.

HPD = high priority diversions

That is, the volume of high priority water taken in the current water year up to the time of the assessment of the announced allocation.

UV = useable volume

UV is determined by summing the useable volume of each of the storages included in the assessment of the announced allocation as per the following equations:

$$UV = \text{sum}(UV_{\text{storage}})$$

$$UV_{\text{storage}} = (CV - DSV - SL)$$

$$UV_{\text{storage}} = 0 \text{ if } (CV - DSV - SL) \text{ is less than } 0$$

Where:

UV storage is the useable volume of each storage.

CV is the current volume of the storage.

DSV is the dead storage volume of the storage (as contained in Attachment 4.3D).

SL is the storage losses (calculated using data in Table 1)

That is, the projected storage losses from the storage for the remainder of the water year. Storage losses include lake evaporation and seepage. The storage loss depths to be used for Bjelke-Petersen Dam are given in Table 1. The storage loss volume is calculated by using the value next to the current month multiplied by the current surface area of the storage. Storage losses are calculated only on the volume stored in Bjelke-Petersen Dam.

Table 1: Storage loss depth

Month in which Announced Allocation is Calculated	Bjelke-Petersen Dam
	Storage Loss till end of Water Year (mm)
July	1 846
August	1 759
September	1 647
October	1 503
November	1 317
December	1 113
January	893
February	676
March	497
April	318
May	183
June	81

RE = reserve

In the Barker Barambah scheme reserve (RE) is an allowance included in the resource assessment to prevent an increase in announced allocation being made if the storage is less than 4 000 ML capacity within the water year. It does not represent the storage volume set aside for water supplies and associated losses in future water years. The reserve volumes for calculating the announced allocations are given in Table 2. The value for the current month at the time of the calculation is the value used.

Table 2: Reserve volumes

BP Dam Capacity (ML)	Reserve (ML)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 000	0	0	0	0	0	0	0	0	0	0	0	0
4 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
4 001	0	0	0	0	0	0	0	0	0	0	0	0
134 900	0	0	0	0	0	0	0	0	0	0	0	0

TOL = transmission and operational losses

An allowance for the river transmission and operational losses (TOL) expected to occur in running the system to the end of the current water year. TOL varies with the announced allocation for medium priority water allocations.

The transmission and operational loss allowance to be used is given in the Table 3. TOL is to be linearly interpolated for intermediate values of medium priority announced allocation.

Table 3: Transmission and operational losses

Announced Allocation Medium Priority (%)	Transmission and Operational Loss Allowance (ML)											
	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April	May	June
0%	743	703	631	559	490	428	366	303	248	186	122	55
20%	2 875	2 771	2 550	2201	1 939	1664	1 389	1 135	909	655	463	225
40%	5 006	4 839	4 468	3 842	3 389	2 900	2 412	1 966	1 570	1 124	804	396
60%	7 138	6 906	6 387	5 483	4 838	4 137	3 435	2 797	2 231	1 593	1 145	566
80%	9 270	8 974	8 305	7 125	6 288	5 373	4 458	3 629	2 892	2 062	1 486	737
100%	11 401	11 042	10 224	8 766	7 737	6 609	5 481	4 460	3 552	2 531	1 827	907

The net total volume of water allocation that is moved into a water year (VIWY) from the previous water year, taking into account:

- the volume of water carried over to the current water year from the previous water year;
- the volume of water brought forward from the current water year to the previous water year; and
- the volume of water carried over to the current water year that had been supplied in the current water year as at the date of the assessment of the announced allocation.

Attachment

4.3G**Barker Barambah Water Supply Scheme:
Monitoring program****1 Water quantity****1.1 Stream flow (storage inflow and tailwater flow) and storage water level**

- (1) The ROL holder must record water level and volume, daily inflow and flow data in accordance with Table 1.
- (2) The ROL holder must record continuous time series height and flow data for tailwater flows as indicated in Table 1.

Table 1: Locations where data is required

Location	Gauging station site identification	AMTD km	Water level and volume data	Daily flow data
Ficks Crossing	GS 136212A	141.5		✓
Stonelands	GS 136206A	90.2		✓
Silverleaf Weir headwater	GS 136205A	120.4	✓	
Silverleaf Weir tailwater	GS 136214A	120.3		✓
Bjelke-Petersen Dam headwater	GS 136210A	1.4	✓	
Bjelke-Petersen Dam tailwater ⁷	GS 136211A	1.0		✓
Joe Sippel Weir headwater	GS 136215A	171.8	✓	
Joe Sippel Weir tailwater	GS 136216A	171.7		✓
Joe Sippel Weir (Redgate Pipeline Outlet)	GS 136217A	0.0		✓

1.2 Reserved for future amendments**1.3 Releases from storages**

- (1) This section applies to the following storages:
 - (a) Silverleaf Weir;
 - (b) Bjelke-Petersen Dam; and
 - (c) Joe Sippel Weir.
- (2) The ROL holder must record on a daily basis for each storage outlet:
 - (a) the volume released;
 - (b) the release rate, and for each change in release rate:

⁷ This gauging station only measures release water. Total tailwater discharge will need to be calculated from headwater discharge data and any releases.

- (i) the date and time of the change; and
- (ii) the new release rate.
- (c) the ROL holder must record for each storage outlet the reason for each release and the component volumes⁸ for each release;
- (d) for storages with a multilevel outlet, the water level from which the release was made.

1.4 Announced allocations

The ROL holder must record details of announced allocation determinations referred to in Section 1 of Attachment 4.3F, including:

- (a) the announced allocations for medium and high priority allocations;
- (b) the date announced allocations are determined; and
- (c) the value of each parameter applied for calculating the announced allocation.

1.5 Transfer of water between water years

The ROL holder must record details of the transfer of water between water years.

1.6 Water taken by water users

The ROL holder must record the volume of water taken by each water user per zone as follows:

- (a) the total volume of water taken each quarter;
- (b) the total volume of water entitled to be taken at any time;
- (c) the basis for determining the total volume of water entitled to be taken at any time; and
- (d) the basis for determining the total volume of water entitled to be taken, including adjustments for volumes moved into or out of the water year and seasonal water assignments.

1.7 Seasonal water assignments

The ROL holder must record the details of seasonal water assignment arrangements including:

- (a) the name, volume and location of water seasonally assigned by individuals; and
- (b) the name, volume and location of individuals that received a seasonal assignment.

⁸ Component volumes comprise of the following;

- passing flows under the low flow management strategy, where applicable;
- passing flows under the medium to high flow management strategy, where applicable;
- volume released for water supply in the storage's local supply area;
- an estimate of the volume released to meet transmission and operating losses in the storage's local supply area;
- volume released to maintain the water level in the next downstream storage;
- volume released through fishways;
- total volume released from the storage; and
- for storages with a multilevel outlet, the water level from which the release was made.

1.8 Critical water supply sharing arrangements

The ROL holder must record details of any restrictions on the supply of high priority water due to the application of critical water sharing arrangements including:

- (a) the dates of restrictions;
- (b) the nature of restrictions; and
- (c) the basis of the determination of restrictions including the minimum allocation for high priority users.

2 Impact of storage operation on aquatic ecosystems

The ROL holder must undertake the following to establish any impacts on aquatic ecosystems potentially related to the operation of storages.

2.1 Water quality

The ROL holder must monitor water quality in relation to relevant infrastructure in accordance with the Department's Water Monitoring Data Collection Standard.

2.2 Bank condition

- (1) The ROL holder must inspect banks for evidence of collapse and/or erosion within the ponded area and downstream of storages following instances of rapid water level changes or large flows through storages, or other occasions when collapse and/or erosion of banks may be likely.
- (2) The distance downstream is the distance of influence of storage operations.

2.3 Fish stranding

The ROL holder must record and assess reported instances of fish stranding in watercourses and ponded areas associated with the operation of infrastructure of the ROL holder as listed in Attachment 4.3D to determine if any instance is associated with the operation of that infrastructure.

3 Reporting

Reporting requirements

There are four levels of reporting for ROL holders:

- (1) Quarterly reports;
- (2) Annual reports for the previous water year;
- (3) Operational reports; and
- (4) Emergency reports.

Unless otherwise specified in the ROP, reporting must be consistent with the Department's Water Monitoring Data Reporting Standard.

3.1 Quarterly reporting

The ROL holder must submit a quarterly report to the chief executive after the end of each quarter, of every water year. The report should contain the following data or information:

- (a) verified stream flow, storage inflow and water level – all records referred to in Section 1.1;
- (b) releases from storages – the daily volumes released referred to in Section 1.3;
- (c) water quality – all records referred to in Section 2.1; and
- (d) a summary of bank condition monitoring carried out in accordance with Section 2.2, which may include incidences of slumping.

3.2 Annual report

The ROL holder must submit an annual report to the chief executive after the end of each water year.

Water quantity reporting

- (1) The annual report must include a summary of:
 - (a) announced allocation determinations including:
 - (i) an evaluation of the announced allocation procedures and outcomes; and
 - (ii) the date and value for each announced allocation;
 - (b) instances where critical water supply sharing rules have been implemented, including:
 - (i) an evaluation of the effectiveness of the rules and outcomes; and
 - (ii) the commencement date(s) and time period(s) for which the rules were in effect;
 - (c) the total annual volume of water taken by all water users, specified by zone, namely:
 - (i) the total volume of supplemented water taken;
 - (ii) the total volume of supplemented water entitled to be taken; and
 - (iii) the basis for determining the volume entitled to be taken;
 - (d) seasonal water assignments, specified by scheme, namely:
 - (i) the total number of seasonal water assignment arrangements; and
 - (ii) the total volume of water seasonally assigned.
- (2) The annual report must include:
 - (a) all details of changes to the storage and delivery infrastructure, or the operation of storages and delivery infrastructure that may impact on compliance with rules in this plan; and
 - (b) details of any new monitoring devices used such as equipment to measure stream flow.
- (3) The annual report must include a discussion on any other issues that arose as a result of the implementation and application of the rules and requirements in this plan.
- (4) The annual report must include water taken by each water user as follows:
 - (a) the total volume of water taken for each zone;
 - (b) the total volume entitled to be taken for each zone; and
 - (c) the basis for determining the total volume of water entitled to be taken.

Impact of storage operation on water quality

- (1) The annual report must include:
 - (a) a summary of environmental considerations made by the ROL holder in making operational and release decisions; and
 - (b) a summary of the environmental outcomes of the decision including any adverse environmental impacts.
- (2) The annual report must include a summary of bank condition and fish stranding monitoring and assessment including:
 - (a) results of investigations of bank slumping or erosion identified in ponded areas and/or downstream of storages;
 - (b) results of any investigations of fish stranding downstream of storages; and,
 - (c) changes to operation of storages to reduce instances of bank slumping, erosion or fish stranding.
- (3) The annual report must include a discussion and assessment of the following water quality issues:
 - (a) water quality in each storage;
 - (b) thermal and chemical stratification in each storage;
 - (c) contribution of the storage and its management to the quality of water released;
 - (d) cumulative effect of successive storages on water quality;
 - (e) Cyanobacterial population changes in response to stratification in each storage; and
 - (f) any changes to the monitoring program as a result of evaluation of the data.

3.3 Operational report

- (1) The ROL holder must notify the chief executive within one business day:
 - (a) upon becoming aware of any of the following operational incidents:
 - (i) a non-compliance by the ROL holder with the rules given in this plan likely to affect the outcomes of the plan; and
 - (ii) instances when a waterhole is drawn down 0.5m below cease to flow level; and
 - (iii) instances of fish stranding, blue-green algae growth or bank slumping within the ponded areas or downstream of storages associated with the operation of the Barker Barambah Water Supply Scheme.
 - (b) upon making a decision relating to:
 - (i) an initial announced allocation and/or its revision;
 - (ii) any restrictions on the taking of medium priority water;
 - (iii) upon activation of critical water supply arrangements; and
 - (iv) details of any arrangements for addressing circumstances where they are unable to supply water allocations.
- (2) The ROL holder must provide the chief executive with:
 - (a) a report on the occurrence of any of the operational incidents discussed in Subsection (1)(a). The report must include details of the incident, conditions under which the incident occurred and any responses or activities carried out as a result of the incident;

- (b) a summary of any other non-compliances by the ROL holder with the rules given in this plan;
 - (c) relevant supporting information used in making a decision relating to:
 - (i) an initial announced allocation and/or its revision; and
 - (ii) any restrictions on the taking of medium priority water; and
 - (d) details of any seasonal water assignments approved by the ROL holder.
- (3) The ROL holder must provide within ten business days the chief executive with a report of supplemented water being taken through a departmental water meter. The ROL holder must report the meter readings at the start and finish of the taking of water and the approved quantities of supplemented water taken.

3.4 Emergency report⁹

In an emergency where the licence holder cannot comply with the conditions of the ROP as a result of the emergency, the ROL holder must:

- (a) notify the chief executive; and
- (b) provide a report to the chief executive including:
 - (i) details of the emergency;
 - (ii) conditions under which the emergency occurred;
 - (iii) any responses or activities carried out as a result of the emergency; and
 - (iv) any rules specified in this plan that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

⁹ This does not preclude requirements for dam safety under the *Water Act 2000* and any other applicable legislation

Attachment
4.3H
**Barker Barambah Water Supply Scheme:
 Water allocation change rules**

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.

1.1 Location

A water allocation holder may apply to change the location of the water allocation from one of the following zones to any other of those zones:

- between HB and HZ, HC, HD, HE, JA;
- between HC and HB, HZ, HD, HE, JA;
- between HD and HB, HZ, HC, HE, JA;
- between HE and HB, HZ, HC, HD, JA;
- between HZ and HB, HC, HD, HE, JA; or
- between JA and HB, HZ, HC, HD, HE.

The proposed change is not a permitted change if the proposed change would result in a distribution of medium or high priority water allocations not provided for in Tables 1 and 2.

Table 1: Permitted distributions of high priority water allocations in the Barker Barambah Water Supply Scheme by zone

Zones	HB	HZ	HC	HD	HE	JA
Minimum nominal volume of high priority water allocation (ML)	0	0	450	1 786	0	0
Maximum nominal volume of high priority water allocation (ML)	0	0	450	1 786	0	0

Table 2: Permitted distributions of medium priority water allocations in the Barker Barambah Water Supply Scheme by zone

Zones	HB	HZ	HC	HD	HE	JA
Minimum nominal volume of medium priority water allocation (ML)	9 633	4 953	6 147	777	4 343	24
Maximum nominal volume of medium priority water allocation (ML)	11 002	6 659	8 662	2 577	7 040	2 721
Minimum nominal volume of medium priority water allocation (ML) for combined zones	9 633	4 953	6 147	777	5 314	
Maximum nominal volume of medium priority water allocation (ML) for combined zones	16 661		8 662	2 577	7 314	
	11 002	15 321				

1.2 Seasonal assignment

A water allocation holder may apply for a seasonal change to the location of the water allocation from one of the following zones to any other of those zones:

- between HB and HZ, HC, HD, HE, JA;
- between HC and HB, HZ, HD, HE, JA;
- between HD and HB, HZ, HC, HE, JA;
- between HE and HB, HZ, HC, HD, JA;
- between HZ and HB, HC, HD, HE, JA; or
- between JA and HB, HZ, HC, HD, HE.

The proposed seasonal change is not a permitted change if the proposed change would result in a use of medium or high priority water allocations not provided for in Tables 3 and 4.

Table 3: Permitted use of high priority water allocations in the Barker Barambah Water Supply Scheme by zone

Zones	HB	HZ	HC	HD	HE	JA
Minimum nominal volume of high priority water allocation (ML)	0	0	450	1 786	0	0
Maximum nominal volume of high priority water allocation (ML)	0	0	450	1 324	0	0

Table 4: Permitted use of medium priority water allocations in the Barker Barambah Water Supply Scheme by zone

Zones	HB	HZ	HC	HD	HE	JA
Minimum nominal volume of medium priority water allocation (ML)	9 632	4 953	6 147	777	4 343	24
Maximum nominal volume of medium priority water allocation (ML)	11 002	6 659	8 662	2 577	7 040	2 721
Minimum nominal volume of medium priority water allocation (ML) for combined zones	9 632	4 953	6 147	777	5 314	
Maximum nominal volume of medium priority water allocation (ML) for combined zones	16 661		8 662	2 577	7 314	
	11 002	15 321				

1.3 Purpose

A water allocation holder may apply to change the purpose from 'any' to 'agriculture' or from 'agriculture' to 'any'.

1.4 Subdivision and amalgamation

A water allocation holder may apply to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into a single water allocation.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change to a location that is not mentioned in Tables 1, 2, 3 or 4.

2.2 Priority group

A change to a priority group that is not 'medium' or 'high'.

2.3 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.4 Nominal volume

A change to the nominal volume other than a change that is a consequence of a change to another attribute of a water allocation.

2.5 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on other interests including entitlement holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

4 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register. However, the registrar will not register the change until a supply contract has been entered into between the water allocation holder and the ROL holder (e.g. SunWater) for supply of the changed water allocation.

Attachment

4.4A

**Boyne River and Tarong Water Supply
Scheme: Reserved for future amendments**

Attachment
4.4B

**Boyne River and Tarong Water Supply
Scheme: Reserved for future amendments**

Attachment
4.4C

**Boyne River and Tarong Water Supply
Scheme: Reserved for future amendments**

Attachment
4.4D
**Boyne River and Tarong Water Supply
Scheme: Infrastructure details**
Table 1: Boondooma Dam – Boyne River – AMTD 86.7

Description of Water Infrastructure	
Main embankment	Concrete faced rock-fill dam
Full supply level	EL 280.4 m AHD
Saddle dam(s)	Nil
Fabridam	Nil
Gates	Nil
Storage Volume and Surface Area	
Full supply volume	204 200 ML
Dead storage volume	8 360 ML
Storage curves/tables	Drawing no: A3-211850A
Spillway Arrangement	
Description of works	The spillway consists of a concrete crest and largely unlined chute excavated through rock on the northern abutment of Sandy Creek. Softer rocks in the chute are capped with concrete.
Spillway level	EL 280.4 m AHD
Spillway width	115 m
Discharge characteristics	Drawing no: A3-63064
River Inlet/Outlet Works	
Description of works	A single 2159 mm diameter pipe with a bellmouth from the diversion tunnel plug with a bifurcation into two 1 600 mm outside diameter (OD) offtakes which reduce to 1 200 mm OD and finally to 750 mm OD connected to 750 mm diameter cone dispersion valves providing control, discharging into a dissipater chamber. Shut off is provided by 1 200 mm diameter guard valves.
Multilevel inlet	Inlet works consist of a reinforced concrete inlet tower that is connected to a 4 000 mm inside diameter (ID) reinforced concrete shaft that has an inlet diameter of 2 200 mm at the base of the tower. The shaft is connected to a 4 000 mm ID reinforced concrete diversion tunnel.
Cease to flow level	EL 252 m AHD
Discharge characteristics	The estimated maximum discharge capacity of the outlet is 1 330 ML/day.
Fish Transfer System	
Description of works	Nil

Attachment
4.4E
**Boyne River and Tarong Water Supply
Scheme: Rules for operation of infrastructure**

1 Rules for operation of storages and waterholes

1.1 Reserved for future amendments

1.2 Minimum operating levels for storages

The minimum operating level for a storage is the level associated with the dead storage volume for that storage, as specified in Table 1.

Table 1: Minimum operating levels for storages

Storage	Minimum Operating Level (m AHD)
Boondooma Dam	252

An objective of setting the minimum operating level is to provide refuge habitat.

Water must not be released or supplied from a given storage when the water level in that storage is at or below its minimum operating level, unless otherwise authorised by the chief executive.

The ROL holder may apply to the chief executive for authorisation to operate a given storage below its minimum operating level. The chief executive may authorise, with or without conditions, the ROL holder to operate that storage below its minimum operating level.

1.3 Minimum levels in waterholes not within the ponded area of a storage

This section applies to waterholes within the extent of the Boyne River and Tarong Water Supply Scheme that are not located within the ponded area of a storage where drawdown of the waterhole may be desired for supply of water allocations.

The water level in any waterhole should where possible be maintained at or near the cease to flow level for that waterhole. Where the outlet discharge capacity of the storage upstream of the waterhole is insufficient to maintain the water level in the waterhole at or near its cease to flow level, the waterhole may be drawn down to 0.5 m below its cease to flow level. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

1.4 Critical water supply arrangements

Critical water supply arrangements make provision for the supply of water during periods of critical water shortage (e.g. periods when high priority water cannot be supplied). When the commencement triggers in the critical water supply arrangements are activated, the critical water supply arrangements apply, and relevant sections in the ROP cease to apply for the critical water supply arrangement period. When the cessation triggers in the critical water supply arrangements are activated, the ROP fully applies.

1.4.1 Approved critical water supply arrangements

- (1) A critical water supply situation starts and ends when the ROL holder notifies under Section (9) of these critical water supply arrangements.
- (2) The triggers for commencement of each stage of a critical water supply situation are as follows:
 - (a) Stage 1 commences when the storage level in Boondooma Dam is estimated to be less than or equal to EL 268.7 m AHD (approximately 70 000 ML).
 - (b) Stage 2 commences when the announced allocation for high priority water allocations, calculated in accordance with Attachment 4.4F, s.1.2, is less than 100 per cent.
 - (c) Stage 3 commences when the storage level in Boondooma Dam is estimated to be less than or equal to EL 247.2 m AHD (approximately 3 360 ML) or announced allocation for high priority, as calculated in accordance with Section (7), is 0 per cent.
- (3) The triggers for the cessation of each stage of a critical water supply situation are as follows:
 - (a) Stage 1 ceases when the announced allocation for medium priority water allocations, calculated in accordance with Attachment 4.4F, s.1.2, is greater than zero per cent, and the storage level in Boondooma Dam is greater than EL 268.7 m AHD (approximately 70 000 ML).
 - (b) Stage 2 ceases when the announced allocation for high priority water allocations, calculated in accordance with Attachment 4.4F, s.1.2, is equal to 100 per cent.
 - (c) Stage 3 ceases when the storage level in Boondooma Dam is estimated to be greater than or equal to EL 249.2 m AHD (approximately 5 000 ML).
- (4) The arrangements that will be applied to Stage 1 are as follows:
 - (a) Announced allocation percentages for high priority and medium priority water allocations will be calculated in accordance with Attachment 4.4F, s.1.2.
 - (b) High priority water allocations will be supplied.
 - (c) Medium priority access will be suspended except for water that can be accessed through bed sands and/or waterholes in accordance with Attachment 4.4F, s.1.1.

- (5) The arrangements that will be applied to Stage 2 are as follows:
- (a) Announced allocations for high priority water allocation holders will be made in accordance with Section (7).
 - (b) High priority water allocations will be supplied.
 - (c) Medium priority access will be suspended except for water that can be accessed through bed sands and/or waterholes in accordance with Attachment 4.4F, s.1.1.
 - (d) Boondooma Dam can be drawn down below the minimum operating level of EL 252 m AHD (approximately 8 360 ML).
- (6) The arrangements that will be applied to Stage 3 are as follows:
- (a) High priority access will be suspended. The taking of water from the remaining water stored in Boondooma Dam, to meet essential water supply requirements, will be considered under the provisions of the *Water Act 2000*.
 - (b) Medium priority access will be suspended except for water that can be accessed through bed sands and/or waterholes in accordance with Attachment 4.4F, s.1.1.
 - (c) Boondooma Dam can be drawn down below the minimum operating level of EL 252 m AHD (approximately 8 360 ML).
- (7) The announced allocation for high priority water allocations in the Boyne River and Tarong Water Supply Scheme is to be calculated for Stage 2 as follows:

$$AA_h = \frac{(UV^{CW2} + HPD)}{HPA} \times 100$$

Where UV^{CW2} is the usable volume during Stage 2 of a critical water supply situation as defined below:

UV^{CW2} is the usable storage volume of Boondooma Dam

$$UV^{CW2} = (CV - COV - SL)$$

$$UV^{CW2} = 0 \text{ if } (CV - COV - SL) \text{ is less than zero}$$

Where:

CV is the current volume in Boondooma Dam

COV is the critical operating volume of Boondooma Dam (with the addition of a vacuum pump) = 3 360 ML

SL is the projected storage loss (calculated using data in Table 1, Attachment 4.4F) from Boondooma Dam for the remainder of the water year. Storage losses include lake evaporation and seepage. The storage loss depths to be used are given in Table 1. The depth for the month in question is used with the relevant storage curve and current storage volume to determine the resulting storage loss.

- (8) Taking water under a water allocation:
- (a) The total volume of water taken under a water allocation in a water year must not be more than the nominal volume for the water allocation.
 - (b) The volume of water taken under a water allocation in a water year, other than from bed sands or waterholes, must not exceed the nominal volume of the water allocation multiplied by the announced allocation and divided by 100.
- (9) Notification arrangements:
- (a) The ROL holder must notify the water allocation holders of the commencement and cessation of Stage 1 of a critical water supply situation.
 - (b) The ROL holder must notify the high priority water allocation holders of the commencement and cessation of Stages 2 and 3 of a critical water supply situation.
 - (c) The ROL holder must notify the department within one business day of becoming aware of the commencement and cessation of each stage of a critical water supply situation.
 - (d) The ROL holder must provide an operational report to the department on commencement of each stage of a critical water supply situation.
- (10) Monitoring requirements when the commencement triggers are active are as follows:
- (a) The ROL holder for the scheme must account for water taken in total.
 - (b) The ROL holder must monitor in accordance with Attachment 4.4G.
 - (c) If the ROL holder becomes aware of impacts on aquatic biota when the water level in Boondooma Dam is below the minimum operating level, the ROL holder will notify the chief executive accordingly.
- (11) A medium priority water allocation holder may only take water from a waterhole if the water level in the waterhole is above the level that is 0.5 m below the level at which the waterhole naturally overflows.
- (12) These critical water supply arrangements commence on the first business day after the amendment to the ROP takes effect.

2 Rules for releases of water from storages

2.1 General rules

When determining releases to make from a storage, the ROL holder must have regard to the following:

- the volume of water to meet the demand;
- the likely contribution of inflows from tributaries that could assist the supply of demand;
- the likely transmission and operational losses;
- the time required for water to travel to the water allocation holder;
- the volume of water required to be released to maintain nominal operating levels in downstream storages and to maintain levels in waterholes;
- the requirements specified in the environmental management rules;

- the physicochemical attributes of the water being released and the possible impact on downstream aquatic ecosystems;
- the change rate in the reduction of releases that may cause downstream bank slumping or fish stranding; and
- the maximum release rate to minimise in-storage bank slumping.

The ROL holder may incorporate provisions in supply contracts for circumstances when release capacity of a storage is insufficient to meet demand.

2.2 Release rules

Water may be released from a storage up to the maximum discharge capacity of the outlet works to meet downstream demand or passing environmental flows as required.

2.3 Rate of release

The ROL holder must minimise the occurrence of adverse environmental impacts (e.g. fish stranding and bank slumping) by ensuring that any change in the rate of release of water from storages occurs incrementally.

2.4 Reserved for future amendments

2.5 Environmental management rules

2.5.1 Low flow objectives

Low flow releases should be within the constraints of existing infrastructure and are required to minimise deviations from values specified in Schedule 5, Part 1 of the WRP for the Boyne River at Derra gauging station.

The performance indicators for low flow EFOs are:

- the percentage of the number of days in the simulation period when flow is less than 2 ML;
- 50 per cent daily exceedence stated for each month;
- 90 per cent daily exceedence stated for each month;
- low flow exceedence duration (10 cm above cease to flow);
- low flow exceedence duration (30 cm above cease to flow); and
- the number of no flow periods for one, three, six and nine months.

2.5.2 Medium to high flow objectives

Medium to high flow EFOs must comply with the values specified in Schedule 5, Part 2 of the WRP at the Boyne River at Derra gauging station.

The performance indicators for the medium to high flow EFOs are:

- the annual proportional flow deviation;
- the mean annual flow;
- the 1.5 year ARI daily flow volume;
- the 5 year ARI daily flow volume;

- the 20 year ARI daily flow volume; and
- the flow regime class.

The rules set out in this attachment comply with the EFOs for these performance indicators specified in the WRP.

2.5.3 Minimum levels for aquatic refuge and recreational purposes

The minimum storage volume in storages for aquatic and recreational purposes is the dead storage level listed in Section 1.2.

2.6 Reserved for future amendments

2.7 Other operational arrangements for environmental, social or cultural purposes

The ROL holder must adopt operational arrangements that comply with legislative requirements and may adopt additional arrangements on a voluntary basis.

3. Quality of water downstream of storages

Where infrastructure incorporates multilevel inlets, the ROL holder must draw water from the inlets that maximise the quality of the water released.

3.1 Use of watercourses for distribution of water

The ROL holder may use the following watercourses for the purposes of distribution of water:

- the Boyne River from the ponded reaches of Boondooma Dam to the confluence with the Burnett River (AMTD 110.5 to AMTD 0);
- the part of the Stuart River directly benefited by the pondage of Boondooma Dam (AMTD 0 to AMTD 19.8).

The ROL holder must not divert water to any watercourse other than those given above for distribution of water without the prior approval of the chief executive.

**Attachment
4.4F****Boyne River and Tarong Water Supply
Scheme: Water sharing rules**

Water sharing rules must be used to determine:

- announced allocation percentages throughout the year;
- restrictions on the movement of water between water years; and
- seasonal water assignment of water allocations.

There are two types of water allocations proposed to be supplied to water users in the Boyne River and Tarong Water Supply Scheme, namely medium and high priority water allocations. The WRP specifies the performance indicators (WASOs) for the medium and high priority groups.

The water sharing rules specify the way the water resources of the Boyne River and Tarong Water Supply Scheme will be shared between each of the water allocation priority groups.

1 Announced allocation

The announced allocation percentage is the percentage of the water allocation's nominal volume that is announced from time to time by the ROL holder. This percentage sets a limit to the amount of supplemented water which a water allocation holder can divert during the water year as a proportion of the water allocation holder's nominal volume.

The ROL holder is required to calculate announced allocation percentages for each priority group through the use of formulas and associated parameters. Details for each parameter used (including those in brackets in the list of points below) are specified in Section 3.

The amount of water that can be apportioned to each of the priority groups at any given time is determined by taking into account factors such as:

- the time of year an assessment is made;
- the amount of water used by each priority group in the current water year up to the date of the assessment (HPD and MPD);
- the amount of water in the storages;
- allowance for evaporative and seepage losses from the storages;
- allowance for the requirements of high and medium priority water allocations in the current or in future water years; and
- allowance for transmission and operational losses along the river (TE).

The values given for the factors applied in the announced allocation formula should not be taken out of the context of their purpose as part of the overall package used to determine the announced allocation.

1.1 General rules

Announced allocation procedures must be used to determine the announced allocation percentages for medium and high priority water allocations.

The announced allocation percentage is the percentage of the water allocation volume that may be taken during the water year. The water year for the Boyne River and Tarong Water Supply Scheme is from 1 July to 30 June in the following year.

Separate assessment of announced allocation percentages must be made for each water allocation priority group.

The initial announced allocation percentage for a water year must be announced within 10 business days after the start of that water year.

Announced allocation percentages must not be greater than 100 per cent.

Announced allocation percentages must be reviewed during the year within 15 working days of when a major inflow occurs. If the announced allocation percentage would increase by more than five percentage points or be increased to 100 per cent, then the announced allocation percentage must be revised.

The announced allocation percentage must not be reduced during a water year. If the formula gives a value below what was previously announced in the same water year, then the previously announced allocation percentage is to be maintained.

If the announced allocation percentage is less than 100 per cent, the announced allocation percentage should be reviewed at intervals not greater than three months.

The ROL holder may revise an announced allocation as an interim value at any time provided the value is not greater than that which would be calculated using the formulas in Section 1.2.

The ROL holder must announce an interim announced allocation immediately prior to the commencement of a water year. The basis/criteria for the determination of the interim announced allocation for the start of the water year must take into account water user requirements, and be made available to water users.

The ROL holder should advise water users of forecast announced allocations, including the details of the parameters used in determining the forecast values. The criteria for forecasting the announced allocations, including the timing, frequency and level of accuracy must take into account water user requirements, and be made available to water users.

Releases are to be made from Boondooma Dam to meet demands from water allocation holders downstream of Boondooma Dam until Boondooma Dam storage is less than or equal to an EL 268.67 m AHD. No releases are to be made from Boondooma Dam to meet downstream demands below this storage level.

When the ROL holder cannot supply any supplemented water, water allocation holders may take water from waterholes only if the water level in the waterhole is above the level that is 0.5 m below the level at which the waterhole naturally overflows or the chief executive is satisfied the taking of water will not adversely affect the cultural and environmental values of the waterhole. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

The *Water Regulation 2002*, made under s.1006(2) of the Water Act, declares water in the aquifer underlying the Boyne River and Tarong Water Supply Scheme, to be water in the respective watercourses. When the ROL holder cannot supply any supplemented water, water allocation holders may take water from the bed sands of the respective watercourses. The volume of water taken in the relevant water year must not exceed the water allocation holder's nominal volume.

Excavation work carried out to enhance the efficiency of access to water in the bed sands will require appropriate authorisation under the provision of the Water Act or the *Integrated Planning Act 1997*.

1.2 Calculation of announced allocation percentages

Medium priority water allocations

The following general formula will be used in the computation of the announced allocation.

The announced allocation level for medium priority allocations will be 100 per cent if

$$CV \geq V_{cut} + MPA + HPA + SL + TOL - MPD - HPD$$

Otherwise, the announced allocation level for medium priority allocations has to be calculated using the following formula:

$$AA_m = \left\{ \frac{(UV_{cut} - HPA_{cut} + MPD - TOL)}{MPA} \right\} \times 100$$

if Boondooma Dam is above EL 268.67 m AHD

and

$$AA_m = 0 \text{ if Boondooma Dam is equal to or below EL 268.67 m AHD}$$

The parameters used in this relationship are defined in Section 3.

The announced allocation percentage for medium priority water allocations will be determined using the following rules:

- The announced allocation percentage for medium priority water allocations is 100 per cent unless it is likely that Boondooma Dam storage elevation will fall below EL 268.67 m AHD during the water year.

- In the above situation, the announced allocation will be less than 100 per cent. The announced allocation percentage will be based on available storage above EL 268.67 m AHD being shared between medium and high priority allocations, provided that the announced allocation for high priority allocation is not less than 100 per cent.
- If the storage elevation is less than 268.67 m AHD, then the announced allocation for medium priority water allocations will be zero.
- If the storage elevation falls below 268.67 m AHD during a water year, then any remaining unused announced allocation will not be available for use.
- The announced allocation percentage determined according to the above rules should be applied equally to all medium priority water allocations. Each medium priority water allocation is receiving an announced allocation volume equal to the percentage multiplied by the water allocation volume.

The ROL holder will maintain and report appropriate records of all announced allocation decisions, including details of calculations and assumptions.

High priority water allocations

Announced allocation percentage for high priority water allocations will be 100 per cent unless the announced allocation percentage for medium priority water allocations is zero, in which case the announced allocation percentage for high priority allocations must be determined from the following relationship.

$$AA_h = \left\{ \frac{(UV + HPD)}{HPA} \right\} \times 100$$

The parameters used in this relationship are defined in Section 3.

The announced allocation percentage determined according to the above rules should be applied equally to all high priority water allocations. Each high priority water allocation is receiving an announced allocation volume equal to the percentage multiplied by the water allocation volume.

2 Restrictions on the taking of water

2.1 Seasonal assignment rules for a water allocation

The ROL holder may give consent to a seasonal water assignment only in relation to a water allocation located in any of the zones listed in Section 1.2 of Attachment 4.4H when the water continues to be supplied from the same zone or between zones within this water supply scheme. From 1 July 2008 the resultant distribution of water supplied in a water year between zones must lie within the ranges shown in Attachment 4.4H, Section 2.1 in Tables 3 and 4.

A water allocation may for the purposes of this section be managed as if it is a water allocation with the purpose of 'any'.

3 Parameters used in calculating announced allocation percentages

AA_m = announced allocation percentage medium priority

That is, the percentage of the nominal volume for a medium priority water allocation that may be taken for the current water year.

AA_h = announced allocation percentage high priority

That is, the percentage of the nominal volume for a high priority water allocation that may be taken for the current water year.

MPA = medium priority water allocations

That is, the volume of medium priority water allocations.

MPD = medium priority diversions

That is, the volume of water taken by medium priority water allocation holders in the current water year up to the time of the resource assessment.

HPA = high priority water allocations

That is, the volume of high priority water allocations.

HPD = high priority diversions

That is, the volume of water taken by high priority water allocation holders in the current water year up to the time of the resource assessment.

UV = useable volume

That is, the useable volume of Boondooma Dam at the time of the announced allocation computation and is determined as per the following equation:

$$UV = CV - DSV - SL$$

$$UV = 0 \text{ if } (CV - DSV - SL) \text{ is less than zero}$$

Where:

CV is the current volume in Boondooma Dam

DSV is the dead storage of Boondooma Dam

SL = storage losses from the current month to the end of water year

That is, the projected storage losses from the Boondooma Dam for the remainder of the water year. Storage losses include lake evaporation and seepage. The storage loss depths for the remainder of the water year to be used for Boondooma Dam are given in Table 1 (Column 2). The storage loss volume is calculated by using the value next to the current month multiplied by the current surface area of the storage.

Table 1: Storage loss depth

Month in which Announced Allocation is Calculated	Boondooma Dam	
	Storage Loss till end of Water Year (mm)	Storage Loss on each month (mm)
Column 1	Column 2	Column 3
July	1 845	86
August	1 759	112
September	1 647	144
October	1503	186
November	1 317	204
December	1 113	220
January	893	217
February	676	179
March	497	179
April	318	135
May	183	102
June	81	81

UV_{cut} = useable volume above EL 268.67 m AHD being shared between medium and high priority allocations

That is, the useable volume of Boondooma Dam above EL 268.67 m AHD being shared between medium and high priority allocations at the time of the announced allocation computation is determined as per the following equation:

$$UV_{cut} = CV - V_{cut} - SL_{cut}$$

V_{cut} = Cut-off volume of Boondooma Dam for medium priority supplies

That is, the volume of Boondooma Dam at cut-off level of 268.67 m AHD below which no releases are to be made from Boondooma Dam to meet downstream medium priority demand.

SL_{cut} = projected storage loss to the sooner of the month when Boondooma Dam is expected to fall below the cut-off volume (V_{cut}) and the end of the current water year.

That is, the projected storage loss from the time of the announced allocation computation to the sooner of the month when Boondooma Dam is expected to fall below EL 268.67m AHD and the end of the current water year. The projected storage loss is to be calculated as the sum of the monthly storage loss volumes which are based on the storage loss depths given in Table 1 (Column 3). Each monthly storage loss volume (ML) is calculated by multiplying the monthly storage loss depth (mm) by the projected surface area of the storage (km²) for the beginning of that month.

HPA_{cut} = high priority demands from the current month to the month when Boondooma Dam is expected to fall below V_{cut} volume.

That is, HPA_{cut} is high priority demands from the current month, the month of resource assessment, to the month when Boondooma Dam is expected to fall below 268.67 m AHD.

TOL = transmission and operation losses

That is, TOL is an allowance for the river transmission and operational losses expected to occur in running the system to the end of the current water year. TOL varies with the announced allocation for medium priority water allocations.

The transmission and operational loss allowance to be used is given in Table 2. TOL is to be linearly interpolated for intermediate values of medium priority announced allocation in the Boyne River and Tarong Water Supply Scheme.

Table 2: Transmission and operational losses

Month in which Announced Allocation is Calculated	Transmission and Operational Losses			
	At AAm = 0%	At AAm = 25%	At AAm = 75%	At AAm = 100%
July	0	1 109	3 327	4 436
August	0	1 031	3 094	4 126
September	0	954	2 861	3 815
October	0	876	2 629	3 505
November	0	765	2 296	3 061
December	0	665	1 996	2 662
January	0	555	1 664	2 218
February	0	433	1 298	1 730
March	0	333	998	1 331
April	0	222	665	887
May	0	144	433	577
June	0	67	200	266

Attachment 4.4G

Boyne River and Tarong Water Supply Scheme: Monitoring program

1 Water quantity

1.1 Stream flow (storage inflow and tailwater flow) and storage water level

- (1) The ROL holder must record water level and volume and flow data in accordance with Table 1.
- (2) The ROL holder must record continuous time series height and flow data for tailwater flows as indicated in Table 1.

Table 1: Locations where data is required

Location	Gauging Station Site Identification	AMTD km	Water level and volume data	Daily flow data
Boondooma Dam headwater	GS 136316A	86.7	✓	
Boondooma Dam tailwater ¹⁰	GS 136317A	86.4		✓

1.2 Releases from storages

- (1) The ROL holder must record on a daily basis for each storage outlet:
 - (a) the volume released;
 - (b) the release rate, and for each change in release rate:
 - (i) the date and time of the change; and
 - (ii) the new release rate.
 - (c) the ROL holder must record for each storage outlet the reason for each release and the component volumes¹¹ for each release;
 - (d) the water level in the storage from which the release was made.

¹⁰ This gauging station only measures release water. Total tailwater discharge will need to be calculated from headwater discharge data and any releases.

¹¹ Component volumes comprise of the following;

- passing flows under the low flow management strategy, where applicable;
- passing flows under the medium to high flow management strategy, where applicable;
- volume released for water supply in the storage's local supply area;
- an estimate of the volume released to meet transmission and operating losses in the storage's local supply area;
- volume released to maintain the water level in the next downstream storage;
- volume released through fishways;
- total volume released from the storage; and
- for storages with a multilevel outlet, the water level from which the release was made.

1.3 Announced allocations

The ROL holder must record details of announced allocation determinations referred to in Section 1 of Attachment 4.4F, including:

- (a) the announced allocations for medium and high priority allocations;
- (b) the date announced allocations are determined; and
- (c) the value of each parameter applied for calculating the announced allocation.

1.4 Reserved for future amendments

1.5 Water taken by water users

The ROL holder must record the volume of water taken by each water user per zone as follows:

- (a) the total volume of water taken each quarter;
- (b) the total volume of water entitled to be taken at any time;
- (c) the basis for determining the total volume of water entitled to be taken at any time; and
- (d) the basis for determining the total volume of water entitled to be taken, including adjustments for volumes moved into or out of the water year and seasonal water assignments.

1.6 Seasonal water assignments

The ROL holder must record the details of seasonal water assignment arrangements including:

- (a) the name, volume and location of water seasonally assigned by individuals; and
- (b) the name, volume and location of individuals that received a seasonal assignment.

2 Impact of storage operation on aquatic ecosystems

The ROL holder must undertake the following to establish any impacts on aquatic ecosystems potentially related to the operation of storages.

2.1 Water quality

The ROL holder must monitor water quality in relation to relevant infrastructure in accordance with the Department's Water Monitoring Data Collection Standard.

2.2 Bank condition

- (1) The ROL holder must inspect banks for evidence of collapse and/or erosion within the ponded area and downstream of Boondooma Dam following instances of rapid water level changes or large flows through Boondooma Dam, or other occasions when collapse and/or erosion of banks may be likely.

- (2) The distance downstream is the distance of influence of storage operations.

2.3 Fish stranding

The ROL holder must record and assess reported instances of fish stranding in watercourses and ponded areas associated with the operation of infrastructure of the ROL holder as listed in Attachment 4.4D to determine if any instance is associated with the operation of that infrastructure.

3 Reporting

Reporting requirements

There are four levels of reporting for ROL holders:

- (1) Quarterly reports;
- (2) Annual reports for the previous water year;
- (3) Operational reports; and
- (4) Emergency reports.

Unless otherwise specified in the ROP, reporting must be consistent with the Department's Water Monitoring Data Reporting Standard.

3.1 Quarterly reporting

The ROL holder must submit a quarterly report to the chief executive after the end of each quarter, of every water year. The report should contain the following data or information:

- (a) verified stream flow and storage water level – all records referred to in Section 1.1;
- (b) releases from storages – the daily volumes released referred to in Section 1.2;
- (c) water quality – all records referred to in Section 2.1; and
- (d) a summary of bank condition monitoring and incidences of slumping carried out in accordance with Section 2.2.

3.2 Annual report

The ROL holder must submit an annual report to the chief executive after the end of each water year.

Water quantity reporting

- (1) The annual report must include a summary of:
 - (a) announced allocation determinations including:
 - (i) an evaluation of the announced allocation procedures and outcomes; and
 - (ii) the date and value for each announced allocation;
 - (b) instances where critical water supply sharing rules have been implemented, including:
 - (i) an evaluation of the effectiveness of the rules and outcomes; and
 - (ii) the commencement date(s) and time period(s) for which the rules were in effect;
 - (c) the total annual volume of water taken by all water users, specified by zone, namely:
 - (i) the total volume of supplemented water taken;
 - (ii) the total volume of supplemented water entitled to be taken; and

- (iii) the basis for determining the volume entitled to be taken;
- (d) seasonal water assignments, specified by scheme, namely:
 - (i) the total number of seasonal water assignment arrangements; and
 - (ii) the total volume of water seasonally assigned.
- (2) The annual report must include:
 - (a) all details of changes to the storage and delivery infrastructure, or the operation of storages and delivery infrastructure that may impact on compliance with rules in this plan; and
 - (b) details of any new monitoring devices used such as equipment to measure stream flow.
- (3) The annual report must include a discussion on any other issues that arose as a result of the implementation and application of the rules and requirements in this plan.
- (4) The annual report must include water taken by each water user as follows:
 - (a) the total volume of water taken for each zone;
 - (b) the total volume entitled to be taken for each zone; and
 - (c) the basis for determining the total volume of water entitled to be taken.

Impact of storage operation on water quality

- (1) The annual report must include:
 - (a) a summary of environmental considerations made by the ROL holder in making operational and release decisions; and
 - (b) a summary of the environmental outcomes of the decision including any adverse environmental impacts.
- (2) The annual report must include a summary of bank condition and fish stranding monitoring and assessment including:
 - (a) results of investigations of bank slumping or erosion identified in ponded areas and/or downstream of storages;
 - (b) results of any investigations of fish stranding downstream of storages; and
 - (c) changes to operation of storages to reduce instances of bank slumping, erosion or fish stranding.
- (3) The annual report must include a discussion and assessment of the following water quality issues:
 - (a) water quality in each storage;
 - (b) thermal and chemical stratification in each storage;
 - (c) contribution of the storage and its management to the quality of water released;
 - (d) cumulative effect of successive storages on water quality;
 - (e) Cyanobacterial population changes in response to stratification in each storage; and
 - (f) any changes to the monitoring program as a result of evaluation of the data.

3.3 Operational report

- (1) The ROL holder must notify the chief executive within one business day:
 - (a) upon becoming aware of any of the following operational incidents:
 - (i) a non-compliance by the ROL holder with the rules;
 - (ii) given in this plan likely to affect the outcomes of the plan;
 - (iii) instances when a waterhole is drawn down 0.5m below cease to flow level;
and
 - (iv) instances of fish stranding, blue-green algae growth or bank slumping within the ponded areas or downstream of storages associated with the operation of the Boyne River and Tarong Water Supply Scheme;
 - (b) upon making a decision relating to:
 - (i) an initial announced allocation and/or its revision;
 - (ii) any restrictions on the taking of medium priority water;
 - (c) upon activation of critical water supply arrangements;
 - (d) details of any arrangements for addressing circumstances where they are unable to supply water allocations.
- (2) The ROL holder must provide the chief executive with:
 - (a) a report on the occurrence of any of the operational incidents discussed in Subsection (1)(a). The report must include details of the incident, conditions under which the incident occurred and any responses or activities carried out as a result of the incident;
 - (b) a summary of any other non-compliances by the ROL holder with the rules given in this plan
 - (c) relevant supporting information used in making a decision relating to —
 - (i) an initial announced allocation and/or its revision; and
 - (ii) any restrictions on the taking of medium priority water;
 - (d) details of any seasonal water assignments approved by the ROL holder.
- (3) The ROL holder must provide within ten business days the chief executive with a report of supplemented water being taken through a departmental water meter. The ROL holder must report the meter readings at the start and finish of the taking of water and the approved quantities of supplemented water taken.

3.4 Emergency report¹²

In an emergency where the licence holder cannot comply with the conditions of the ROP as a result of the emergency, the ROL holder must:

- (a) notify the chief executive; and
- (b) provide a report to the chief executive including:
 - (i) details of the emergency;
 - (ii) conditions under which the emergency occurred;
 - (iii) any responses or activities carried out as a result of the emergency; and
 - (iv) any rules specified in this plan that the licence holder is either permanently or temporarily unable to comply with due to the emergency.

¹² This does not preclude requirements for dam safety under the *Water Act 2000* and any other applicable legislation

Attachment
4.4H
**Boyne River and Tarong Water Supply
Scheme: Water allocation change rules**

1 Seasonal assignment

A water allocation holder may apply for a seasonal assignment/change to the location of the water allocation where:

The seasonal assignment is of a volume of water associated with a water allocation that has a purpose of 'agriculture' or 'any' and where:

- the proposed change would not result in a total nominal volume for a zone that:
 - exceeds the maximum nominal volume for the zone for a priority group as specified in Table 1 or 2; or
 - is less than the minimum nominal volume for the zone for a priority group as specified in Table 1 or 2; and
 - the seasonal assignment is from zone LA to zone KA or from zone KA to zone LA.

Table 1: Permitted use of high priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone

Zones	LA	KA
Minimum nominal volume of high priority water allocation (ML)	0	32 390
Maximum nominal volume of high priority water allocation (ML)	0	37 714

Table 2: Permitted use of medium priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone

Zones	LA	KA
Minimum nominal volume of medium priority water allocation (ML)	0	0
Maximum nominal volume of medium priority water allocation (ML)	13 309.3	13 309.3

2 Permitted changes

Applications for the following changes to a water allocation must be approved in accordance with section 129(4) of the Water Act.

2.1 Location

A water allocation holder may apply to change the location of a water allocation with a purpose of 'agriculture' or 'any', where the proposed change is:

- from zone LA to zone KA or from zone KA to zone LA; and
- would not result in a total nominal volume for a zone that:
 - exceeds the maximum nominal volume for the zone for a priority group as specified in Table 3 or 4; or
 - is less than the minimum nominal volume for the zone for a priority group as specified in Table 3 or 4.

Table 3: Permitted distributions of high priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone

Zones	LA	KA
Minimum nominal volume of high priority water allocation (ML)	0	32 390
Maximum nominal volume of high priority water allocation (ML)	0	37 714

Table 4: Permitted distributions of medium priority water allocations in the Boyne River and Tarong Water Supply Scheme by zone

Zones	LA	KA
Minimum nominal volume of medium priority water allocation (ML)	0	0
Maximum nominal volume of medium priority water allocation (ML)	13 309.3	13 309.3

2.2 Purpose

A water allocation holder may apply to change the purpose of a water allocation from:

- 'any' to 'agriculture' or
- 'agriculture' to 'any'.

2.3 Subdivision and amalgamation

A water allocation holder may apply to:

- subdivide a water allocation into two or more water allocations; or
- amalgamate two or more water allocations into a single water allocation.

2.4 Priority group

A water allocation holder may apply to change the priority group on a water allocation from 'medium' to 'high' where:

- the conversion is of the entire volume of medium priority water specified on the water allocation; and
- there has been no take of water under the water allocation to be converted, for the relevant water year in which the application to change has been made; and
- the location to be specified on the water allocation converted to high priority is zone KA; and
- a conversion ratio of 2.5:1 is used to convert the volume of water from medium to high priority (i.e. 2.5 ML of medium priority water is required to establish 1 ML of high priority water); and
- the conversion occurs when the announced allocation for medium priority water is no less than 100 per cent.

3 Prohibited changes

The following changes are prohibited changes.

3.1 Location

A change to a location that is not permitted.

3.2 Priority group

A change to a priority group that is not a change from 'medium' to 'high'.

3.3 Purpose

A change to any purpose that is not a change to 'agriculture' or 'any'.

3.4 Nominal volume

A change to the nominal volume of a water allocation other than a change that is required as a result of a change to another attribute of a water allocation.

3.5 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

4 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above and is not prohibited under Section 2 above, then an application may be made under s130 of the Water Act for the change.

Under section 131, the chief executive may ask for additional information to be supplied that would assist in determining whether the change should be approved or not. For example, if an application was made to change the purpose of a water allocation from 'distribution loss' to 'any', this might involve the provision of information from the applicant to substantiate to the satisfaction of the chief executive an efficiency gain within the distribution system.

The chief executive will deal with any and all applications made under s130 of the Water Act, in accordance with the Act. That process is summarised as follows:

- Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application.
- The chief executive determines if the application should be approved having regard to the potential impact on other interests including entitlement holders and natural ecosystems.

The chief executive may approve the application with or without conditions. If an application is approved, then the chief executive will issue a change certificate that may be lodged with the registrar of water allocations. The chief executive will provide an information notice on his decision to the applicant and any parties that made a submission on the notice of application. Parties are able to appeal decisions made under internal review.

Attachment

5.1A

**Lower Burnett and Kolan Rivers Water
Management Area: Reserved for future
amendments**

Attachment

5.1B

**Lower Burnett and Kolan Rivers
Water Management Area: Reserved for future
amendments**

Attachment**5.1C****Lower Burnett and Kolan Rivers
Water Management Area: Operating rules for
water allocations taken by water harvesting**

1 Overview

These operating rules apply to water allocations taken by water harvesting with flow conditions in the Lower Burnett and Kolan Rivers Water Management Area:

- the Burnett River from the confluence of St Agnes Creek (AMTD 97.9) downstream to Ben Anderson Barrage (AMTD 25.9), including locations directly benefited by flow or pondage from these river reaches; and
- the Kolan River from the impoundment area of Fred Haigh Dam (AMTD 116) downstream to the Kolan River Barrage (AMTD 14.7), including locations directly benefited by flow or pondage from these river reaches.

These locations are defined in Table 1 of Attachment 2.2 and displayed on the accompanying map sheets.

2 Water year

The water year is from 1 July to 30 June the following year.

3 Location from which water may be taken

The location from which water may be taken is described as a zone on each water allocation. Zone locations are described in Attachment 2.2.

4 Purpose for which water may be taken

The purpose for which water may be taken is stated on each water allocation. All unsupplemented water allocations may be used for 'any' purpose.

5 Maximum annual volume of water that may be taken

The maximum volume of water that may be taken in a water year will be calculated using the formula:

$$AAL_i * \text{Volumetric Limit}$$

The AAL_i is defined in Section 5.1.

5.1 Annual announced limit

The annual announced limit (AAL_i) is the percentage that is announced by the chief executive for each subcatchment on a water year basis. The AAL_i must not be greater than 100 per cent. This percentage sets the annual limit to the amount of unsupplemented water, which an individual water allocation holder can divert during water year 'i' as a proportion of the volumetric limit.

5.2 Calculation of the annual announced limit

The annual announced limit for unsupplemented water allocations for each subcatchment must be determined by the following formulae:

$$TAAL_i = 50 + AAL_{i-1} - (TU_{i-1}/SVL * 100) + RAAL_{i-1}$$

$$RAAL_{i-1} = \text{greater } \{ TAAL_{i-1} - 100, 0 \}$$

$$AAL_i = \text{lesser } \{ 100, TAAL_i \}$$

Where:

i = current water year

i – 1 = previous water year

The parameters used in the above relationships are defined in Section 5.3.

5.3 Parameters used in calculating announced allocation

AAL = annual announced limit

That is, the percentage of the water allocation volumetric limit that may be taken for the water year.

TAAL = trial annual announced limit

That is, the trial annual announced limit is a percentage of the water allocation volumetric limit and determines the annual announced limit for a water year and the residual announced allocation limit for the next year.

TU = total use

That is, the total diverted unsupplemented water allocations (ML) in the subcatchment for the water year.

SVL = sum volumetric limit

That is, the sum of the volumetric limits (ML) for the subcatchment.

RAAL = residual annual announced limit

That is, the residual is the amount by which the trial annual announced limit was greater than 100 per cent in the previous year. This may be available in the following water year.

5.4 Rules for determining the annual announced limit

The rules for determining the annual announced limit are:

- the annual announced limit cannot be greater than 100 per cent;

- RAAL is limited between 0 per cent and 50 per cent;
- AAL percentages must be determined and announced within ten business days after the start of the water year; and
- the AAL is calculated using the formula listed in Section 5.2.

6 Maximum rate for taking water

The maximum rate of take stated on a water allocation is the maximum instantaneous rate (in L/s) at which water may be taken.

7 Flow conditions under which water may be taken

The passing flow conditions associated with the water allocation group stated on a water allocation are the stream flow conditions nominally required while water is being taken under the water allocation.

The chief executive will determine when the passing flow conditions exist and when water may be taken under arrangements given in Section 8 and Section 9. A period of time during which water may be taken is referred to as an announced period for water harvesting.

8 Announced periods for taking water

The chief executive will notify water allocation holders of the start and end of an announced period during which water may be taken.

9 Determining announced periods for taking water

The chief executive will determine the start and the end of a period during which the stream flow is estimated to exceed the flow threshold conditions for each water allocation group.

10 Assessment of quantity of unsupplemented water taken

The following rules apply for the assessment of the quantity of unsupplemented water taken under a water allocation:

- a water allocation holder must advise the chief executive prior to taking unsupplemented water;
- for water taken during an announced period, a water allocation holder must provide meter readings to the chief executive at the start and finish of the announced period and at the end of the water year if required by the chief executive;
- unsupplemented water may be taken only during announced periods;
- the chief executive will advise the ROL holder for the Bundaberg Water Supply Scheme of the meter readings and the approved quantities of unsupplemented water taken within ten business days of the conclusion of all announced periods for the Lower Burnett and Kolan Rivers Water Management Area; and

- any water taken that is not in accordance with these rules for unsupplemented water and taken from within the limits of the Bundaberg Water Supply Scheme will be treated as supplemented water.

11 Seasonal water assignment rules

A water allocation holder or the holder of a seasonal water assignment notice may apply under s.142 of the Water Act for a seasonal water assignment for the water year in which the application is made. Seasonal water assignment of a water allocation in the Lower Burnett and Kolan Rivers Water Management Area is permitted subject to the following rules.

The chief executive will approve all applications to seasonally assign water provided that the application conforms to the following rules.

Seasonal water assignments may be made to all or part of the unused portion of water that may be taken under a water allocation or seasonal water assignment notice.

A water allocation holder may apply for a seasonal assignment of water within any zone or between:

- zone AA, AB or AC and zone AA, AB or AC; or
- zone CA and zone CB.

The permitted use of unsupplemented water allocations in a water year is provided for in Table 1.

Table 1: Seasonal water assignment use limits

Zones	AA	AB	AC	CA	CB
Minimum nominal volume (ML)	223	0	466	1 082	382
Maximum nominal volume (ML)	335	170	788	1 828	646

The flow condition for a seasonal water assignment of water will be the same as the flow condition of the water allocation or seasonal water assignment notice that is being seasonally assigned. The maximum rate of take under a seasonal water assignment notice will be determined during the processing of the application so that the WASOs and EFOs of the WRP are met. Seasonal water assignment of a water allocation or seasonal water assignment notice must not lead to the water allocation being managed under a ROL.

The holder of the seasonal water assignment notice must also be a holder of a development permit for works that may take the seasonally assigned water.

12 Procedures

Details of procedures associated with the implementation of these operating rules will be developed and made available by the chief executive.

Attachment

5.1D

Lower Burnett and Kolan Rivers Water Management Area: Water allocation change rules

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.

1.1 Location

A change to the location of a water allocation:

- within any zone; or:
 - between zone AA, AB or AC and zone AA, AB or AC; or
 - between zone CA and zone CB.

The proposed change is not a permitted change if the proposed change would result in a distribution of water allocations not provided for in Table 1.

Table 1: Change limits: maximum and minimum nominal volumes by zone

Zones	AA	AB	AC	CA	CB
Minimum nominal volume (ML)	223	0	466	1 082	382
Maximum nominal volume (ML)	335	170	788	1 828	646

1.2 Purpose

A change to the purpose of the water allocation from 'agriculture' to 'any' or from 'any' to 'agriculture'.

1.3 Amalgamation or subdivision

A change to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into one water allocation.

If a water allocation is subdivided, the maximum rate for taking water of each new water allocation will be proportional to the volume of the new water allocation.

Water allocations with the same location and flow condition specifications can be amalgamated into a new water allocation. The volume of the new water allocation will be set at the combined volume of the original water allocations and the new rate will be determined during the application process so that the WASOs and EFOs of the WRP are met.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change of location from:

- zone AA, AB or AC to a location which is not zone AA, AB or AC; or
- zone CA or CB to a location which is not zone CA or CB.

2.2 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.3 Water allocation group

A change that would alter the water allocation group that applies to a water allocation.

2.4 Rate

A change to the maximum rate of a water allocation that is not a consequence of a change to another attribute of a water allocation.

2.5 Supply of water

A change to a water allocation must not be a change that would lead to the water allocation being managed under a ROL.

2.6 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on a range of interests including other allocation holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

3.1 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register.

Attachment

5.2A

**Upper Burnett and Nogo Rivers Water
Management Area: Reserved for future
amendments**

Attachment

5.2B

**Upper Burnett and Nogo Rivers Water
Management Area: Reserved for future
amendments**

Attachment**5.2C****Upper Burnett and Nogo Rivers
Water Management Area: Operating rules for
water allocations taken by water harvesting**

1 Overview

These operating rules apply to water allocations taken by water harvesting with flow conditions in the Upper Burnett and Nogo Rivers Water Management Area:

- the Burnett River from the impoundment area of John Goleby Weir at full supply level (AMTD 333.9) downstream to the confluence of St Agnes Creek (AMTD 97.9), including locations directly benefited by flow or pondage from these river reaches; and
- the Nogo River from the impoundment area of Wuruma Dam at full supply level (AMTD 44.5) to the confluence of the Burnett River (AMTD 311.8), including locations directly benefited by flow or pondage from these river reaches.

These locations are defined in Table 1 of Attachment 2.2 and displayed on the accompanying map sheets.

2 Water year

The water year is from 1 July to 30 June the following year.

3 Location from which water may be taken

The location from which water may be taken is described as a zone on each water allocation. Zone locations are described in Attachment 2.2.

4 Purpose for which water may be taken

The purpose for which water may be taken is stated on each water allocation. All unsupplemented water allocations may be used for 'any' purpose.

In order to comply with WRP objectives, the AAL for zones OD and PA must be 100 per cent.

5 Maximum annual volume of water that may be taken

The maximum volume of water that may be taken in a water year will be calculated using the formula:

$$AAL_i * \text{Volumetric Limit}$$

The AAL_i is defined in Section 5.1.

5.1 Annual announced limit

The annual announced limit (AAL_i) is the percentage that is announced by the chief executive for each subcatchment on a water year basis. The AAL_i must not be greater than 100 per cent. This percentage sets the annual limit to the amount of unsupplemented water, which an individual water allocation holder can divert during water year 'i' as a proportion of the volumetric limit.

5.2 Calculation of the annual announced limit

The annual announced limit for unsupplemented water allocations for each subcatchment must be determined by the following formulae.

$$TAAL_i = 50 + AAL_{i-1} - (TU_{i-1}/SVL * 100) + RAAL_{i-1}$$

$$RAAL_{i-1} = \text{greater } \{ TAAL_{i-1} - 100, 0 \}$$

$$AAL_i = \text{lesser } \{ 100, TAAL_i \}$$

Where:

i = current water year

i – 1 = previous water year

The parameters used in the above relationships are defined in Section 5.3.

5.3 Parameters used in calculating announced allocation

AAL = annual announced limit

That is, the percentage of the water allocation volumetric limit that may be taken for the water year.

TAAL = trial annual announced limit

That is, the trial annual announced limit is a percentage of the water allocation volumetric limit and determines the annual announced limit for a water year and the residual announced allocation limit for the next year.

TU = total use

That is, the total diverted unsupplemented water allocations (ML) in the subcatchment for the water year.

SVL = sum volumetric limit

That is, the sum of the volumetric limits (ML) for the subcatchment.

RAAL = residual annual announced limit

That is, the residual is the amount by which the trial annual announced limit was greater than 100 per cent in the previous year. This may be available in the following water year.

5.4 Rules for determining the annual announced limit

The rules for determining the annual announced limit are:

- the annual announced limit cannot be greater than 100 per cent;
- RAAL is limited between 0 per cent and 50 per cent;
- AAL percentages must be determined and announced within ten business days after the start of the water year; and
- the AAL is calculated using the formula listed in Section 5.2 except for zones OD and PA where AAL will be 100 per cent.

6 Maximum rate for taking water

The maximum rate of take stated on a water allocation is the maximum instantaneous rate (in L/s) at which water may be taken.

7 Flow conditions under which water may be taken

The passing flow conditions associated with the water allocation group stated on a water allocation are the stream flow conditions nominally required while water is being taken under the water allocation.

The chief executive will determine when the passing flow conditions exist and when water may be taken under arrangements given in Section 8 and Section 9. A period of time during which water may be taken is referred to as an announced period for water harvesting.

8 Announced periods for taking water

The chief executive will notify water allocation holders of the start and the end of an announced period during which water may be taken.

9 Determining announced periods for taking water

The chief executive will determine the start and the end of a period during which the stream flow is estimated to exceed the flow threshold conditions for each water allocation group.

10 Assessment of quantity of unsupplemented water taken

The following rules apply for the assessment of the quantity of unsupplemented water taken under a water allocation:

- a water allocation holder must advise the chief executive prior to taking unsupplemented water;
- for water taken during an announced period, a water allocation holder must provide meter readings to the chief executive at the start and finish of the

announced period and at the end of the water year if required by the chief executive;

- unsupplemented water may be taken only during announced periods;
- the chief executive will advise the ROL holder for the Upper Burnett Water Supply Scheme of the meter readings and the approved quantities of unsupplemented water taken within ten business days of the conclusion of all announced periods for the Upper Burnett and Nogo Rivers Water Management Area; and
- any water taken that is not in accordance with these rules for unsupplemented water and taken from within the limits of the Upper Burnett Water Supply Scheme will be treated as supplemented water.

11 Seasonal water assignment rules

A water allocation holder or the holder of a seasonal water assignment notice may apply under s.142 of the *Water Act 2000* for a seasonal water assignment for the water year in which the application is made. Seasonal water assignment of a water allocation in the Upper Burnett and Nogo Rivers Water Management Area is permitted subject to the following rules.

The chief executive will approve all applications to seasonally assign water provided that the application conforms to the following rules:

- seasonal water assignments may be made to all or part of the unused portion of water that may be taken under a water allocation or seasonal water assignment notice; and
- a water allocation holder may apply for a seasonal assignment of water within any zone or between:
 - zone GA and GB;
 - zone NA, NB or NC and zone NA, NB or NC; or
 - zone OA, OB, OC, OD or MA and zone OA, OB, OC, OD or MA.

The permitted use of unsupplemented water allocations in a water year is provided for in Table 1.

Table 1: Seasonal water assignment use limits

Location (Zone)	GA	GB	MA	NA	NB	NC	OA	OB	OC
Minimum Nominal Volume (ML)	483	407	119	422	840	776	912	584	21
Maximum Nominal Volume (ML)	806	679	199	703	1400	1293	1519	973	35

The flow condition for a seasonal assignment water allocation will be the same as the flow condition of the water allocation or seasonal water assignment notice that is being seasonally assigned. The maximum rate of take under a seasonal water assignment permit will be determined during the processing of the application so that the WASOs and EFOs of the WRP are met. Seasonal water assignment of a water allocation or seasonal water assignment notice must not lead to the water allocation being managed under a ROL.

The holder of the seasonal water assignment notice must also be a holder of a development permit for works that may take the seasonally assigned water.

12 Procedures

Details of procedures associated with the implementation of these operating rules will be developed and made available by the chief executive.

Attachment

5.2D

Upper Burnett and Nogo Rivers Water Management Area: Water allocation change rules

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.

1.1 Location

A change to the location of a water allocation:

- within any zone; or between:
 - zone GA and GB;
 - zone NA, NB or NC and NA, NB or NC; or
 - zone OA, OB, OC or MA and OA, OB, OC or MA.

A change of location will be allowed from zone MA in Subcatchment 'M' to zones OA, OB, OC in Subcatchment 'O'.

The proposed change is not a permitted change if the proposed change would result in a distribution of water allocations not provided for in Table 1.

Table 1: Change limits: maximum and minimum nominal volumes by zone

Location (Zone)	GA	GB	MA	NA	NB	NC	OA	OB	OC
Minimum Nominal Volume (ML)	483	407	119	422	840	776	912	584	21
Maximum Nominal Volume (ML)	806	679	199	703	1 400	1 293	1 519	973	35

1.2 Purpose

A change to the purpose of the water allocation from 'agriculture' to 'any' or from 'any' to 'agriculture'.

1.3 Amalgamation or subdivision

A change to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into one water allocation.

If a water allocation is subdivided, the maximum rate for taking water of each new water allocation will be proportional to the volume of the new water allocation.

Water allocations with the same location and flow condition specifications can be amalgamated into a new water allocation. The volume of the new water allocation will be set at the combined volume of the original water allocations and the new rate will be determined during the application process so that the WASOs and EFOs of the WRP are met.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change of location from:

- zone GA or GB to a location which is not zone GA or GB;
- zone NA, NB or NC to a location which is not zone NA, NB or NC; and
- zone OA, OB, OC or MA to a location which is not zone OA, OB, OC or MA.

2.2 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.3 Water allocation group

A change that would alter the water allocation group that applies to a water allocation.

2.4 Rate

A change to the maximum rate of a water allocation that is not a consequence of a change to another attribute of a water allocation.

2.5 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on a range of interests including other entitlement holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

3.1 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register.

Attachment

5.3A

**Barker Barambah Creeks Water
Management Area: Reserved for future
amendments**

Attachment

5.3B

**Barker Barambah Creeks Water Management
Area: Reserved for future amendments**

**Attachment
5.3C****Barker Barambah Creeks Water Management
Area: Operating rules for water allocations
taken by water harvesting**

1 Overview

These operating rules apply to water allocations taken by water harvesting with flow conditions in the Barker Barambah Creeks Water Management Area:

- Barker Creek from AMTD 38.2 downstream to the confluence with Barambah Creek, including locations directly benefited by flow or pondage from these stream reaches; and
- Barambah Creek from AMTD 189.5 downstream to AMTD 85 including locations directly benefited by flow or pondage from these stream reaches.

These locations are defined in Table 1 of Attachment 2.2, and displayed on the accompanying map sheets.

2 Water year

The water year is from 1 July to 30 June the following year.

3 Location from which water may be taken

The location from which water may be taken is described as a zone on each water allocation. Zone locations are described in Attachment 2.2.

4 Purpose for which water may be taken

The purpose for which water may be taken is stated on each water allocation. All unsupplemented water allocations may be used for 'any' purpose.

5 Maximum annual volume of water that may be taken

The maximum volume of water that may be taken in a water year is the volumetric limit stated on each water allocation.

6 Maximum rate for taking water

The maximum rate of take stated on a water allocation is the maximum instantaneous rate (in L/s) at which water may be taken.

7 Flow conditions under which water may be taken

The passing flow conditions associated with the water allocation group stated on a water allocation are the stream flow conditions nominally required while water is being taken under the water allocation.

The chief executive will determine when the passing flow conditions exist and when water may be taken under arrangements given in Section 8 and Section 9. A period of time during which water may be taken is referred to as an announced period for water harvesting.

8 Announced periods for taking water

The chief executive will notify water allocation holders of the start and end of an announced period during which water may be taken.

9 Determining announced periods for taking water

The chief executive will determine the start and the end of a period during which the stream flow is estimated to exceed the flow threshold conditions for each water allocation group and when unsupplemented water is available in each zone.

10 Assessment of quantity of unsupplemented water taken

The following rules apply for the assessment of the quantity of unsupplemented water taken under a water allocation:

- a water allocation holder must advise the chief executive prior to taking unsupplemented water;
- for water taken during an announced period, a water allocation holder must provide meter readings to the chief executive at the start and finish of the announced period and at the end of the water year if required by the chief executive;
- unsupplemented water may be taken only during announced periods;
- the chief executive will advise the ROL holder for the Barker Barambah Water Supply Scheme of the meter readings and the approved quantities of unsupplemented water taken within ten business days of the conclusion of all announced periods for the Barker Barambah Creeks Water Management Area; and
- any water taken that is not in accordance with these rules for unsupplemented water and taken from within the limits of the Barker Barambah Water Supply Scheme will be treated as supplemented water.

11 Seasonal water assignment rules

A water allocation holder or the holder of a seasonal water assignment notice may apply under s.142 of the *Water Act 2000* for a seasonal water assignment for the water year in which the application is made. Seasonal water assignment of a water allocation in the Barker Barambah Creeks Water Management Area is permitted subject to the following rules.

The chief executive will approve all applications to seasonally assign water provided that the application conforms to the following rules.

Seasonal water assignments may be made to all or part of the unused portion of water that may be taken under a water allocation or seasonal water assignment notice.

A water allocation holder may apply for a seasonal assignment of water within any zone or from:

- HJ to HK;
- HK to HJ or to HL; or
- HL to HK.

Prohibited changes specified in Attachment 5.3D apply to seasonal water assignments.

The permitted use of unsupplemented water allocations in a water year is provided for in Table 1.

Table 1: Seasonal water assignment use limits

Zones	HJ	HK	HL	JC	JD
Minimum nominal volume (ML)	2 849	2 876	752	34	780
Maximum nominal volume (ML)	4 749	4 794	1 254	56	1 300

The flow condition for a seasonal water assignment of water will be the same as the flow condition of the water allocation or seasonal water assignment notice that is being seasonally assigned. The maximum rate of take under a seasonal water assignment notice will be determined during the processing of the application so that the WASOs and EFOs of the WRP are met.

Seasonal water assignment of a water allocation or seasonal water assignment notice must not lead to the water allocation being managed under a ROL.

The holder of the seasonal water assignment notice must also be a holder of a development permit for works that may take the seasonally assigned water.

12 Procedures

Details of procedures associated with the implementation of these operating rules will be developed and made available by the chief executive.

Attachment**5.3D****Barker Barambah Creeks Water Management Area: Water allocation change rules**

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations.

1.1 Location

A change to the location of a water allocation:

- From HJ to HK;
- From HK to HJ or HL; or
- From HL to HK.

The proposed change is not a permitted change if the proposed change would result in a distribution of water allocations not provided for in Table 1.

Table 1: Change limits: maximum and minimum nominal volumes by zone

Zones	HJ	HK	HL	JC	JD
Minimum nominal volume (ML)	2 849	2 876	752	34	780
Maximum nominal (ML)	4 749	4 794	1 254	56	1 300

1.2 Purpose

A change to the purpose of the water allocation from 'agriculture' to 'any' or from 'any' to 'agriculture'.

1.3 Amalgamation or subdivision

A change to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into one water allocation.

If a water allocation is subdivided, the maximum rate for taking water of each new water allocation will be proportional to the volume of the new water allocation.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change of location from:

- zone JC to any other zone; or
- zone JD to any other zone.

A change that would result in a water allocation with a Water Allocation Group 'Class 1H' being located in zone HL.

A change that would result in a water allocation with a Water Allocation Group 'Class 3H' being located in zone HJ.

2.2 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.3 Water allocation group

A change that would alter the water allocation group that applies to a water allocation.

2.4 Rate

A change to the maximum rate of a water allocation that is not a consequence of a change to another attribute of a water allocation.

2.5 Supply of water

A change to a water allocation must not be a change that would lead to the water allocation being managed under a ROL.

2.6 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on a range of interests including other allocation holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

3.1 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register.

Attachment

5.4A

**Boyne and Stuart Rivers Water
Management Area: Reserved for future
amendments**

Attachment

5.4B

**Boyne and Stuart Rivers Water Management
Area: Reserved for future amendments**

**Attachment
5.4C****Boyne and Stuart Rivers Water Management
Area: Operating rules**

1 Overview

These operating rules apply to water allocations taken within the Boyne and Stuart Rivers Water Management Area:

- The Boyne River from AMTD 181.8 downstream to the confluence with the Burnett River, including locations directly benefited by flow or pondage from these stream reaches;
- The Stuart River from AMTD 155.7 downstream to the confluence with the Boyne River, including locations directly benefited by flow or pondage from these stream reaches;
- Reedy Creek from AMTD 0.2 downstream to the confluence with the Stuart River; and
- Flagstone Creek from AMTD 0.9 downstream to the confluence with the Stuart River.

These locations are defined in Table 1 of Attachment 2.2 and displayed on the accompanying map sheets.

2 Water year

The water year is from 1 July to 30 June the following year.

3 Location from which water may be taken

The location from which water may be taken is described as a zone on each water allocation. Zone locations are described in Attachment 2.2.

4 Purpose for which water may be taken

The purpose for which water may be taken is stated on each water allocation.

5 Maximum annual volume of water that may be taken

The maximum volume of water that may be taken in a water year for allocations in water allocation groups 1K, 5K and 6K will be the volumetric limit as stated on the allocation. For water allocations groups 2K, 3K, 4K, 7K, 1L, 2L, 3L, and 4L the maximum volume of water that may be taken in a water year will be calculated using the formula:

$$AAL_i * \text{Volumetric Limit}$$

The AAL_i is defined in Section 5.1.

5.1 Annual announced limit

The annual announced limit (AAL_i) is the percentage that is announced by the chief executive for each subcatchment on a water year basis. The AAL_i must not be greater than 100 per cent. This percentage sets the annual limit to the amount of unsupplemented water, which an individual water allocation holder can divert during water year 'i' as a proportion of the volumetric limit.

5.2 Calculation of the annual announced limit

The annual announced limit for unsupplemented water allocations in each subcatchment, except water allocations in water allocation groups 1K, 5K and 6K, must be determined by the following formulae:

$$TAAL_i = 50 + AAL_{i-1} - (TU_{i-1}/SVL * 100) + RAAL_{i-1}$$

$$RAAL_{i-1} = \text{greater } \{ TAAL_{i-1} - 100, 0 \}$$

$$AAL_i = \text{lesser } \{ 100, TAAL_i \}$$

Where:

i = current water year

i – 1 = previous water year

The parameters used in the above relationships are defined in Section 5.3.

5.3 Parameters used in calculating announced allocation

AAL = annual announced limit

That is, the percentage of the water allocation volumetric limit that may be taken for the water year.

TAAL = trial annual announced limit

That is, the trial annual announced limit is a percentage of the water allocation volumetric limit and determines the annual announced limit for a water year and the residual announced allocation limit for the next year.

TU = total use

That is, for the water year, the total diverted unsupplemented water allocations (ML) in water allocation groups 2K, 3K, 4K and 7K for subcatchment K and in water allocation groups 1L, 2L, 3L and 4L for subcatchment L.

SVL = sum volumetric limit

That is, the sum of the volumetric limits (ML) in water allocation groups 2K, 3K, 4K and 7K for subcatchment K and in water allocation groups 1L, 2L, 3L and 4L for subcatchment L.

RAAL = residual annual announced limit

That is, the residual is the amount by which the trial annual announced limit was greater than 100 per cent in the previous year. This may be available in the following water year.

5.4 Rules for determining the annual announced limit

The rules for determining the annual announced limit are:

- the annual announced limit cannot be greater than 100 per cent ;
- RAAL is limited between 0 per cent and 50 per cent;
- AAL percentages must be determined and announced within ten business days after the start of the water year; and
- the AAL is calculated using the formula listed in Section 5.2.

6 Maximum rate for taking water

The maximum rate of take stated on a water allocation is the maximum instantaneous rate (in L/s) at which water may be taken.

7 Flow conditions under which water may be taken

The passing flow conditions associated with the water allocation group stated on a water allocation are the stream flow conditions nominally required while water is being taken under the water allocation.

The chief executive will determine when the passing flow conditions exist in water allocation groups 1L, 2L, 3L, 3K and 4L and when water may be taken under arrangements given in Section 8 and Section 9. A period of time during which water may be taken is referred to as an announced period for water harvesting.

Announced periods will not be required in water allocation groups 1K, 2K, 4K, 5K, 6K and 7K. The taking of water in water allocation groups 2K, 4K and 6K must be limited by a device approved by the chief executive.

8 Announced periods for taking water

The chief executive will notify water allocation holders in water allocation groups 1L, 2L, 3L, 3K and 4L of the start and end of an announced period during which water may be taken.

9 Determining announced periods for taking water

The chief executive will determine the start and the end of a period during which the stream flow is estimated to exceed the flow threshold conditions for water allocation groups 1L, 2L, 3L, 3K and 4L and when unsupplemented water can be taken in these water allocation groups.

10 Assessment of quantity of unsupplemented water taken

The following rules apply for the assessment of the quantity of unsupplemented water taken under a water allocation:

- a water allocation holder must provide meter readings to the chief executive and at the end of the water year if required by the chief executive;
- a water allocation holder in water allocation groups 1L, 2L, 2K, 3L, 3K, 4L, 4K and 6K must provide meter readings to the chief executive at the start and finish of any period of take;
- unsupplemented water may be taken only during announced periods in water allocation groups 1L, 2L, 3L, 3K and 4L;
- the chief executive will advise the ROL holder for the Boyne and Tarong Water Supply Scheme of the meter readings and the approved quantities of unsupplemented water taken within ten business days of the conclusion of all announced periods for the Boyne and Stuart Rivers Water Management Area where water is taken from supplemented reaches of the Boyne River; and
- any water taken that is not in accordance with these rules for unsupplemented water and taken from within the limits of the Boyne and Tarong Water Supply Scheme will be treated as supplemented water.

11 Seasonal water assignment rules

A water allocation holder or the holder of a seasonal water assignment notice may apply under s.142 of the Water Act for a seasonal water assignment for the water year in which the application is made. Seasonal water assignment of a water allocation in the Boyne and Stuart Rivers Water Management Area is permitted.

The chief executive will approve all applications to seasonally assign water provided that the application conforms to the following rules:

- Seasonal water assignments may be made to all or part of the unused portion of water that may be taken under a water allocation or seasonal water assignment notice; and
- A water allocation holder may apply for a seasonal assignment of water within any single zone only. Seasonal assignment between zones is prohibited.

The flow condition for a seasonal water assignment of water will be the same as the flow condition of the water allocation or seasonal water assignment notice that is being seasonally assigned. The maximum rate of take under a seasonal water assignment notice will be determined during the processing of the application so that the WASOs and EFOs of the WRP are met. Seasonal water assignment of a water allocation or seasonal water assignment notice must not lead to the water allocation being managed under a ROL.

The holder of the seasonal water assignment notice must also be a holder of a development permit for works that may take the seasonally assigned water.

12 Procedures

Details of procedures associated with the implementation of these operating rules will be developed and made available by the chief executive.

13 Minimum levels in waterholes

This section applies to waterholes within the extent of the Boyne and Stuart Rivers Water Management Area where drawdown of a waterhole may be desired for supply of water allocations.

A water allocation may be taken from a waterhole only if the water level in the waterhole is above the level that is 0.5m below the level at which the waterhole normally flows. These conditions do not apply if the taking of water is in accordance with s.27(2) of the Burnett Basin WRP.

14 Access to water in bed sands

The *Water Regulation 2002* made under s.1006(2) of the Water Act declares water in the aquifer underlying the Boyne River from AMTD 0 to 180 to be water in the watercourse. Holders of water allocations in zone KB may take water from bed sands. The volume of water taken in the relevant water year must not exceed the water allocation holder's volumetric limit.

Excavation work carried out to enhance the efficiency of access to water in the bed sands will require appropriate authorisation under the provision of the Water Act or the *Integrated Planning Act 1997*.

Attachment**5.4D****Boyne and Stuart Rivers
Water Management Area: Water allocation
change rules**

1 Permitted changes

Application for the following changes to a water allocation will be approved. On approval, a change certificate will be issued by the chief executive, which may be lodged with the registrar of water allocations. Movement of a water allocation within a zone is permitted and does not require a registered change.

1.1 Purpose

A change to the purpose of the water allocation from 'agriculture' to 'any' or from 'any' to 'agriculture'.

1.2 Amalgamation or subdivision

A change to subdivide a water allocation into two or more water allocations, or to amalgamate two or more water allocations into one water allocation.

If a water allocation is subdivided, the maximum rate for taking water of each new water allocation will be proportional to the volume of the new water allocation.

Water allocations with the same location and flow condition specifications can be amalgamated into a new water allocation. The volume of the new water allocation will be set at the combined volume of the original water allocations and the new rate will be determined during the application process so that the WASOs and EFOs of the WRP are met.

2 Prohibited changes

The following changes are prohibited changes.

2.1 Location

A change of location from:

- zone LA, KA, KB, KC, KD and KE to any other zone.

2.2 Purpose

A change to a purpose that is not 'agriculture' or 'any'.

2.3 Water allocation group

A change that would alter the water allocation group that applies to a water allocation.

2.4 Rate

A change to the maximum rate of a water allocation that is not a consequence of a change to another attribute of a water allocation.

2.5 Supply of water

A change to a water allocation must not be a change that would lead to the water allocation being managed under a ROL.

2.6 Other

A change to a water allocation that requires an amendment to this ROP, other than an amendment provided for in Chapter 8.

3 Application for change under s.130 of the Water Act

If a water allocation holder wishes to apply for a change to a water allocation that is not permitted under Section 1 above, and not prohibited under Section 2 above, then application may be made under s.130 of the Water Act for the change.

The chief executive will deal with any and all applications made under s.130 of the Water Act, in accordance with the Act. That process is as follows. Notice of the application is published in local newspapers. The notice includes information about where the application can be inspected and invites submissions from the public on the application. The chief executive determines if the application should be approved having regard to the potential impact on a range of interests including other allocation holders and natural ecosystems. If the chief executive approves the application, then the chief executive issues a change certificate that may be lodged with the registrar of water allocations. If the chief executive refuses the application, then the applicant can appeal to the Land Court.

3.1 Registration of change

If an application to change a water allocation is approved, the chief executive will issue a change certificate. The water allocation holder may lodge the change certificate with the registrar of water allocations who will change the water allocation on the water allocation register.

Attachment**9.1****Implementation schedule**

The following requirements will be implemented within the time frames specified.

1 Water supply schemes

The Burnett Basin ROP was approved by the Governor in Council on 29 May 2003 and came into effect on 2 June 2003. The operational arrangements for the Bundaberg and Upper Burnett Water Supply Schemes commenced on 1 July 2003.

1.1 Upper Burnett Water Supply Scheme

For the Upper Burnett Water Supply Scheme, the operating arrangements in Chapter 4, Sections 4.2.5, 4.2.6, 4.2.7, 4.2.8 and 4.3 took effect at the start of the first water year following the commencement of the amendment to the ROP (November 2005).

1.2 Bundaberg Water Supply Scheme

For the Bundaberg Water Supply Scheme, the operating arrangements in Chapter 4, Sections 4.1.5, 4.1.6, 4.1.7, 4.1.8 and 4.3 commenced at the start of the 2006/07 water year.

1.3 Barker Barambah Water Supply Scheme

For the Barker Barambah Water Supply Scheme, Attachments 4.3E, 4.3F, 4.3G and 4.3H took effect at the start of the first water year following the commencement of the amendment to the ROP (November 2005).

1.4 Boyne River and Tarong Water Supply Scheme

For the Boyne River and Tarong Water Supply Scheme, Attachments 4.4E, 4.4F, 4.4G and 4.4H took effect at the start of the first water year following the commencement of the amendment to the ROP (December 2006).

2 Water management areas

The operational arrangements for the Upper Burnett and Nogo River Water Management area and the Lower Burnett and Kolan River Water Management Area commenced on 1 July 2003.

2.1 Upper Burnett and Nogo River Water Management Area

For the Upper Burnett and Nogo River Water Management Area, Attachments 5.2C and 5.2D took effect at the start of the first water year following the release of the ROP (May 2003).

2.2 Lower Burnett and Kolan River Water Management Area

For the Upper Burnett and Kolan River Water Management Area, Attachments 5.1C and 5.1D took effect at the start of the first water year following the release of the ROP (May 2003).

2.3 Barker Barambah Creeks Water Management Area

For the Barker Barambah Creeks Water Management Area, Attachments 5.3C and 5.3D took effect at the start of the first water year following the commencement of the amendment to the ROP (November 2005).

2.4 Boyne and Stuart Rivers Water Management Area

For the Boyne and Stuart Rivers Water Management Area, Attachments 5.4C and 5.4D take effect at the start of the first water year following the commencement of the amendment to the ROP (December 2006). In the interim, the chief executive will manage the Boyne and Stuart Rivers Water Management Area in accordance with the management arrangements in effect immediately prior to the commencement of the amendment to the ROP.

In subsequent years, the operating rules specified in Chapter 5 apply.

3 Information required in Chapters 3 and 4

Additional information to be supplied by the ROL holder regarding rules and monitoring details required in Chapters 3 and 4 will take effect from the water year following the chief executive's approval of the additional information unless specified otherwise in the ROP or in the approval of the chief executive.

Attachment

9.2

Amendment history of the Resource Operations Plan

Overview

The Burnett Basin Resource Operations Plan was originally released on 29 May 2003 and has been amended as detailed below.

Revision 1 (23 October 2003) under section 106 of the *Water Act 2000*

- (a) Amendment of Attachment 4.1F, section 2.2, dot point 2, page 134

1. Insert

“from 1 July 2005 the resultant distribution of water supplied in a water year lies within the ranges shown in Tables 1 and 2 in Attachment 4.1H.”

- (b) Amendment of Attachment 4.2F, section 2.2, dot point 2, page 176

Insert

“from 1 July 2005 the resultant distribution of water supplied in a water year lies within the scenario provided for in Tables 1 and 2 in Attachment 4.2H.”

- (c) Amendment of Attachment 4.2H, section 1.1, page 192

Replace

Table 2

with the following

Table 2: Permitted distributions of medium priority water allocations and IWAs in the Upper Burnett Water Supply Scheme by zone

Zone	GA	GB	MA	NA	NB	NC	OA	OB	OC	OD	PA	SA	SB
Minimum nominal volume of medium priority water allocation (ML)	3 817	913	883	1 951	3 488	2 411	5 863	6 405	0	0	0	0	0
Maximum nominal volume of medium priority water allocation (ML)	3 967	963	993	2 201	3 738	3 261	6 653	7 005	283	1560	1560	0	50

(d) Amendment of Attachment 5.1D, section 1.1, page 203

Replace

Table 1

with the following

Table 1: Change limits: maximum and minimum nominal volumes by zone

Zones	AA	AB	AC	CA	CB
Minimum nominal volume of high priority water allocation (ML)	223	170	788	1 828	646
Maximum nominal volume of high priority water allocation (ML)	335	0	466	1 082	382

(e) Omission of disclaimer on inner title page

Revision 2 (4 December 2003) under section 106 of the *Water Act 2000*

(a) Amendment of Attachment 5.1D, section 1.1, page 203

2. Replace

Table 1

with the following

Table 1: Change limits: maximum and minimum nominal volumes by zone

Zones	AA	AB	AC	CA	CB
Maximum nominal volume (ML)	335	170	788	1 828	646
Minimum nominal volume (ML)	223	0	466	1 082	382

Revision 3 (April 2005) under section 106 of the *Water Act 2000*.

Revision 4 (November 2005) under sections 105 and 106 of the *Water Act 2000*.

Revision 5 (April 2006) under section 106 of the *Water Act 2000*.

(a) Amendment of Attachment 9.2, section 1.3, page 300

Insert

“In the interim, the ROL holder for the Barker Barambah Water Supply Scheme must operate in accordance with the rule:

- Specified in the expired interim resource operations licence for the Barker Barambah Water Supply Scheme issued to Sun Water dated December 2004 as it applied prior to the commencement of this Plan, with the exception of part 9 of section 2.3 of the Interim Resource Operations Licence, where section 2.7 of Attachment 4.3E of the ROP applies from commencement.”

(b) Amendment of Attachment 9.2, section 1.3, pages 300 and 301

Insert

“The total volume of water of an unused portion of a water allocation under rules as applied on 30 June 2006, may be carried over in accordance with section 2.1 of Attachment 4.3F in the water year 2006/07.”

Revision 6 (December 2006) under sections 105 and 106 of the *Water Act 2000*.

Revision 7 (June 2007) under section 106 of the *Water Act 2000*.

Revision 8 (November 2007) under section 106 of the *Water Act 2000*.

Revision 9 (June 2008) under section 106 of the *Water Act 2000*.

Revision 10 (August 2009) under section 106 of the *Water Act 2000*.

Revision 11 (April 2010) under section 106 of the *Water Act 2000*.

Glossary

TERM	DEFINITION
“1.5 year average recurrence interval (ARI) daily flow volume”	1.5 year ARI: the daily flow volume that has a 67 per cent probability of being reached at least once a year.
“5 year average recurrence interval (ARI) daily flow volume”	5 year ARI: the daily flow volume that has a 20 per cent probability of being reached at least once a year.
“AHD”	the Australian height datum which references a level or height to a standard base level.
“aquatic habitat”	the type of environment that relies on water, in which a given animal or plant lives and grows, including physical and biological conditions. Some of the attributes that contribute to aquatic habitat include – substrate type, stream flow, stream depth, presence of large and small woody debris, shade provided by trees, presence and type of aquatic vegetation.
“aquatic vegetation”	plants that live entirely or primarily in or on water.
“ARMCANZ”	Agriculture and Resource Management Council of Australia and New Zealand.
“barrage”	is a barrier constructed across a watercourse to prevent the inflow of tidal water.
“basin”	a river basin, which is the total area from which water drains to a river system or a grouping of adjacent river systems.
“catchment”	the area above a specific point on a watercourse from which water drains to the watercourse.
“cease to flow”	for a waterhole the level at which water stops flowing from a waterhole over its downstream control.
“channel system”	a system of channels, canals, pumps and pipelines and other works used for the distribution of water to water users within a water project area.
“confluence”	the point where two or more watercourses meet.
“critical water supply arrangements”	for a water supply scheme, a plan for the management of water during periods of critical water shortage when the storage levels in dams, weirs or waterholes are at or below minimum operating levels specified in the ROP.
“cumecs”	cubic metres per second (m ³ /s), a measurement of the rate at which a volume of water passes through a cross-section per unit of time.

“cyanobacteria”	also know as blue green algae. Naturally occurring microscopic, primitive photosynthetic bacteria.
“daily flow”	for a node, the volume of water that flows past the node in a day.
“dead storage”	for a dam or weir, the specified minimum volume of water within the ponded area of the storage that cannot be released or used from the storage under normal operating conditions.
“degradation”	any decline from the natural state in the quality of natural resources.
“DERM”	Department of Environment and Resource Management (comprising former Department of Natural Resources and Water and former Environment Protection Agency)
“development permit”	as defined under the <i>Integrated Planning Act 1997</i> .
“discharge”	discharge is the rate at which a volume of water passes through a cross-section per unit of time. This could be measured in cubic metres per second (cumecs or m ³ /s) or in megalitres per day (ML/day).
“EIS”	Environmental Impact Statement.
“EPA”	Environmental Protection Agency, now DERM.
“estuarine”	referring to the mouth of the river and the lower part of the river where river flows interact with the ocean's tide.
“flow preference groups”	in the indices of flow velocity and substrate preference groups, families of macroinvertebrates are assigned to a flow preference and a substrate preference group.
“flow regime”	the entire range of flows associated with a particular location or river reach and includes variations in river height or discharge, seasonality, annual variability or event duration.
“flow regime class”	the measure of flow regime seasonality worked out using the method stated in Haines, A.T., Finlayson, B.L. and McMahon, T.A., “A global classification of river regimes. Applied Geography, 1988”.
“functional feeding groups”	changes in functional feeding group composition reflect changes in food availability and ecological processes in and around streams and rivers. These changes are used to construct indices of trophic structure.
“gauging station”	the complete installation at a measuring site where water level and/or discharge records are regularly obtained.
“geomorphology”	study of the nature and history of the landforms on the surface of the Earth including rivers, and of the processes that create them.
“high priority water allocation”	a water allocation within a priority group for which the WASO (performance indicator) is in the range specified in the WRP.
“hydrology”	the study of water as it moves through the water cycle and includes the simulation of stream flows in river systems.
“interim resource operations licence”	a licence granted under s.175 of the <i>Water Act 2000</i> . The purpose of an IROL is to make provision for how infrastructure and water are managed

(IROL)”	before the details have been established through an approved ROP.
“low flow”	the total number of days in the simulation period in which the daily flow is not more than half the pre-development median daily flow.
“macroinvertebrate”	any animal, without a backbone, that is easily seen by the naked eye. In aquatic ecosystems this generally refers to insect larvae, prawns and worms.
“macrophytes”	aquatic plants that can be seen by the unaided eye.
“mean annual diversion”	the long-term average annual volume of water diverted.
“maximum instantaneous rate”	for taking water, the maximum rate in litres a second (L/s).
“mean annual flow”	the total volume of flow in the simulation period divided by the number of years in the simulation period.
“mean wet season flow”	the total volume of flow during the months of January to March in the simulation period divided by the number of years in the simulation period.
“medium priority water allocation”	a water allocation within a priority group for which the WASO (performance indicator) is in the range specified in the WRP.
“multilevel inlet”	an inlet arrangement on a dam or weir that allows stored water to be released downstream from selected levels below the stored water surface.
“nominal allocation”	the quantity of water apportioned under an existing authorisation for a regulated water supply.
“nominal entitlement”	the volume of water, in megalitres, that represents the share of the water, that the holder of a water allocation may take under the allocation. However, the volume of water that may be taken in a particular water year or other stated period is decided under the water sharing rules.
“normally depastured”	the number of stock that can be put to graze on a given area of land.
“NRW”	Department of Natural Resources and Water, now DERM
“performance indicator”	a measure that can be calculated to assess the impact of water allocation and management decisions on water entitlements and aquatic ecosystems.
“PET richness”	Plecoptera, Ephemeroptera and Trichoptera are the macroinvertebrate taxa most sensitive to changed conditions. PET richness is the total number of taxa of these three orders in a sample and is used to assess instream habitat and water quality.
“pH”	is a measure of the acidity or alkalinity of a substance, and the term “pH” is short for hydrogen potential.
“plan area”	the area shown as the plan area on Map A.

“pool”	a small, quiet, rather deep reach of a stream, as between rapids or where there is little current.
“priority area”	the areas defined in Attachment 2.1 for the conversion of water allocations, operating rules and trading arrangements.
“priority group”	a grouping of water allocations for taking supplemented water from a water supply scheme with the same WASO.
“QPI&F”	Queensland Primary Industries and Fisheries.
“rating table”	a table (or a graph) relating the measured height of the river (gauge height) to the stream flow at that location. This is usually done at a stream flow gauging station.
“refuge habitat”	for a water storage a refuge for biota during dry periods. Refuge habitat for water storages is provided for in the ROP by specifying a minimum storage volume (dead storage) under normal operating conditions.
“release”	for water from a dam the water passes downstream from the dam either through the dam outlet works or over the dam spillway.
“release rate”	rate of release of water from a storage facility.
“riffle”	a shallow area of the river in which water flows rapidly and often turbulently over stones or gravel.
“riparian”	the area adjacent to a watercourse.
“riparian vegetation”	vegetation bordering a river or stream which provides a direct link between the terrestrial and aquatic environment.
“river-forming processes”	a flow that structures and maintains the river channel features.
“riverine”	relating to rivers and their floodplains.
“resource operations licence (ROL)”	a licence granted under s.108 of the <i>Water Act 2000</i> . It authorises the holder to interfere with the flow of water to the extent necessary to operate the water infrastructure to which the licence applies.
“SIGNAL index”	a methodology for the bioassessment of water quality and pollution based on the differing tolerances of macroinvertebrate families to water pollution.
“stratification”	the layering effect which can occur in large water bodies. Often, the upper part of the water body becomes warmer than the lower part as a result of heating by the sun and if there is insufficient mixing of the water column two distinct layers can form. This can lead to a deterioration in water quality in the lower layer.
“supplemented water”	“supplemented water” means water supplied under an interim resource operations licence, resource operations licence or other authority to operate water infrastructure.
“surface water”	a) water in a watercourse, lake or spring; and b) water collected in a weir or dam constructed across a watercourse, lake or spring.

“tailwater”	the flow of water immediately downstream of a dam or weir. Tailwater includes all water passing the water storage, for example controlled releases and uncontrolled overflows.
“technical advisory panel (TAP)”	a scientific panel formed to provide technical advice in relation to environmental flow requirements.
“thermocline”	the depth in the water column of a dam or weir where a distinct change in temperature occurs due to stratification.
“threshold”	a nominated flow level above which water may be taken from a watercourse, lake or spring.
“transfer”	of a ROL, an IROL or a water allocation, means the passing of the legal or beneficial interest in the licence or allocation.
“unsupplemented water”	“unsupplemented water” means water that is not supplemented water.
“volume of water allocation”	the maximum quantity of water that may be taken in a water year in accordance with the terms and conditions of a water allocation.
“water harvesting”	the taking of unsupplemented water during specified high flow events, and generally involves the pumping of water into on-farm storage for later use.
“waterhole”	a part of a watercourse that contains water after the watercourse ceases to flow, other than a part of a watercourse that is within the storage area of a dam on the watercourse.
“zone”	a geographic location defined by a reach of a watercourse. Zones are for defining the location of a water allocation and operational arrangements under the ROP.