Department of Environment
and Resource Management

Baffle Creek Basin

draft water resource plan

overview report and draft plan

March 2010

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Minister's foreword

This overview report is a guide to the Baffle Creek Basin draft Water Resource Plan (the draft plan) that it accompanies. The draft plan provides a framework for sustainably managing the water resources of the plan area. The report summarises the key outcomes and provisions in the draft plan, and the reasoning behind them.

The Baffle Creek Basin economy is supported by beef grazing, horticulture, commercial and recreational fishing, aquaculture and tourism. Water use is relatively small compared to some other parts of Queensland and this helps to maintain the basin's high ecological and nature conservation values.

A number of groups have expressed their support for protecting these important environmental values. This has been recognised in the draft plan, while also providing security for existing water users and providing for future water needs.

Through the community consultation process, the people of the Baffle Creek Basin played a central part in identifying issues of particular importance to the plan area. I would like to thank the groups and individuals who contributed to the process, in particular the Community Reference Panel members.

Community participation will again be important in reviewing the draft plan. I encourage everyone with an interest in the Baffle Creek Basin to read the draft plan and overview report and contribute to finalising the plan by making a public submission.

Stephen Robertson MP
Minister for Natural Resources, Mines and Energy
and Minister for Trade

Contents

How to make a submission

Submissions are invited on the Baffle Creek Basin draft Water Resource Plan. In addition, submissions are sought on the proposal to prepare a draft resource operations plan (ROP). The draft ROP will form the basis on which the final Baffle Creek Basin Water Resource Plan will be implemented.

Anyone can present a submission about the draft water resource plan or proposal to prepare a draft ROP.

Submission form

The submission form on the next page can be used to lodge a submission about either the attached draft plan, or the proposal to prepare a draft ROP. Complete the five steps on the first page of the form to finalise a submission. Internet submissions will also be accepted.

Completed submission forms should be forwarded to the following address:

Postal address:

The Chief Executive
Department of Environment and Resource Management
Attention: Mr Mark Pearson
Water Services (Baffle Creek Basin WRP)
PO Box 1167
Bundaberg Qld 4670

Street address:

The Chief Executive
Department of Environment and Resource Management
Attention: Mr Mark Pearson
Water Services (Baffle Creek Basin WRP)
16-32 Enterprise Street
Bundaberg Qld 4670

Submissions may also be made via:

- The internet where an electronic submission form can be found: <www.derm.qld.gov.au/wrp/baffle_basin>
- Email: WRPBaffleCreekBasin@derm.qld.gov.au
- Fax: (07) 4131 5766 Attention: Mark Pearson

For further information on submissions:

Telephone: 1800 135 531

Closing date for submissions

All submissions must be received by **5 pm** on **14 May 2010**.

Submission form

Baffle Creek Basin

Draft Water Resource Plan

and

Proposal to Prepare Draft Resource Operations Plan

-Please use a ballpoint pen to complete this submission-

Submissions are being sought from interested individuals and groups about:

1) The content of the draft Baffle Creek Basin Water Resource Plan

The Minister for Natural Resources, Mines and Energy and Minister for Trade has released the Baffle Creek Basin draft Water Resource Plan for public review, discussion and submissions. Submissions will be considered by the Minister in finalising the Baffle Creek Basin Water Resource Plan.

2) The proposal to prepare a draft Baffle Creek Basin Resource Operations Plan

The Department of Environment and Resource Management has commenced the resource operations planning process in the Baffle Creek Basin. Submissions will be considered by the Department in the preparation of a draft resource operations plan for the Baffle Creek Basin. Further submissions will be sought from the public once a draft resource operations plan has been prepared.

Please complete the following five steps to make a proper submission:

- ☐ On the form, enter the name and address of each person making the submission.
- ☐ Ensure that each person making the submission has signed it.
- ☐ State the grounds of the submission, and the facts and circumstances relied on in support of these grounds.
- ☐ If you require more than the space provided in this submission form, please attach this completed submission form as a cover sheet to your detailed submission and tick the 'Detailed submission attached' box on this submission form.
- ☐ Ensure your submission is lodged by **5 pm** on **14 May 2010.**

Submission Form

Office Use Only

Submission No:.....

Date Received:.....

Issue Category:.....

Surname (Mr/Mrs/Ms/Dr)…….

First Name …….

Address ……..

……Postcode ……Fax ……..……

Organisation…….Position……

Phone No ……. Mobile No… ……Email……..……..……..……..……

Signature(s)…….……..…Date……..……

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

- ☐ Riparian landholder
- ☐ Stock or Domestic water user
- ☐ Horticultural interests
- ☐ User of overland flow
- ☐ Environmental interests
- ☐ State/Commonwealth department or agency
- ☐ Irrigator (unsupplemented surface water)
- ☐ Mining/petroleum industry
- ☐ Industry representative body
- ☐ Irrigator (groundwater)
- ☐ Urban water user
- ☐ Commercial fisher
- ☐ Dryland farmer
- ☐ General industry/business
- ☐ Recreational fisher
- ☐ Grazier
- ☐ Tourism industry
- ☐ Local Government
- ☐ Community group (name) …….....
- ☐ Indigenous community
- ☐ Other (please specify) …….

……..

Which catchment or subcatchment, within the plan area, do you live in?

- ☐ Littabella Creek Catchment
- ☐ Baffle Creek Catchment
- ☐ Broadwater Creek Catchment
  - ☐ Blackwater Creek Subcatchment
  - ☐ Deepwater Creek Subcatchment
- ☐ Eurimbula Creek Catchment
- ☐ Worthington Creek Catchment
- ☐ Other (e.g. do not live in the plan area)

A) **Draft Water Resource Plan.** What features of the Baffle Creek Basin draft Water Resource Plan do you think are worthwhile? What issues concern you? How do you think the Baffle Creek Basin draft Water Resource Plan could be improved to address these issues?

☐ Detailed submission attached

B) **Commencement of the resource operations planning process.** What suggestions do you have about how the Baffle Creek Basin draft Water Resource Plan might be implemented through the resource operations planning process?

☐ Detailed submission attached

NOTE: All submissions will be treated as confidential wherever possible. However, submissions may be viewed by other parties under the provisions of the *Right to Information Act 2009.*

Summary

Purpose of the overview report

This overview report, a requirement of the *Water Act 2000* (the Water Act), has been prepared to accompany the release of the Baffle Creek Basin draft Water Resource Plan (the draft plan) for public review and comment.

It summarises the development of the draft plan and the key provisions for allocating and managing water resources in the plan area. It also outlines the main issues raised in the technical assessments that were prepared to inform the process.

Read in conjunction with the draft plan, the report provides interested agencies, groups or individuals with the information they will need to prepare a formal submission for the Minister to consider when finalising the Baffle Creek Basin Water Resource Plan.

Developing the draft water resource plan

In line with requirements of the Water Act, the provisions in the draft plan were developed by evaluating the many factors—hydrologic, environmental, economic and social—that influence how water is allocated and sustainably managed to meet present and future needs.

Preparation of the draft plan began formally in October 2006 through public notification and release of an information report that explained the planning process and outlined key issues pertinent to the plan area.

Submissions on the proposed draft plan were invited, and a community reference panel was formed, to advise the Minister on water-related issues, community water needs and aspirations for the region.

To ensure that the draft plan provides a sound basis for the sustainable allocation and management of water in the Baffle Creek Basin, many factors were taken into consideration during the development of the draft plan. These factors include:

- community views and aspirations—as raised in public submissions at the start of the draft plan preparation and during community reference panel meetings
- how water flow supports natural ecosystems
- future water needs—including cultural, economic and environmental needs
- existing water entitlements and their use
- water use efficiency and the potential availability of alternative sources of water
- hydrologic, environmental, economic, and social factors raised in the technical assessments.

Guiding principles

As water resource plans establish the extent to which water will be allocated throughout a basin, the decision as to how much water can be allocated will depend on the factors listed above. Foremost among these are the environmental flow needs of the river system, which are provided for at the catchment scale by a number of strategies in the plan, including environmental flow objectives.

It is generally acknowledged that the environmental flow requirements of a river system are difficult to determine accurately, but can be more easily assessed in terms of *risk* to river function. In determining an appropriate level of risk for a particular river system, there will always be a trade-off between providing for existing and future development, and providing water for the environment. Where the balance lies is dependent on factors such as the economic and social uses of water, and the environmental values of a particular area.

Therefore, the key guiding principles in setting the outcomes and developing the strategies contained in the draft plan are:

- to consider the existing condition of the river system, particularly with respect to any changes in stream flows
- to understand the community, economic, and environmental needs for the water resources within the plan area
- to provide for environmental flow outcomes balanced against the existing and future community water needs.

Key provisions of the plan

Generally the plan:

- provides a framework for the allocation and management of the surface water, including overland flow water resources of the plan area
- provides for the continued use of all existing entitlements and existing overland flow works
- provides for the protection of the high environmental values of the Baffle Creek trunk stream and watercourses in the Eurimbula and Worthington Creek catchment areas by requiring the refusal of applications to build dams or weirs in these watercourses—this strategy aligns with the Premier's statement of 29 February 2008 that there would be no dam built on Baffle Creek.
- provides for long-term flows at both catchment and subcatchment scales, which ensure the maintenance of stream-flow variability and seasonality (refer to Table 1)
- provides for the protection of local ecosystems by imposing flow access conditions on new licences to take water from a watercourse and passflow conditions on new licences to interfere with water
- maintains the ecological and cultural values of lagoons by applying draw-down limits to existing authorisations to take from these features and by not allowing for any new entitlements to take water from them.

Table 1: Draft plan mean annual flows as a percentage of pre-development flows

Location	Mean annual flow	
	Pre-development*	Draft plan
Mouth of Baffle Creek	529 000 ML/a	97%
Mouth of Worthington Creek	15 200 ML/a	99%
Mouth of Eurimbula Creek	35 500 ML/a	98%
Mouth of Broadwater Creek	72 000 ML/a	95%
Mouth of Littabella Creek	55 600 ML/a	84%

*Pre-development flows are those stream flows calculated using the departments' Integrated Quality and Quantity Model (IQQM) over the simulation period of 1889 to 2007 as if there were no dams or other water infrastructure and no water was taken under licences or permits.

For existing entitlements, the plan provides for the better definition of entitlements, including amendment of area-based and other licences to state annual volumetric limits.

For future development, the plan provides for volumes of unallocated water to:

- meet future demands from agriculture and aquaculture throughout the plan area, while maintaining water flows to support environmental processes and protecting existing entitlements (refer to Table 2)
- provide for town water supply and potential projects of state and regional significance.

Table 2: Unallocated water

Catchment	Unallocated water	Comments
Baffle Creek	**3000 ML/a - strategic reserve**	Demand for additional town water supplies is possible over the next 10 years. Potential water demand for mining in the longer term.
	5000 ML/a - general reserve	Some demand for irrigated agriculture. Potential expansion of the aquaculture industry may require additional take of overland flow water.
Worthington Creek	**100 ML/a - general reserve**	No potential future demands identified.
Eurimbula Creek	**500 ML/a - general reserve**	Potential small expansion of the aquaculture industry.
Broadwater Creek	**1000 ML/a - general reserve**	Potential further irrigation development to support the horticulture industry, particularly macadamia production.
Littabella Creek	**5000 ML/a - general reserve**	Likely further irrigation development to support the horticulture industry in the catchment. Potential expansion of the aquaculture industry may require additional take of overland flow water.

For overland flow water, the plan:

- allows for the continued use of all existing overland flow works, where in some cases authorisation of existing overland flow works will be dependent upon a notification of works
- requires landholders to notify the department of all existing overland flow works of more than 5 megalitres (ML) in storage capacity
- specifies that new overland flow works with storages of less than 5 ML capacity and all stock and domestic dams will be self-assessable under the *Sustainable Planning Act 2009*, with no requirement for a water licence
- states that new overland flow works (other than for stock and domestic purposes and some stated exemptions) of more than 5 ML will require a development permit for the works and a licence to take the water.

For monitoring, reporting and amending, the plan:

- includes improved monitoring strategies, such as measurement of water use and monitoring of flows and aquatic ecosystems to establish how effectively the plan's outcomes are being achieved
- specifies that the Minister must prepare an annual report on the plan that summarises monitoring and any research findings, and assesses the effectiveness of the plan's strategies in achieving its outcomes
- includes a mechanism for the Minister to consider amending the plan if there is a major change in circumstances relating to water demands or environmental water needs.

1.0 Introduction

1.1 The role of the overview report

Preparation of an overview report is required under the *Water Act 2000* (the Water Act). The report serves as a plain English guide to the development of the draft Water Resource (Baffle Creek Basin) Plan. It summarises the assessments undertaken to develop the draft plan, explains key provisions and the reasoning behind them, and the process for finalising and implementing the plan.

The draft plan follows the overview report.

The report aims to:

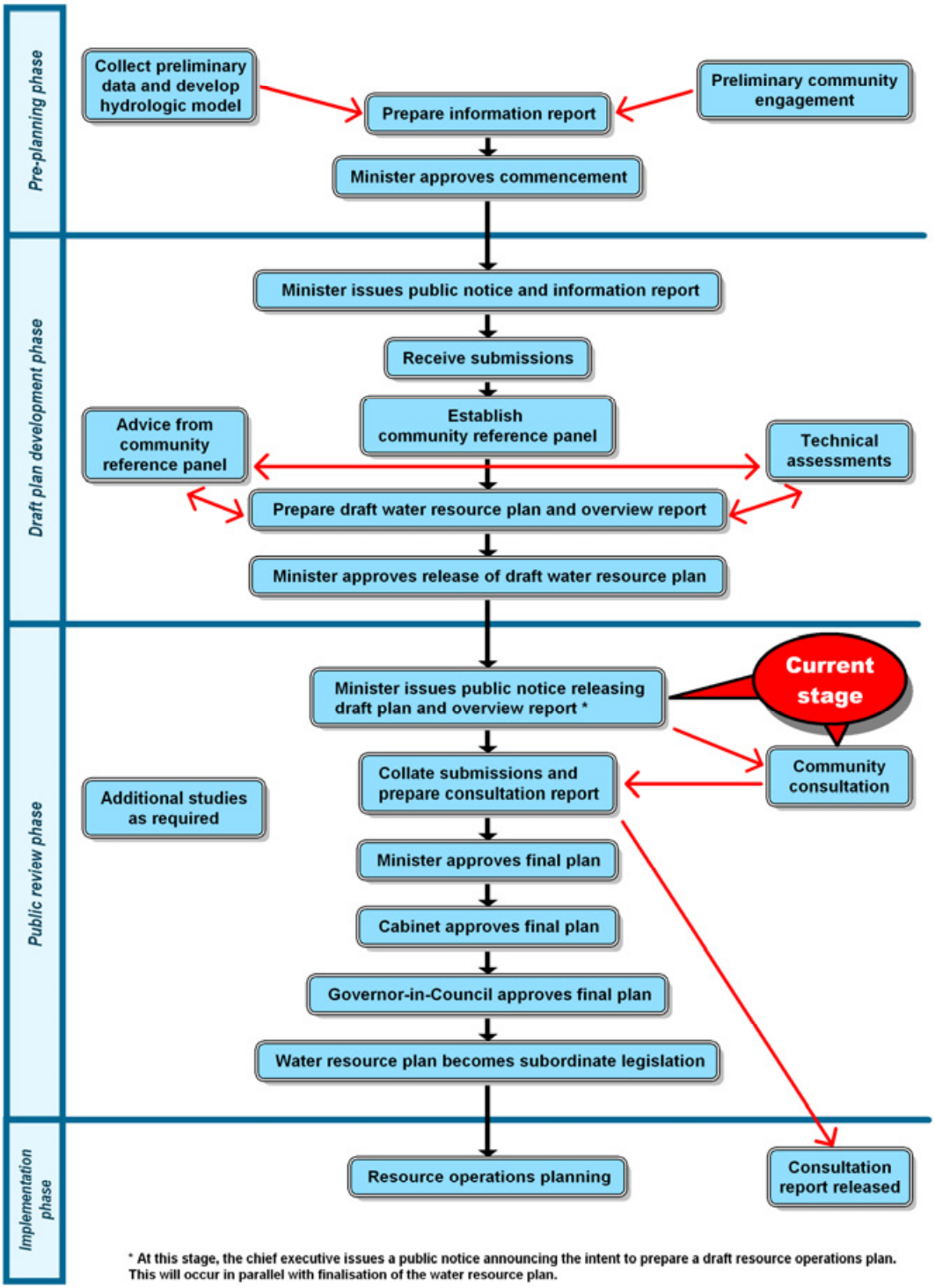
- promote informed debate and understanding about the water planning process
- provide information to support preparation of submissions on the draft water resource plan.

The report comprises seven chapters which address the following matters:

- Chapter 1 provides an introduction to the process and profiles the plan area
- Chapter 2 summarises the draft plan purpose and outcomes
- Chapter 3 explains the strategies for achieving general outcomes
- Chapter 4 explains the strategies for achieving ecological outcomes
- Chapter 5 outlines monitoring and reporting requirements
- Chapter 6 sets out arrangements for implementing and amending the plan
- Chapter 7 summarises how the draft plan was developed.

The water resource planning process and the current status of its preparation are shown in Figure 1.

Figure 1: The water resource planning process



1.2 Background to the water resource planning process

In the initial stages of modern settlement, the small Australian population generated relatively negligible development pressures and the effects of unstructured and incremental water resource allocation policies were correspondingly low. In the latter part of the last century, as growth increased and the limitations on water availability became apparent, it was clear that a more coordinated approach to water allocation and management was needed to sustain future needs.

Prolonged drought in many parts of the country added further impetus to the case for finding a new way of allocating and managing our finite water resources.

Moreover, it became evident that the relationship between a healthy natural environment and a healthy economy needed to be considered when making future decisions. This is an especially important consideration in a dry land, renowned for its extreme climatic variability. While the need to address these factors was most pronounced in Australia's populous southern coastal regions and in the Murray–Darling Basin, experience suggested that if similar water resource planning principles were applied to other regions—such as the Baffle Creek Basin—the types of challenges that have arisen elsewhere could be avoided.

1.2.1 Water reforms and the National Water Initiative

In 1994 the Council of Australian Governments agreed on the need to restructure the nation's water allocation and management approach. The new approach was underpinned by efficiency objectives that would address the problems associated with managing our limited water resources.

The states and territories agreed to implement changes that would ensure water resource availability was properly assessed, with supplies sustainably allocated to support economic, social and environmental needs.

Existing entitlements can be clearly specified under this structured approach, bringing a new level of confidence to the water-using community. At the same time, additional water that is potentially available for allocation within a system can be identified once the needs of other interests, such as the environment, have been addressed.

Now at an advanced stage of implementation, the water reform agenda was refreshed and refined in 2004 and is now known as the National Water Initiative.

The draft Baffle Creek Basin plan is consistent with Queensland's commitments to the national water reform agenda through:

- transparent, statute-based water planning
- better definition of terms and conditions for water entitlements
- stating general and ecological outcomes
- allowing for potential future water demands to be met where sustainable
- building a strengthened case for creating water allocations under a future plan
- ensuring that appropriate monitoring and reporting requirements are introduced to foster water user confidence and ensure that ecological outcomes are being met
- encouraging water use efficiency within the urban and rural sectors as a way of meeting increased water demands
- recognition of the linkages between overland flow water and stream flows as complementary parts of a single surface water resource, including their management and allocation as a single resource.

1.2.2 The Water Act 2000—the Queensland approach

Queensland's commitments to the water reform agenda are principally met through the *Water Act 2000*, under which the Minister plans for the allocation and sustainable management of water through the

preparation of a water resource plan for any part of the state. The requirements include provision for protecting natural ecosystems and security of supply for water users. A water resource plan can apply to water in streams, lakes and springs, overland flow water and subartesian water where necessary.

1.3 A water resource plan for the Baffle Creek Basin

Regardless of the relatively low levels of water use in the plan area, demand for water resources is expected to increase as a result of growth within the Wide Bay region.

Through the experience gained in other parts of Australia, governments now recognise that the early application of water management frameworks (such as water resource plans) is the key to sustainable growth and protection of water-reliant ecosystems.

With this in mind, the Minister determined that a water resource plan for the Baffle Creek Basin was necessary to better define water availability and establish an appropriate framework to secure present and future water needs. In October 2006, the Minister announced his intention to prepare a draft plan for the Baffle Creek Basin.

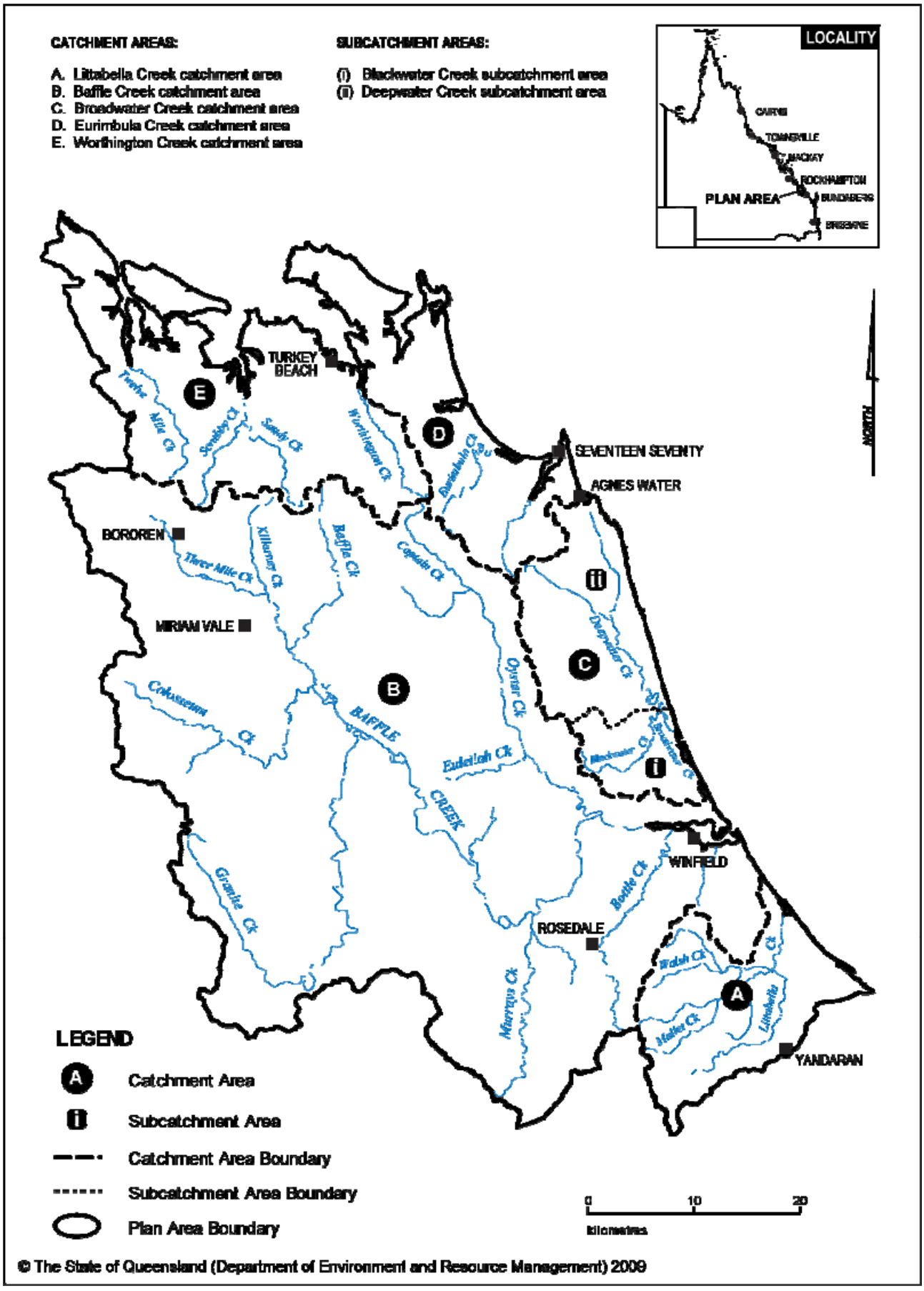
1.3.1 The plan area and the water to which it applies

The plan area (see Figure 2) comprises five catchments that drain to the Great Barrier Reef World Heritage Area. The draft plan applies to:

- water in watercourses, lakes or springs
- overland flow water[1].

[1] The Water Act defines overland flow water as 'water, including floodwater, flowing over land, other than water in a watercourse or lake, after having fallen as rain or in any other way; or after rising to the surface naturally from underground'.

Figure 2: The Baffle Creek Basin plan area



The approach of the draft plan is to treat all water as a single resource, since the movement of water through the landscape contributes to the overall availability of water resources in the plan area.

While groundwater can also play an important part in the exchange and movement of water through the landscape, its availability and usage in the Baffle Creek Basin is minimal. Groundwater is not dealt with in the draft plan, however any future development of groundwater resources will be closely monitored so that emerging issues can be identified and considered in a timely manner.

The plan will primarily be implemented following the development of a resource operations plan, as explained in Chapter 6 of this report.

> The public notices announcing the release of the draft Water Resource Plan and the Notice of Intent to prepare a draft Resource Operations Plan for the Baffle Creek Basin are shown in Appendix A of this report.

1.3.2 Life of the plan and plan review

As subordinate legislation to the Water Act, the finalised Baffle Creek Basin Water Resource Plan will have a 10-year life. The Minister must review and prepare a new water resource plan before the 10-year expiry date.

For any minor interim changes that may become necessary, the Water Act provides a process for amendments. If the broader plan outcomes are not being met, or should they change, the Act provides for a process for review and amendment.

An amendment to, or review of, the final plan could be triggered:

- if water entitlements in the plan area are unable to meet existing or emerging needs, having regard to potential gains from unallocated water available under the plan, unused entitlements, water use efficiency improvements, or alternative water sources such as recycling; and
- if economically viable and ecologically sustainable uses for additional water are identified; or
- if the ecological outcomes are not being achieved.

1.4 Links with other planning initiatives

In recent years, the plan area has experienced an increase in natural resource management and planning activity. To varying degrees, these initiatives have influenced the development of the draft plan.

1.4.1 Compatibility of the draft plan with the Reef Water Quality Protection Plan and the State Coastal Management Plan

The Reef Water Quality Protection Plan (Reef Plan), released in 2003 and updated in September 2009, is a joint initiative of the Australian and Queensland governments.

The Reef Plan identifies actions to halt and reverse the decline in the quality of water entering the reef, within a 10-year timeframe. The two primary objectives of the Reef Plan are:

- to reduce the pollutant load from non-point sources in the water entering the reef
- to rehabilitate and conserve areas of the reef catchment that have a role in removing water-borne pollutants.

The State Coastal Management Plan (coastal management plan), released in February 2002, is a statutory plan under the *Coastal Protection and Management Act 1995*. The coastal management plan provides the framework under which the coastal zone and its resources are managed. The coastal management plan includes objectives relating to water quality, Indigenous culture and the maintenance of coastal ecosystems.

The Baffle Creek Basin draft Water Resource Plan is consistent with the principles of both of these plans. The strategies contained within the draft plan that maintain flows for the environment will help to protect water quality. The draft plan also contains a number of strategies designed both to maintain processes that

support coastal ecosystems and to support water-related cultural values of the traditional owners of the plan area.

1.4.2 Consistency of the draft plan with other regional planning initiatives

The draft plan has been developed in consideration of other regional planning initiatives such as the proposed draft Regional Water Supply Strategy for the Wide Bay Burnett Region, which is currently under development. The regional water supply strategy is expected to provide a long-term approach to meeting the urban, industrial and rural water needs of the region over the next 50 years. The results of water demand studies undertaken as part of the development of the proposed draft regional water supply strategy helped to inform the development of the draft plan.

1.4.3 Contribution to natural resource management planning

The draft plan compliments the work of the community-based natural resource management regional body in the plan area—the Burnett Mary Regional Group. The regional body is responsible for preparing and implementing the Australian Government's *Caring for our Country* natural resource management initiative. This initiative is a partnership between the community and all levels of government to conserve, protect and restore the environment.

The draft plan builds upon the outcomes of the *Caring for our Country* initiative by:

- providing for the protection of flows required by aquatic ecosystems
- maintaining the current flows that influence morphology and biodiversity of aquatic habitats
- promoting and allowing for sustainable water use to provide economic and social benefits to the community
- providing a more robust system of allocating water, reinforced by stronger licensing and monitoring of water use, leading to greater protection of water resources.

The final plan will provide a statutory framework that supports the goals of the regional body and encourages efficient and sustainable water use.

1.5 Background to the Baffle Creek Basin plan area

The basin is located between Bundaberg and Gladstone, has a subtropical climate, and covers an area of approximately 4125 square kilometres. The main stream in the plan area is Baffle Creek, which has a catchment area of 2615 square kilometres. The Many Peaks Range and Bobby Range both run north-south along the western boundary of the basin with smaller ranges running parallel closer to the coast, resulting in extensive low-lying valleys. The basin is recognised for its high ecological and nature conservation values, in terms of the near-natural condition of many of the plan areas waterways and high biodiversity values.

The basin contains a number of protected areas, Natural Heritage sites and high conservation value areas. Other features include:

- a diverse freshwater fish community
- a full complement of migratory fish species (both of commercial and recreational importance)
- extensive rainforest communities and important regional ecosystems
- a number of rare and threatened fauna and plant species
- nationally important coastal wetland complexes.

1.5.1 People of the plan area

The plan area is located predominantly within the Gladstone Regional Council area, with a small area in the south falling within the boundary of the Bundaberg Regional Council.

In 2001 the plan area had an estimated total population of over 6300 persons, with Indigenous persons comprising two percent of the population. Medium series population projections estimate the plan area's population will increase to approximately 9800 by the year 2026. Most growth is projected to occur along the Discovery Coast, particularly in the towns of Agnes Water and Seventeen Seventy.

Employment in the plan area is concentrated in the agriculture, forestry, fishing, manufacturing, construction and retail trade industries. Employment in agriculture is primarily in beef cattle grazing, with much of the employment in the retail trade industry primarily in accommodation, cafes and restaurants attributable to the growing tourism industry.

1.5.2 Industry in the plan area

Water use supports a number of agricultural industries—including sugar cane, dairying, horticulture and pasture for beef grazing—as well as the urban sector and the aquaculture industry.

Tourism and fishing (recreational and commercial) are extremely important to the plan area's economy. The area is known for its ecotourism values and the maintenance of ecosystem services attributable to water management (e.g. habitat for fishing). Adequate freshwater stream flows are also important to commercial and recreational fishing industries, as reduced stream flows can have an adverse impact on fish populations.

1.5.3 Water resource development and use

The water resources within the plan area are relatively undeveloped compared to many other regions in Queensland and elsewhere in Australia. The plan area does not have any supplemented water supply schemes like those throughout the Burnett Basin to the south where water can be supplied by releases from dams and weirs.

The main sources of water demand include pasture for beef grazing and horticulture for the domestic and export markets (potentially including processed horticulture products). Aquaculture is an emerging industry in the plan area, however its future water demand is not expected to be significant. Water use in the aquaculture industry is dependent upon particular species grown and can be either marine or freshwater. The major use of freshwater for aquaculture is to dilute pond salinities, or to compensate for evaporation losses. Demand for additional water over the next 10 years, with the exception of demand in the Littabella catchment, is likely to be relatively low. The ability for the horticulture industry to expand will be subject to water access, land suitability, market access, competitive advantage, and the ability to value-add.

Although groundwater is the main source of water for the urban centres in the plan area, this resource is limited in extent and yield. Groundwater is accessed from the coastal dune sands for the towns of Agnes Water and Seventeen Seventy (both experiencing rapid population growth), the Elliott Formation for Winfield and the granites and alluvium for Miriam Vale and Bororen. Miriam Vale is primarily supplied with surface water from Baffle Creek, with additional water taken from a bore adjacent to the township. Rain water tanks also supplement supplies for all towns.

The alluvial and dunal sand aquifers around Agnes Water and Seventeen Seventy are limited in extent and yield. Reliability is not high and there is limited scope for further development of these resources due to significant National Park areas overlying the aquifers. The Gladstone Regional Council is progressing its Integrated Water Supply Strategy to meet the supply shortfall for the towns of Agnes Water and Seventeen Seventy. Part of this strategy is the construction of a desalination plant, producing potable water to meet the area's future needs.

It is anticipated that, for the life of the plan, surface water requirements for the agricultural industries will remain relatively static—especially for the sugar cane and dairying industries—with some potential growth

for horticulture, aquaculture and opportunistic irrigation. Macadamia nuts are the horticulture crop in the Baffle Creek Basin with the greatest export potential.

Urban demand is likely to be driven by population growth. It is unlikely that there will be any significant demand from secondary industries in the plan area due to the lack of nearby industrial centres and secure water supplies.

2.0 Draft plan purpose and outcomes

2.1 Plan purpose

The draft plan has been prepared and made available for public comment as required under the Water Act. The draft plan is a part of this report.

The draft plan's purposes are to:

- define the availability of water in the plan area
- provide a framework for sustainably managing water and the taking of water
- identify priorities and mechanisms for dealing with future water requirements
- provide a framework for minimising, where practicable, degradation in natural ecosystems
- regulate the taking of overland flow water.

2.2 Plan outcomes

The Water Act requires that a draft water resource plan must state outcomes, including ecological outcomes intended to support the sustainable management of water. The outcomes are stated in Chapter 3 of the draft plan and fall into three categories:

- general outcomes
- ecological outcomes
- specific ecological outcomes.

They are a complementary and balanced set of outcomes and reflect the diversity of issues raised through the community consultation process and technical assessments The outcomes have guided the development of the draft plan's strategies.

2.2.1 General outcomes

The draft plan's provisions will cater for the area's consumptive and non-consumptive water needs for the life of the final plan.

The draft plan has been structured to achieve the following general outcomes:

- to provide for the use of all existing water entitlements and other authorisations to take or interfere with water
- to provide for the continued use of all existing overland flow works
- to make water available to support:
    - population growth in towns and communities dependent on surface water resources in the plan area
    - growth in industries, including agriculture and aquaculture, dependent on surface water resources in the plan area
    - stock or domestic purposes in the plan area
- to maintain flows that support water-related aesthetic, economic and recreational values in the plan area, including, for example, tourism
- to support, as far as practicable, surface water and groundwater interactions

- to encourage continual improvement in the efficient use of water
- to support water-related cultural values in the plan area, including the values of the traditional owners of the plan area.

Strategies to achieve these general outcomes are presented in Chapter 3.

2.2.2 Ecological outcomes

Streamflows and other factors important to the water cycle in the plan area's catchments are in a comparatively natural condition. With few significant artificial barriers, flows in most of the plan area's streams, estuaries, aquifers and floodplains are unimpeded. That is, water can move freely through the landscape, connecting and supporting numerous types of habitat and ecological processes. Subject to summer rain, waterholes, aquifers, wetlands and floodplains are replenished or inundated annually, while the streams provide a path for fish and other species to migrate and breed.

The draft plan's general ecological outcomes focus on making sure that water continues to move freely between habitats. These outcomes are summarised as follows:

- to maintain the natural variability of flows that support the habitats of native plants and animals and migratory birds in watercourses, floodplains, wetlands, lakes and springs
- to provide for the continued capability of one part of a river system to be connected to another, including by maintaining flows that:
    - allow for the movement of native aquatic species between riverine, floodplain, wetland, estuarine and marine environments
    - deliver nutrients and organic matter throughout the plan area to support natural processes such as breeding, growth and migration in riverine, floodplain, wetland, estuarine and marine environments
    - deliver water and sediment throughout the plan area to support river-forming processes
- to minimise changes to natural variability in water levels to support natural ecological processes, including maintaining refugia associated with waterholes and lakes
- to minimise adverse impacts on aquatic ecosystems immediately downstream of new water resource development
- to improve understanding of the matters affecting flow ecology responses of ecosystems within the plan area.

2.2.3 Specific ecological outcomes

The draft plan's specific ecological outcomes for water in particular parts of the plan area are summarised as follows:

- to maintain the near-natural flow regime that supports biodiversity within waterholes and estuarine communities in the Eurimbula Creek catchment area and Worthington Creek catchment area
- to minimise changes to flows that maintain existing brackish habitat downstream of barrages in the Broadwater Creek catchment area
- in the Baffle Creek catchment area:
    - to maintain connectivity between Baffle Creek and its adjacent floodplain system, including lakes

  - to maintain the near-natural flow regime that provides for intermittent brackish habitat through the entire length of the Baffle Creek estuary
  - to minimise changes to the low flow regime that provides for riffle habitat and maintains waterholes
  - to minimise changes to the persistence of waterholes
- to minimise changes to the flow regime that maintains brackish habitat in the upper reaches of Littabella Creek estuary.

Strategies to achieve ecological outcomes are presented in Chapter 4.

Climate Change

The draft water resource plan contains strategies that have been developed for achieving general and ecological outcomes. During the development of these strategies, climate variability and the potential impacts of climate change were considered. The draft plan strategies, while developed to achieve general and ecological outcomes, will also help mitigate the potential longer-term impacts of climate change on water resources and areas of vulnerability, such as waterholes and lakes.

3.0 Strategies for achieving general outcomes

3.1 Allowing full use of existing entitlements

The draft plan provides for the full use of existing entitlements to take water. All existing entitlements—irrespective of whether they are currently used in full—will be recognised. Existing entitlements in the plan area are predominantly used for sugar cane, dairying, horticulture, pasture for beef grazing and town water supplies. Most water use in the region occurs in the Baffle Creek catchment; however significant use also occurs within the Littabella Creek catchment.

Riparian stock and domestic water use will continue to be authorised without a requirement for a water licence. Additionally, the taking of water in an emergency situation, for example, to fight a fire, is authorised under the Water Act.

3.2 Better defined water licences

Clearly defined entitlements are essential to the sustainable allocation and management of water resources. Under previous arrangements, new entitlements were issued without detailed consideration of the possible effects on existing users or ecological assets. In addition, in the absence of clear specification, entitlement conditions were open to individual interpretation. For example, many entitlements did not specify a volume that could be taken. In most cases, entitlements were specified in terms of an area that could be irrigated, with no volumetric limit specified.

Under the draft plan, all stream water licences will be required to state the same set of licence terms, such as:

- the purpose for which the water is to be used
- the maximum rate for taking water, expressed in litres per second
- the daily volumetric limit that may be taken, expressed in megalitres per day
- the annual volumetric limit that may be taken, expressed in megalitres per year.

In addition, existing area-based water licences will be required to state a monthly volumetric limit, expressed in megalitres per month. The chief executive may also state the conditions for the licence, including any flow conditions or conditions for storing the water.

These terms specify a volume of take over a range of time scales, providing water users with clear specification of their entitlement. The terms also allow water resources in the basin to be managed at a point in the stream, at a reach or system level, and on a whole-of-basin scale, thus contributing to the sustainable management of the resource.

The ***purpose*** stated on a licence can be 'stock and domestic', 'rural' or 'any'. *Rural* includes normal uses associated with primary production—for example, stock-watering, irrigation, agriculture and aquaculture. *Any* also includes urban, mining and industrial uses—that is, the water can be used for any purpose including rural purposes.

The ***maximum rate*** at which water can be taken will be based on existing diversion rates in litres per second where these are already stated on the water licence. Where diversion rates are not already stated, but a pump size is, the rates given for that pump size in Table 3 will apply. If the pump size is stated but not listed in the table, it will be assigned a rate interpolated from those sizes that are given.

Table 3: Maximum rates and daily volumetric limits for various pump sizes

Pump size (mm)	Maximum rate (litres/sec)	Daily volumetric limit (ML/day)
32	10	0.7
40	16	1.1
50	31	2.2
65	55	4
80	78	5.6
100	114	8.2
125	139	10
150	179	12.9
200	264	19
250	360	25.9
300	416	30
350	466	35
375-400	575	43.2
450	733	55
500	838	65.8
600-610	1100	86.4
660	1683	132
800	2237	184

The maximum pump rates outlined in Table 3 are based on the maximum capability of pumps, for example, as interpreted from manufacturers' pump curves.

If an existing licence already states a ***daily volumetric limit***, this will remain the daily volumetric limit for the licence. If no limit is currently stated, but a pump size is given, the daily limit given in Table 3 for that pump size will apply. While linked to the maximum rate of take, the daily volumetric limits specified in Table 3 reflect a more realistic estimate of how the pump might perform over the course of a day under normal operating conditions.

For existing area-based licences, a ***monthly volumetric limit*** of 2 ML/ha/month will be added to the licence conditions and any restrictions on storing water for later use will be removed. This term will maintain the integrity of the existing arrangements with respect to equitable base flow access, while ensuring that peak irrigation requirements are still met.

If an existing licence already states an annual volumetric limit, this will be used to specify the future annual volumetric limit. Where an existing licence states an area that can be irrigated, the ***annual volumetric limit*** for the licence will be based on multiplying the area in hectares by the relevant factor shown in Table 4 below.

Table 4: Factors for establishing annual volumetric limits for area-based entitlements

Catchment/subcatchment area	Factor
Baffle Creek	12 ML/hectare
Littabella Creek	9 ML/hectare
Blackwater Creek #	5 ML/hectare
Deepwater Creek #	10 ML/hectare

#Subcatchment areas

These multiplication factors are based on crop water needs and water availability in various parts of the plan area.

Where the existing licence does not give a clear indication of the maximum rate, daily volumetric limit or annual volumetric limit, such terms will be determined by considering a number of factors including the water access conditions stated on the licence, the water taking capacity of existing works, the volumes required for the intended purpose, and any previous water use including the efficiency of that use.

3.3 Securing existing town water supplies and other authorities

Water resource plans provide an opportunity to bring historic and poorly defined arrangements into line with the more contemporary arrangements provided for by the Water Act. The draft plan provides a process for granting a licence to take up to 10 megalitres per year to the Rosedale Water Supply Association Inc. The details of the licence, when granted, are shown in schedule 7 of the draft plan. Rosedale Water Supply Association Inc. acquired ownership of a pump on Bottle Creek. This pump was previously operated by Queensland Rail to supply six properties in the township of Rosedale. There is no other non-potable water source for the township of Rosedale.

It is also proposed to provide a process for the granting of licences for the take of water from two off-stream lagoons. These licences will replace a statutory right held previously under the *Water Resources Act 1989*. The details of these licences are shown in schedule 7 of the draft plan.

The draft plan will also provide information on the replacement of an Order-in-Council authority, relating to town water supplies in the plan area, with a better-defined water licence as set out in schedule 6 of the draft plan. The details of the replaced licence have been developed in consultation with the Gladstone Regional Council. Across the state these Order-in-Council authorities are progressively being replaced with better-defined water entitlements under provisions contained in the Water Act.

3.4 Meeting future water needs

Water to meet future needs will be made available through the provision of volumes of unallocated water.

Table 5 shows the proposed volumes of unallocated water provided for in the draft plan. It is important to note that any unallocated water will need to be acquired by a proponent and taken as unsupplemented water.

The unallocated water volumes are geared towards areas where water demands have been identified—through community consultation and the economic and social assessments discussed in Chapter 7 of this report.

The provision of unallocated water is expected to cater for the following range of future potential demands throughout the basin including:

- population growth within towns
- growth in industries dependent on reliable surface water resources
- agriculture
- irrigated horticulture in the Littabella and Broadwater Creek catchments
- new aquaculture enterprises in the Baffle and Littabella Creek catchments.

Table 5: Unallocated water

Catchment	Unallocated water	Comments
Baffle Creek	**3000 ML/a - strategic reserve**	Demand for additional town water supplies is possible over the next 10 years. Potential water demand for mining in the longer term.
	5000 ML/a - general reserve	Demand for irrigated agriculture. Potential expansion of the aquaculture industry may require additional take of overland flow water.
Worthington Creek	**100 ML/a - general reserve**	No potential future demands identified.
Eurimbula Creek	**500 ML/a - general reserve**	Potential small expansion of the aquaculture industry.
Broadwater Creek	**1000 ML/a - general reserve**	Potential further irrigation development to support the horticulture industry, particularly for macadamia production.
Littabella Creek	**5000 ML/a - general reserve**	Likely further irrigation development to support the horticulture industry in the catchment. Potential expansion of the aquaculture industry may require additional take of overland flow water.

3.5 How unallocated water will be made available

3.5.1 Process for releasing unallocated water

Water use efficiency is now a national priority as Australians increasingly come to grips with the reality of living on the driest inhabited continent. While the draft plan provisions are intended to promote progressive efficiency for existing uses, those uses associated with the release of any unallocated water will also need to satisfy efficiency and other criteria to ensure consistency with overall planning goals.

Criteria that will support the intended outcomes include:

- land and water management plans for new irrigation uses— it is intended that the resource operations plan will state a requirement for a land and water management plan for all new irrigation licences. This will ensure that proposals address factors such as soil suitability, and water management innovations like run-off capture, recycling and drainage.
- unallocated water is to be released under a market-based process—as a rule, any unallocated water made available will be sold at auction or by tender. This will promote efficiency and overall best benefit to the community by ensuring that potential buyers carefully evaluate the value of water within their business plans. Prices are likely to be influenced by demand, especially where there are competing interests driven by high-value uses. However, in some instances—for example, if competition were low—sales might be based on a predetermined reserve price.

Section 32 of the draft plan lists some of the considerations in developing the process for the release of unallocated water.

The Queensland Government has developed a set of policy principles to guide the release of unallocated water to ensure that any water that is made available in different parts of the state is released to consistent standards. Any release of water as a result of the Baffle Creek Basin water resource planning process will be in accordance with these policy principles.

These provisions are consistent with government principles formulated to guide the release of unallocated water in a way that promotes efficiency and maximum benefit to the community. The Queensland Government policy principles for the release of unallocated water are available from www.derm.qld.gov.au (refer fact sheet W152). The process for releasing unallocated water will be outlined in the resource operations plan (ROP). Releases are likely to occur in stages as industries and water demands mature.

The plan also contains allocation and management strategies pertaining to the release of unallocated water to ensure that any impacts are both localised and limited. Specifically, the granting of any unallocated water will be subject to the meeting of the plan's environmental flow objectives. In some cases this could mean that there are limitations to the volume and scale of new water development proposals. Furthermore, any new licences to either take or interfere with water will include pass flow conditions. These strategies support the aim of ensuring the ecological outcomes of the plan are met. Strategies for achieving ecological outcomes are described further in Chapter 4 of this report.

3.5.2 Dealing with outstanding licence applications

There are a number of outstanding licence applications to take or interfere with water in the plan area. It is considered that this demand is best dealt with under the framework provided by the water resource plan. It is therefore proposed that these outstanding applications will be refused under the final plan and applicants will be redirected to the process for the release of unallocated water. As discussed in section 3.5.1 of this report,

the process for the release of unallocated water will be provided in the final resource operations plan. It is expected that the final resource operations plan will be released within a year of the release of the final water resource plan.

3.5.3 Interim arrangements for meeting increased water demands

A moratorium on any activity that would lead to an increase in the taking or interfering with water from a watercourse, lake or spring in the plan area was introduced on 16 July 2004. The moratorium was amended on 27 September 2008 to include overland flow water. The moratorium is intended to ensure that the current status of water resource development is maintained during the planning process so the final plan can be prepared from a stable base—one in which all existing water entitlements are accounted for and protected from the effects of additional development.

The moratorium will remain in place until the final plan is released; however the draft plan proposes to continue some aspects of the moratorium until the resource operations plan is finalised, bringing with it the process for releasing unallocated water. To meet any immediate demand for town water supply and potential projects of regional and state significance ('state purpose'), the draft plan allows applications for such purposes to be accepted and dealt with before the resource operations plan is finalised.

3.6 Regulation of overland flow water

Technical assessments indicate that overland flow development in the Baffle Creek Basin plan area may have a significant impact on the amounts of rainfall run-off reaching streams and the recharge of groundwater. Left unchecked, this could have long-term implications for the needs of towns, industry and landholders that rely on this resource. Overland flow contributions are also important for riverine, wetland, estuary and coastal environments, as well as fisheries and other non-consumptive uses.

Therefore, controls are needed to protect overall planning goals. This will be achieved through the introduction of uniform overland flow provisions that will apply throughout the plan area.

3.6.1 The importance of overland flow

Overland flow water in the Baffle Creek Basin is a vital resource for the environment to:

- sustain high streamflows
- produce wet season discharge, important for coastal processes
- revive and replenish inland and coastal wetlands
- trigger reproduction cycles for aquatic and terrestrial plants and animals
- convey nutrients to and from floodplains
- contribute to aquifer replenishment
- provide beneficial flooding required by riparian and floodplain vegetation.

Overland flow water is an important source of water in rural communities for:

- supplementing stock and domestic water supplies
- supplementing irrigation water supplies
- supporting tourism—particularly where visitors come to enjoy a healthy environment

- regenerating pastures
- supporting fisheries
- supporting values important to traditional owners, including food production.

3.6.2 Provisions for stock or domestic storages and small scale storages

All landholders will continue to be able to take overland flow water for stock and domestic[2] needs, both from existing overland flow works (those in existence on 27 September 2008) and from new overland flow works. In addition, the draft plan will allow landholders to take water from existing and new storages up to 5 ML in capacity for any purpose. Landholders with existing stock and domestic overland flow storages over 5 ML in capacity will be required to notify the department of the details of the works. This will lead to an improved understanding of the existing overland flow works in the plan area.

New overland flow works of either type will be self-assessable development under the *Sustainable Planning Act 2009* and the proponent must notify the department of the storage details within 30 days of completion of the works. Any development proposals that do not meet the self-assessment criteria will be 'assessable development' under the relevant Sustainable Planning Act code.

3.6.3 Provisions for overland flow storages built for environmental purposes

The draft plan recognises the environmental benefits that arise for water quality if contaminated run-off is captured. The draft plan therefore also authorises existing and new take of overland flow water for either of the following purposes:

- the capture of contaminated run-off from agricultural land

  or

- to meet the requirements of an environmental authority, or a development permit for an environmentally relevant activity under the *Environmental Protection Act 1994.*

Landholders who have existing works over five megalitres in capacity for either of these purposes will be required to notify the department of the existing works.

New works that take overland flow water to meet the requirements of an environmental authority, or for an environmentally relevant activity are 'self-assessable development' under the *Sustainable Planning Act 2009* and do not require a development permit to build the works. New works for the purpose of capturing contaminated run-off from agricultural land are 'assessable development' and will need a development permit.

3.6.4 Provisions for other storages over 5 ML in capacity

All other existing overland flow works (that are over 5 ML and have not been built for any of the purposes mentioned in 3.6.2 and 3.6.3) will be authorised under the water resource plan for a period of 12 months from the day the final plan is released. These existing works will continue to be authorised, provided the landholder notifies the department of the details of the works.

Any proposal for new overland flow works of more than 5 ML capacity (other than for the purposes mentioned in 3.6.2 and 3.6.3) will require both of the following:

- a development permit issued under the *Sustainable Planning Act 2009*

[2] Section 20(4) of the *Water Act 2000* authorises the take of water for stock and domestic purposes. The draft plan does not affect this provision.

- a licence to take water, issued under the Water Act, subject to the availability of unallocated water and the process for the release of this water under the resource operations plan.

Section 3.5 of this report discusses the provision of unallocated water.

3.7 Providing for Indigenous values

For traditional owners, the water resources of the Baffle Creek Basin, and the landscape they shape and are formed by, are inseparable from Indigenous spiritual and cultural values. The land and water resources also support the plants and animals that are an important source of food for Indigenous communities.

Under the *Aboriginal Cultural Heritage Act 2003* (Cultural Heritage Act), anyone engaging in any activity has a duty of care to protect areas and objects of significance to Aboriginal people in accordance with their tradition or history.

In parallel to the Cultural Heritage Act, the provisions in the draft plan support social and cultural interests by protecting dry season habitats such as waterholes, lakes, and other permanent sources of water that may be important to the traditional owners of the area. Additionally, floodwaters will continue to flow to estuarine and marine environments where they will maintain productive traditional fishing interests.

4.0 Strategies for achieving ecological outcomes

Water resource plans provide a framework for the sustainable allocation and management of the water resources of a basin. Sections 12 and 13 of the draft plan provide for general and specific ecological outcomes that are dependent on the way in which the surface water resources of the basin, including overland flow water, are allocated and managed. The draft plan proposes to achieve these outcomes through a number of strategies and at a number of different scales.

At the broadest scale, the draft plan provides for environmental water needs by effectively limiting the overall volumes of water that can be taken under existing entitlements (which will be amended to include volumetric limits) and by specifying unallocated water reserves in each catchment area. In certain parts of the plan area, the draft plan ensures that streams can flow freely with no barriers to fish passage and sediment movement.

At the subcatchment scale, the draft plan provides limitations on the volumes and changes to stream flows from any additional take of water. This ensures that natural aquatic ecosystems and processes, at any point in the plan area, are not subject to significant impacts.

At a more local scale, the draft plan provides for conditions to be placed on future entitlements granted from the reserve of unallocated water and any licences to interfere in allowed areas. These provisions will be of particular importance in achieving the specific ecological outcomes described in section 13 of the draft plan.

4.1 Protecting natural aquatic ecosystems by limiting interference with water flows

The plan area is renowned in the region for its high environmental values and Baffle Creek itself is unusual in that it contains no significant weirs, barrages or other infrastructure that disrupt fish migrations, flows or tidal movement. These generally unhindered flows are important for the many non-consumptive users, such as tourism and fisheries, whose interests are directly linked to the basin's status as a relatively undisturbed system.

Interference with water in watercourses has many benefits in the plan area, including water supply for drinking, stock watering, and irrigation purposes. However, there are a number of major effects caused by

interference. Alteration in watercourse flow characteristics can impact on key geomorphological and ecological processes in both riverine and estuarine ecosystems, including near-shore marine ecosystems.

Under the Water Act, water licences are generally required to authorise any interference with water caused by a structure or barrier across a watercourse, waterhole, lake or spring—for example, a weir or dam that interferes with water by impounding the flow of water. In recognising the importance of the natural flow regime, the draft plan proposes the refusal of any new licences to interfere with water in a watercourse by impounding flow, within the Worthington Creek and Eurimbula Creek catchment areas and in the trunk stream of Baffle Creek.

In the Littabella Creek and Broadwater Creek catchments and for tributary streams of the Baffle Creek catchment, water licences to interfere may be granted only if the proposed impoundment is to be used to supply stock and domestic water or to provide a pumping pool. Water licences to interfere may also be granted if the application is associated with the purchase of unallocated water through the process provided for in the final resource operations plan. However, any authorisation associated with the purchase of unallocated water may be limited in scale and will be subject to pass flow conditions.

4.2 Meeting environmental needs at the catchment scale by limiting water use

At the plan area scale, environmental needs are provided for by ensuring total long-term water use from existing and future entitlements is limited. This will allow stream flows to continue to:

- provide for the health of marine, wetland and estuarine habitats by delivering fresh water, nutrients and sediment
- maintain off-stream lagoons and in-stream waterholes
- provide for the movement of native aquatic species by allowing one part of a river system to be connected to another
- deliver water and sediment throughout the plan area to support river-forming processes.

Water resources will be allocated and managed to maintain high proportions of the natural stream flow to continue in each catchment of the plan area. These natural flows may be protected through environmental flow objectives, which state minimum levels of change from the natural condition and provide an overall guide to future decision making. Table 6 shows the mean and median annual flows as a percentage of pre-development flows for each catchment area.

Table 6: Draft plan mean and median annual flows as a percentage of pre-development flows

Location	Mean annual flow		Median annual flow	
	Pre-development	Draft plan	Pre-development	Draft plan
Mouth of Baffle Creek	529 000 ML/a	97%	369 000 ML/a	95%
Mouth of Worthington Creek	15 200 ML/a	99%	11 200 ML/a	99%
Mouth of Eurimbula Creek	35 500 ML/a	98%	27 500 ML/a	98%
Mouth of Broadwater Creek	72 000 ML/a	95%	50 200 ML/a	91%
Mouth of Littabella Creek	55 600 ML/a	84%	25 400 ML/a	73%

4.3 Securing environmental flows at subcatchment scales

The draft plan also limits water diversions at the subcatchment scale through the specification of two environmental flow objectives that apply at any point of take in the plan area. These particular environmental flow objectives ensure that future decisions regarding the granting of unallocated water will maintain the long-term mean annual flow above 70 per cent and the median annual flow above 60 per cent of pre-development flows, at any point in the plan area.

The environmental flow objectives specified in schedule 4 of the draft plan were developed through a hydrological simulation of stream flows and water resource development over a 118-year period from 1889 to 2007. The percentages for both the mean and median annual flows shown in Table 6 represent the environmental flow objectives for each catchment area. It is important to note that these values also include representation of the volumes of unallocated water supported by the draft plan. As long-term statistics, these values should *not* be viewed as necessarily typical of each year or future years.

4.4 Protecting local aquatic ecosystems by placing conditions on new licences

The environmental water needs at the local scale will be met through a range of strategies which are included in the process for dealing with unallocated water in the resource operations plan. These strategies will guide the water access conditions placed on new licences, and existing licences where needed, by protecting the water bodies and stream flows required to maintain local aquatic values.

The range of resource management strategies in the draft plan include:

- new water licences to take water from a watercourse will be subject to flow thresholds to protect the low flow regime—these conditions will also help to maintain surface water/groundwater connectivity
- all new licences to interfere will have specific pass flow conditions applied to protect the low flow regime and aquatic ecosystems, including waterholes, downstream of the interference
- applying drawdown limits on existing take from off-stream lagoons.

4.5 Maintaining ecological and cultural values of waterholes and lakes

An environmental assessment of the plan area identified both in-stream waterholes and lakes, particularly off-stream lagoons, as high conservation value features in the plan area. They provide important dry season refuge and vital habitat for flora and fauna.

For traditional owners, in-stream waterholes and off-stream lagoons have great cultural significance as they were used as meeting places where tribal disputes were settled and other arrangements, such as annual trading took place. They were also focal points for ceremonies and provided reliable sources of food such as fish and water lily bulbs.

Lagoons and waterholes are important features in the plan area and could be potentially at risk, if excessively drawn down. The draft plan proposes to allow existing users to continue to take water from in-stream waterholes and off-stream lagoons; although these entitlements may be subject to access conditions to ensure that ecological and cultural values are maintained. Waterholes and off-stream lagoons will be fully protected from any future development. All new entitlements to take water from a watercourse will be subject to flow

thresholds thus ensuring that there is no draw-down on any waterholes. Furthermore, new take from off-stream lagoons will not be allowed.

5.0 Monitoring and reporting requirements

Monitoring and reporting, required under the Water Act, will provide a valuable tool for assessing and reviewing the effectiveness of the final plan. The information gathered will also contribute to the growing body of knowledge about our river systems and will assist in the 10-year review of the plan.

The monitoring program will have general and ecological provisions. General water monitoring will focus on:

- streamflows
- the taking and diverting of water.

Natural ecosystem monitoring will focus on:

- volume, frequency, duration and timing of streamflows
- information on hydraulic habitat requirements of ecological assets.

In addition, groundwater development will be monitored along with any other monitoring as determined by the chief executive. This data will be used to analyse the effectiveness of the resource management strategies in meeting their intent.

The monitoring programs will be conducted by the chief executive or other relevant state agencies. Other monitoring programs considered relevant by the chief executive may also be undertaken.

The Minister will report annually on the effectiveness of the implemented resource management strategies in achieving the plan's outcomes.

5.1 Measuring (metering) devices

Water taken under water entitlements in the Baffle Creek Basin plan area is currently unmeasured. Historical water use has been estimated for the development of this plan, but future plans will benefit from the improved information afforded by the installation of measuring devices (or meters).

The draft plan proposes that measuring devices be installed for all water licences to take water from a watercourse, lake or spring. The installation of measuring devices will occur as part of the statewide metering program. Implementation will be consistent with the statewide metering regulation under the Water Act.

The Queensland Government's statewide Metering Water Extractions Policy may be found on the Department's website: www.derm.qld.gov.au/water/use/index

Metering provides the information needed to ensure that water users comply with the conditions of their water entitlement. These devices also provide accurate water use data which may help users improve their water resource management and water use efficiency.

By accurately knowing the volume and location of take, metering will support and improve future planning activities. The information gathered will be integrated with other knowledge to improve our understanding of how the water resources in the plan area support the rural economy, communities and the natural environment.

6.0 Implementing and amending the plan

6.1 Plan implementation through a resource operations plan

A water resource plan will primarily be implemented through a resource operations plan (ROP). The first step towards implementation has been taken, with the chief executive, under the Water Act, releasing the proposal to prepare a draft resource operations plan and inviting submissions on this proposal. A copy of the public notice of proposal to prepare a Baffle Creek Basin draft ROP can be found in Appendix A of this report. The department will prepare the draft resource operations plan in consultation with water users and other stakeholders. On its completion, the draft resource operations plan will be released for public comment through a formal submissions process.

6.1.1 What the resource operations plan will do

The resource operations plan, when finalised, will establish the day-to-day rules relating to the management of water in the Baffle Creek Basin plan area.

Among other things, the draft resource operations plan will:

- amend existing water licences to include volumetric terms consistent with the water resource plan
- establish a process for the releasing and granting of unallocated water
- establish a process for the granting or amending of overland flow licences
- implement the monitoring and reporting requirements set out in the water resource plan.

Stakeholders can comment on the proposal to prepare a resource operations plan through the submissions process outlined in the 'How to make a submission' section of this report.

6.1.2 Timetable for implementing the plan

The preparation of a draft resource operations plan will commence with the release of the draft water resource plan. This timing will expedite the finalisation and implementation of the resource operations plan. The actual timeframe will depend on the community response to the draft water resource plan, the draft resource operations plan, and resolution of any issues that arise from these plans.

6.2 Amending or replacing this plan

Water resource plans have a statutory life of 10 years under the *Statutory Instruments Act 1992*. The review and development of the next water resource plan is expected to begin after the final plan has been in place for seven years. However, the plan can be amended during its 10-year life. Section 59 of the draft plan allows for specific minor amendments to be made. These types of amendments would allow improved ongoing implementation of the water resource plan and are considered to have no effect on achieving the outcomes of the plan. In particular circumstances, the Water Act also allows for more significant amendments or the replacement of the plan during the 10-year period.

Water resource plans are developed through using the best available information and seeking the views of stakeholders through an extensive community consultation process. While they are designed to achieve a range of outcomes and provide certainty over their 10-year life, it is prudent to cater for possible changed circumstances or new information, which may show that the plan outcomes are not being achieved. Section 60 of the draft plan directs the Minister to consider amending the plan or preparing a new plan if, for example, water entitlements are not sufficient to meet water needs or if the general or specific ecological outcomes are not being achieved.

7.0 How the draft plan was developed

A moratorium applying to water in watercourses, lakes and springs in the proposed plan area was published on 16 July 2004. On 25 October 2006, the Minister announced his intent to prepare a water resource plan for the Baffle Creek Basin area. At that stage the draft plan proposed only to apply to water in watercourses, lakes and springs.

As part of the planning process, a number of assessments were conducted across the plan area.

Information on the current and potential use of overland flow water highlighted the existence of significant overland flow storages and take of water, with potential for further expansion of irrigated agriculture. It became apparent that further development of overland flow storages, if unmanaged, could potentially impact on the security of existing water entitlement holders and the environment, and this could compromise the water resource planning outcomes for the plan area. As a result, the scope of the draft plan was increased to include overland flow water. The moratorium was amended on 27 September 2008 to apply to overland flow water as well as water from a watercourse, lake or spring.

Under the water resource planning process, the Minister has a clearly defined set of requirements within which there is flexibility to assess and address the future needs of each individual plan area and its communities.

Community consultation as well as technical assessments—hydrologic, environmental, and social and economic—were central to preparing the draft plan and provided information necessary to consider the water resources of the plan area in the regional context.

While the technical assessments provide comprehensive information that must be considered in developing the draft plan, input from the community in the plan area ensures that this information is considered in the broadest social context.

7.1 Community consultation

Community views were sought formally through a submission period at the commencement of the planning process and through the establishment of a community reference panel. The department also sought views from relevant community and stakeholder groups, as well as from individuals.

7.1.1 Submissions on the proposed draft plan and the community reference panel

The Minister is required, under the Water Act, both to conduct a formal submission process on the intention to prepare the draft plan and to establish a community reference panel for the water resource planning process.

Two formal submissions processes were undertaken during the development of the draft plan. Submissions were sought both at the commencement of the water resource planning process and following the release of a notice of intent to include overland flow in the draft plan. All submissions received were considered in the development of the draft plan. They provided the Minister with a perspective on community support and their views regarding the draft water resource plan.

The Baffle Creek Basin Community Reference Panel was appointed by the Minister in March 2007. The panel included representatives of traditional owners, natural resource management, conservation, grazing, aquaculture, local government, irrigated agriculture, commercial and recreational fisheries, tourism, and community interests. Although the panel is not a decision-making body, it plays a key role in advising the Minister on the views and opinions of the community.

The extensive interests represented on the panel were reflected in the breadth of views that were expressed during the six meetings held throughout the development of the draft plan. This, in turn, generated a wide range of factors for the Minister to consider in preparing the draft plan.

Key issues raised through submissions and by the members of the Community Reference Panel included:

- opposition to any in-stream dams/weirs on Baffle Creek
- the protection of aquatic habitats
- the requirement for river flows to keep the system healthy
- the importance of considering social and economic values
- that water should only be used for high value uses
- the need to protect significant Indigenous sites, such as waterholes, off-stream lagoons and scar trees (present along Baffle Creek)
- the importance of fisheries and their reliance on the pristine nature of Baffle Creek
- the importance of adequate supplies of town water for future urban growth and tourism
- requests for adequate volumes of water to be made available for aquaculture and horticulture
- the precautionary approach be used when providing for future water demand
- support for the management of overland flow water
- requests that the use of overland flow water be monitored
- opposition to the establishment of water trading in the plan area.

7.1.2 Additional consultation with the community

While the submissions processes and the community reference panel were the main forms of consultation, other methods of gauging community perspective were also employed. These included:

- public information sessions held in the basin, providing the general community with the opportunity to contribute to the draft plan's development
- meetings with local government to discuss the development of the plan
- meetings with individual stakeholder groups such as the tourism board and the Burnett Mary Regional Group
- consultation with land holders in the plan area about the need to increase the scope of the draft plan to include overland flow water in the development of the draft plan.

7.2 Technical assessments

The technical assessments undertaken to support the preparation of the draft plan were:

- an economic and social assessment of how the water resources in the plan area have directly and indirectly supported the development and growth of communities and their respective economies, as well as their social and cultural ties to water
- an environmental assessment that examined the relationship between the water resources in the plan area and the natural environment
- a hydrologic assessment of the plan area.

The community reference panel reviewed and provided comments on the draft technical reports for the environmental, and economic and social assessments. Interviews were also conducted with key panel members for the economic and social assessments.

7.2.1 Hydrologic assessment

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

The department used the Integrated Quantity Quality Model (IQQM), a computerised model, to simulate stream flows in the plan area. The model simulates stream flows over a 118-year period—from 1889 to 2007.

Hydrologic models work by representing a river system as a sequence of nodes and links. Each node represents a location at which a known hydrologic change occurs. For example, the point where two streams meet, a point on a stream from where town water supply is taken or a water storage is situated—for example, dams and weirs. Nodes are connected by links, which represent stream reaches, and allow flow characteristics to be represented as closely as possible. Characteristics include the time it takes water to move through stream reaches, and the way the peak of a flow is attenuated or smoothed as it progresses downstream.

Hydrologic models were developed for each catchment and subcatchment of the plan area to help develop and test strategies for the draft plan. Together with the environmental assessment, the hydrologic assessments for each catchment and subcatchment in the plan area provided the necessary understanding of how water movement in the hydrologic cycle links habitats and supports natural processes.

Hydrologic modelling allowed for a comparison between simulated pre-development flows—how streams would behave if there were no water extraction—and different development levels. This demonstrated the potential effects of differing development levels on stream flows and existing water users. The model is also used to test the performance indicators against which the objectives in the draft plan are assessed.

7.2.2 Economic and social assessment

The department commissioned Marsden Jacob Associates to investigate potential economic and social effects of alternate water use scenarios. The report was completed in July 2008 and its main findings were:

- the plan area has experienced rapid population growth in recent years, particularly in the towns of Agnes Water and Seventeen Seventy. This trend is expected to continue for the life of the plan
- water is an important resource to the Indigenous people that live in and around the plan area, for fishing, recreation and cultural values
- the main types of employment in the plan area include the agriculture, forestry, fisheries, tourism, manufacturing, construction and retail industries. Much of the employment in retail and accommodation, cafes and restaurants has been attributed to the growing tourism industry in the area
- the highest future water use scenario investigated could have the potential to impact on the ecotourism sector, fisheries, recreational values, environmental values, and Indigenous and cultural values, in parts of the plan area due to reduced flow regimes
- additional unallocated water made available under the plan could result in significant increases in horticultural production, the number of people employed in horticulture and in the longer term Gross Value of Production (GVP) from horticulture. However market conditions may result in only a fraction of the potential GVP and employment benefits being realised

- as horticultural crops in the plan area are mainly tree crops, providing a smaller volume of higher reliability water would be preferable
- in parts of the plan area water is more likely to be a constraining factor on growth than suitable land. There is a need to ensure the future allocation of water under the plan achieves efficient outcomes and the release process is equitable
- the provision of unallocated water could lead to a doubling or tripling of the area under horticulture. Likely resultant increases in nutrient, pesticide and (potentially) sediment loads into the adjacent freshwater and marine environments need to be mitigated
- the risks associated with climate change are likely to impact on crop choice and trigger a need for relatively larger on-farm storages to ensure reliability in supply, particularly in the longer term

A full report on the findings of the social and economic assessment may be found on the department's website <http://www.derm.qld.gov.au/wrp/baffle_basin>.

7.2.3 Ecological assessment

Environmental technical advice for the Baffle Creek Basin was incorporated into the development of the draft water resource plan in accordance with the legislative requirements of the Water Act. The study included field assessments and desktop analyses of flow-related biotic and abiotic ecosystem components. Broadly, the objectives of the study were to assess current ecological condition, identify ecological and geomorphological assets that are linked to flow, including their water requirements, and identify risks to those assets from both existing and potential water resource development.

The key findings of the Baffle Creek Basin environmental assessment include:

- the Baffle Creek Basin is one of the last relatively unmodified catchment stream systems in South East Queensland with near natural stream flows and generally good water quality. Its estuaries and marine water bodies are of high conservation value.
- important ecological features in the plan area include a diverse freshwater fish community, relatively extensive areas of flow dependent rainforest communities, threatened plant and animal species such as the wallum froglet (*Crinia tinnula*) and the little tern (*Sterna albifrons*) and nationally important coastal wetland complexes.
- there are limited reserves of groundwater with some very localised interaction between the surface water flows and groundwater flows
- the level of future water resource development provided for in the draft plan for the Worthington Creek and Eurimbula Creek catchment areas would pose no significant risks to ecological assets
- for the Baffle Creek catchment, existing water resource development has impacted on base flows. Further impacts on base flows will be avoided by applying flow thresholds to all new licences.
- for the Broadwater Creek catchment, tidal barrages pose a risk to ecological assets, future water resource development will not pose a greater risk
- for the Littabella Creek catchment, future water resource development may pose a risk to pool habitats, the freshwater fish community, aquatic fauna and the estuarine ecosystem.

Information from the ecological assessments was used in developing ecological outcomes for the draft water resource plan, environmental flow strategies to address these outcomes, and selection of ecological assets for natural ecosystem monitoring.

A full report on the findings of the environmental assessment may be found on the department's website <www.derm.qld.gov.au/wrp/baffle_basin>.

8.0 Glossary

Annual volumetric limit—the maximum volume of water that may be taken under a water entitlement, in a water year.

Environmental flow objectives—a flow objective for the protection of the health of natural ecosystems for the achievement of ecological outcomes.

Groundwater—subartesian water and artesian water as defined under Schedule 4 of the *Water Act 2000*.

Mean annual flow—the average volume of water that is discharged at a location. It is found by summing the yearly volumes of water discharged over a series of years and dividing the total by the number of years in the series.

Median annual flow—the middle value in a series of values that describe the yearly volume of water discharged at a location, when the values are ranked in order of size.
[For example: The median annual flow for the following sequence is 200 000 ML—500 000 ML, 300 000 ML, **200 000 ML**, 150 000 ML and 100 000 ML. The mean annual flow is 250 000 ML.]

Non-point source – the discharge doesn't come from one identifiable source. For example, run-off from agricultural and urban sources does not usually enter a waterway at one point, but enters at a number of points.

Refugia – the habitat required by a species during a time of stress, for example, drought.

Resource operations plan—a plan approved under section 103 (2) of the Water Act. [Note: A resource operations plan implements water resource plan strategies and, among other things, guides the release of unallocated water and the day-to-day management of streamflows and water infrastructure for consistency with the water resource plan.]

Unallocated water—water that can be made available for future consumptive use for urban, rural or industrial uses without compromising the environment or the security of supply to existing water users.

Unsupplemented water—water, occurring in its natural state, that is, not supplemented by releases from infrastructure.

Water licence—a licence granted under Chapter 2, Part 6, Division 2 of the Water Act.

Water resource plan—a plan approved under section 50 (2) of the Water Act. [Note: A plan to allocate and sustainably manage water in a defined part of Queensland.]

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.

9.0 References

Baffle Creek Catchment Management Group Inc., 2001, *The Baffle Creek Catchment Strategy: Integrated Catchment Management for the Baffle Catchment*.

Binney, J, 2008, *The economic and social implications of the Baffle Creek Basin Water Resource Plan: A report prepared for the Queensland Department of Natural Resources and Water*, Marsden Jacobs Associates, Brisbane.

Council of Australian Governments (COAG), 2000, *National Action Plan for Salinity and Water Quality*, Australian Government, Australia.

Council of Australian Governments (COAG), 2004, *National Water Initiative*, Australian Government, Australia.

Department of Environment and Resource Management, 2009, *Draft Water Resource (Baffle Creek Basin) Plan—community reference panel report*, Queensland Government, Brisbane.

Department of Local Government, Planning, Sport and Recreation 2007, *Wide Bay Burnett Regional Plan 2007 - 2026*, Queensland Government, Bundaberg.

Environmental Protection Agency, 2003*, State of the Environment Queensland 2003*, Queensland Government, Brisbane.

Hydrobiology Pty Ltd 2008, *An Environmental Assessment of the Baffle Creek Basin Water Resource Plan Area* , Department of Natural Resources and Water, Brisbane.

The State of Queensland and Commonwealth of Australia 2003, *Reef Water Quality Protection Plan: for catchments adjacent to the Great Barrier Reef World Heritage Area*, Department of the Premier and Cabinet, Brisbane.

Appendix A—Public notices

Public Notice of Availability of Draft Water Resource [Baffle Creek Basin] Plan 2010

Water Act 2000 section 49

1. Purpose

Notice is given under section 49 of the *Water Act 2000* that the Minister for Natural Resources, Mines and Energy and Minister for Trade has prepared a Draft Water Resource (Baffle Creek Basin) Plan 2010 (Draft Plan).

2. Proposed plan area

The proposed plan area for the Draft Plan is identified in the map shown in this Notice, which is indicative only. The proposed plan area and more details of the location of the area boundaries are held in digital electronic form by the Department of Environment and Resource Management (the department), and may be inspected at the department's offices at 16–32 Enterprise St, Bundaberg.

3. Inspection of Draft Plan

Copies of the Draft Plan can be inspected at, or obtained by contacting, the department using the details specified in clause 6(b) of this Notice. The Draft Plan may also be viewed or downloaded from the internet at www.derm.qld.gov.au/wrp/baffle_basin.

4. Public information session

A public information session will be held to provide an avenue for communicating further details on the Draft Plan with the general community. The date and time for the information session is:

Location	Date	Time	Venue
Miriam Vale	26 March 2010	1:30pm – 3:00pm	Miriam Vale Community Centre

To ensure sufficient seating and for catering purposes, please contact the department on 1800 135 531 to register your interest for the session.

5. Submissions

Submissions may be made about the Draft Plan and the contents of the overview report.

Anyone may make a submission. Submissions must:

a) be in writing and signed by each person who made the submission;
b) state the name and address of each person who made the submission;
c) state the grounds of the submission and the facts and circumstances relied on in support of the grounds;
d) **be received on or before 5:00 pm 14 May 2010**; and
e) be received by the person stated in clause 6(a) of this Notice.

Email and internet submissions will also be accepted.

Submissions should identify information that is considered confidential. The department will endeavour to maintain the confidentiality of information that is identified in this way; however, submissions are subject to the Right to Information Act 2009 *and information may be required to be released upon requests made under this Act. Furthermore, other legal obligations, such as the processes of the courts or natural justice may also override confidentiality.*

6. Enquiries

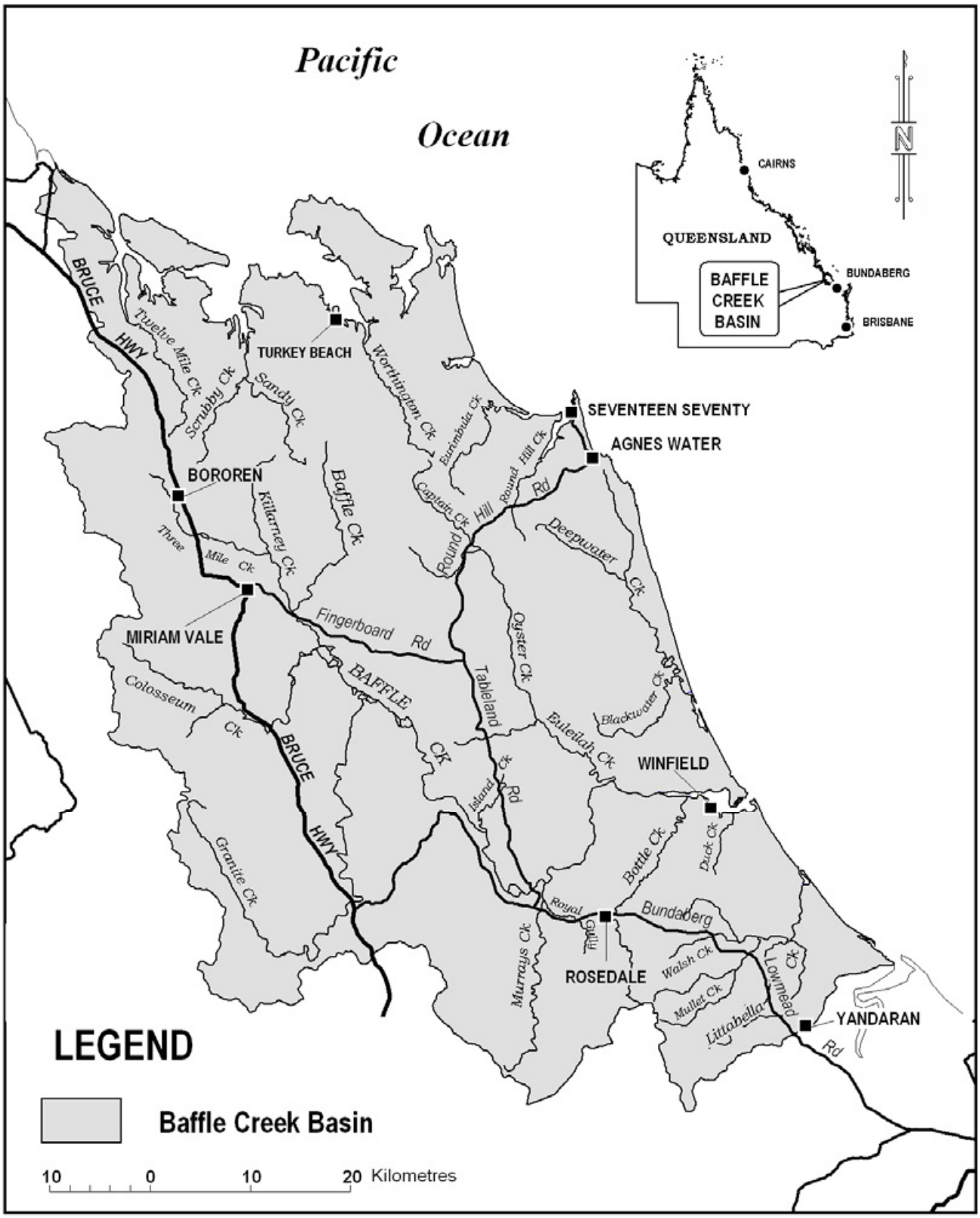
(a) Submissions on the Draft Plan must be addressed to:

Postal Address:	**Street Address:**
Chief Executive Attn: Mr Mark Pearson Water Services Department of Environment and Resource Management PO Box 1167 Bundaberg Q 4670	Chief Executive Attn: Mr Mark Pearson Water Services Department of Environment and Resource Management 16–32 Enterprise Street Bundaberg Q 4670
By Email: WRPBaffleCreekBasin@derm.qld.gov.au	**By Facsimile:** Attention: Mr Mark Pearson Number: (07) 4131 5766
By Internet: www.derm.qld.gov.au/wrp/baffle_basin	

(b) Further enquiries should be directed to Amanda Casey, Senior Project Officer, Department of Environment and Resource Management on 1800 135 531. Alternatively, information can be viewed or downloaded via the internet from <www.derm.qld.gov.au/wrp/baffle_basin>.

Dated this 18th day of March 2010

Stephen Robertson
Minister for Natural Resources, Mines and Energy and Minister for Trade


Pacific
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CAIRNS
QUEENSLAND
BUNDABERG
BRISBANE
BAFFLE CREEK BASIN
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BRUCE HWY
TURKEY BEACH
Twelve Mile Ck
Scrubby Ck
Sandy Ck
Worthington Ck
Eurimbula Ck
SEVENTEEN SEVENTY
AGNES WATER
Round Hill Ck
Round Hill Rd
BOROREN
Baffle Ck
Killarney Ck
Three Mile Ck
Captain Ck
Deepwater Ck
MIRIAM VALE
Fingerboard Rd
Oyster Ck
Tableland
BAFFLE CK
Colosseum Ck
Granite Ck
Island Ck Rd
Eulelah Ck
Blackwater Ck
WINFIELD
Bottle Ck
Duck Ck
Royal Gully
Bundaberg
ROSEDALE
Murrays Ck
Walsh Ck
Mullet Ck
Littabella Ck
Lowmead Rd
YANDARAN
LEGEND
Baffle Creek Basin
10 0 10 20 Kilometres

Public Notice of Proposal to Prepare a Baffle Creek Basin Draft Resource Operations Plan

Water Act 2000 section 96

1. Purpose

Notice is given under section 96 of the *Water Act 2000* that the Chief Executive for the Department of Environment and Resource Management (the department) intends to prepare a Draft Resource Operations Plan (Draft Plan) in accordance with section 98 of the *Water Act 2000* to implement the Baffle Creek Basin Water Resource Plan once finalised.

2. Proposed plan area

The proposed plan area for the Draft Plan is identified in the map shown in this Notice, which is indicative only. The proposed plan area and more detail on the location of the area boundaries are held in digital electronic form by the department, and may be inspected at the department's office at 16–32 Enterprise St, Bundaberg.

3. Water in the proposed plan area to which the Draft Plan is intended to apply

The water to which the Draft Plan is intended to apply is water in each watercourse, lake or spring and overland flow water in the proposed plan area.

The Draft Plan is not intended to apply to underground water.

4. Consultation

A public information session will be held to provide an avenue for consultation for the preparation of the Draft Plan with the general community. The date and time for the information session is:

Location	**Date**	**Time**	**Venue**
Miriam Vale	26 March 2010	1:30pm – 3:00pm	Miriam Vale Community Centre

To ensure sufficient seating and for catering purposes, please contact the department on 1800 135 531 to register your interest.

Community and technical consultation for the preparation of the Draft Plan will also take place through:

a) formal written submissions under clause 5 in response to this Notice;
b) discussions and meetings between officers of the department and individuals and representatives of interested groups, organisations and agencies; and
c) liaison with other organisations and agencies, for technical consultation.

5. Submissions

Submissions may be made about the proposal to prepare a Draft Plan.

Anyone may make a submission. Submissions must:

f) be in writing and signed by each person who made the submission;
g) state the name and address of each person who made the submission;
h) state the grounds of the submission and the facts and circumstances relied on in support of the grounds;
i) **be received on or before 5:00 pm 14 May 2010**; and
j) be received by the person stated in clause 6(a) of this Notice.

Email and internet submissions will be accepted.

Submissions should identify information that is considered confidential. The department will endeavour to maintain the confidentiality of information that is identified in this way; however, submissions are subject to the Right to Information

Act 2009 *and information may be required to be released upon requests under this Act. Furthermore, other legal obligations, such as the processes of the courts or natural justice may also override confidentiality.*

6. Enquiries

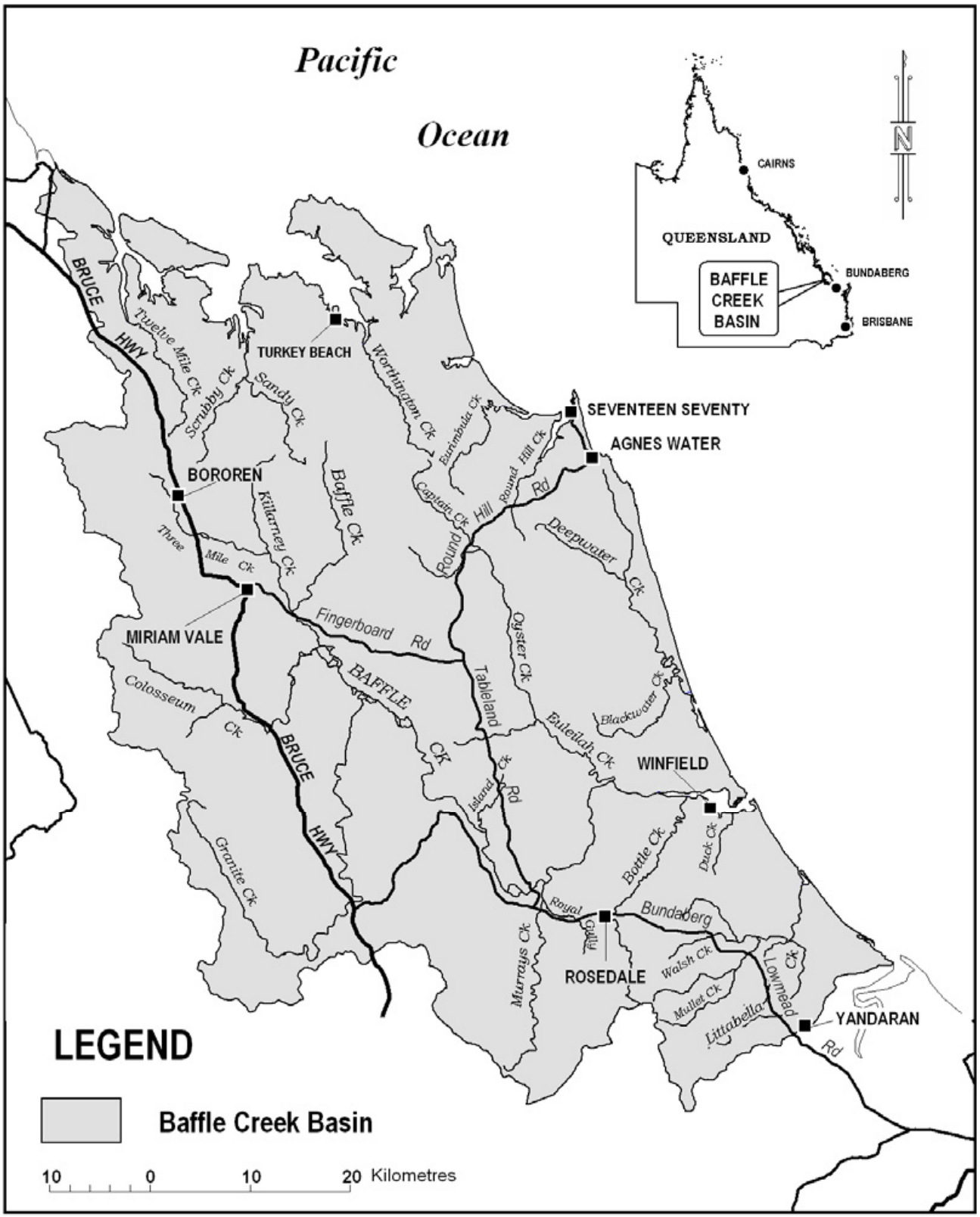
(a) Submissions on the intent to prepare a Draft Plan must be addressed to:

Postal Address: Chief Executive Attn: Mr Mark Pearson Water Services Department of Environment and Resource Management PO Box 1167 Bundaberg Q 4670	**Street Address:** Chief Executive Attn: Mr Mark Pearson Water Services Department of Environment and Resource Management 16–32 Enterprise Street Bundaberg Q 4670
By Email: WRPBaffleCreekBasin@derm.qld.gov.au	**By Facsimile:** Attention: Mr Mark Pearson Number: (07) 4131 5766
By Internet: www.derm.qld.gov.au/wrp/baffle_basin	

(b) Further enquiries should be directed to Amanda Casey, Senior Project Officer, Department of Environment and Resource Management on 1800 135 531. Alternatively, information can be viewed or downloaded via the internet from <www.derm.qld.gov.au/wrp/baffle_basin>.

Dated this 18th day of March 2010

Debbie Best
Deputy Director-General
Water and Corporate Services
Department of Environment and Resource Management
(As the delegate of the Chief Executive)


Pacific
Ocean
CAIRNS
QUEENSLAND
BAFFLE CREEK BASIN
BUNDABERG
BRISBANE
N
BRUCE HWY
Twelve Mile Ck
Scrubby Ck
Sandy Ck
TURKEY BEACH
Worthington Ck
Eurimbula Ck
SEVENTEEN SEVENTY
AGNES WATER
Round Hill Ck
Round Hill Rd
BOROREN
Baffle Ck
Killarney Ck
Three Mile Ck
Deepwater Ck
Fingerboard Rd
MIRIAM VALE
Oyster Ck
Tableland
BAFFLE CK
Colosseum Ck
Blackwater Ck
Eulelilah Ck
WINFIELD
Island Ck Rd
Granite Ck
Bottle Ck
Duck Ck
Royal Gully
Bundaberg
Murrays Ck
ROSEDALE
Walsh Ck
Mullet Ck
Littabella Ck
Lowmead Rd
YANDARAN
LEGEND
Baffle Creek Basin
10 0 10 20 Kilometres

Draft Water Resource (Baffle Creek Basin) Plan 2010

The following draft plan outlines the water allocation and management strategies for water in the Baffle Creek Basin plan area. The management arrangements that will be contained in the final plan will be detemined by the Minister for Natural Resources, Mines and Energy, and Minister for Trade following consideration of all properly made submissions about the draft plan.

Queensland

Water Resource (Baffle Creek Basin) Plan 2010

Subordinate Legislation 2010 No. ...

made under the

Water Act 2000

Contents

Contents

Contents

Chapter 1 Preliminary

1 Short title

This plan may be cited as the *Water Resource (Baffle Creek Basin) Plan 2010*.

2 Purposes of plan

The following are the purposes of this plan—

(a) to define the availability of water in the plan area;

(b) to provide a framework for sustainably managing water and the taking of water;

(c) to identify priorities and mechanisms for dealing with future water requirements;

(d) to provide a framework for minimising, where practicable, degradation in natural ecosystems;

(e) to regulate the taking of overland flow water.

3 Definitions

The dictionary in schedule 9 defines particular words used in this plan.

Chapter 2 Plan area and water to which plan applies

4 Plan area

This plan applies to the area shown as the plan area on the map in schedule 1.

5 Catchment areas

Each part of the plan area that is within a catchment area shown on the map in schedule 2 is a catchment area for this plan.

6 Subcatchment areas

Each part of the plan area that is within a subcatchment area shown on the map in schedule 2 is a subcatchment area for this plan.

7 Information about areas

(1) The exact location of the boundaries of the plan area, catchment areas and subcatchment areas is held in digital electronic form by the department.

(2) The information held in digital electronic form can be reduced or enlarged to show the details of the boundaries.

8 Nodes

(1) A node mentioned in this plan is a place on a watercourse in the plan area.

(2) The location of each node is shown on the map in schedule 1 and described in schedule 3.

(3) Each node is identified on the map by a number.

9 Water to which plan applies

This plan applies to the following water in the plan area—

(a) water in a watercourse or lake;

(b) water in a spring not connected to—

(i) artesian water; or

(ii) subartesian water connected to artesian water;

(c) overland flow water, other than water in springs connected to—

(i) artesian water; or

(ii) subartesian water connected to artesian water.

Chapter 3 Outcomes for sustainable management of water

10 Outcomes for water in plan area

Water is to be allocated and sustainably managed in a way that—

(a) recognises the natural state of watercourses, lakes and springs has changed because of the taking of, and interfering with, water; and

(b) seeks to achieve a balance in the following outcomes—

(i) the general outcomes mentioned in section 11;

(ii) the ecological outcomes for the plan area mentioned in section 12 or 13.

11 General outcomes

Each of the following is a general outcome for water in the plan area—

(a) to provide for the use of all existing water entitlements and other authorisations to take or interfere with water;

(b) to provide for the continued use of all existing overland flow works;

(c) to make water available to support—

(i) population growth in towns and communities dependent on surface water resources in the plan area; and

(ii) growth in industries, including agriculture and aquaculture, dependent on surface water resources in the plan area; and

(iii) stock or domestic purposes in the plan area;

(d) to maintain flows that support water related aesthetic, economic and recreational values in the plan area, including, for example, tourism;

(e) to support, as far as practicable, surface water and groundwater interactions;

(f) to encourage continual improvement in the efficient use of water;

(g) to support water-related cultural values in the plan area, including the values of the traditional owners of the plan area.

12 Ecological outcomes

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

(a) to maintain the natural variability of flows that support the habitats of native plants and animals and migratory birds in watercourses, floodplains, wetlands, lakes and springs;

(b) to provide for the continued capability of one part of a river system to be connected to another, including by maintaining flows that—

(i) allow for the movement of native aquatic species between riverine, floodplain, wetland, estuarine and marine environments; and

(ii) deliver nutrients and organic matter throughout the plan area to support natural processes such as breeding, growth and migration in riverine,

floodplain, wetland, estuarine and marine environments; and

(iii) deliver water and sediment throughout the plan area to support river-forming processes;

(c) to minimise changes to natural variability in water levels to support natural ecological processes, including maintaining refugia associated with waterholes and lakes;

(d) to minimise adverse impacts on aquatic ecosystems immediately downstream of new water resource development;

(e) to improve understanding of the matters affecting flow ecology responses of ecosystems within the plan area.

(2) In this section—

refugia means the habitat required by a species during a time of stress, for example, drought.

13 Specific ecological outcomes

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

(a) to maintain the near-natural flow regime that supports biodiversity within waterholes and estuarine communities in the Eurimbula Creek catchment area and Worthington Creek catchment area;

(b) to minimise changes to flows that maintain existing brackish habitat downstream of barrages in the Broadwater Creek catchment area;

(c) in the Baffle Creek catchment area—

(i) to maintain connectivity between Baffle Creek and its adjacent floodplain system including lakes; and

(ii) to maintain the near-natural flow regime that provides for intermittent brackish habitat through the entire length of the Baffle Creek estuary; and

(iii) to minimise changes to the low flow regime that provides for riffle habitat and maintains waterholes; and

(iv) to minimise changes to the persistence of waterholes;

(d) to minimise changes to the flow regime that maintains brackish habitat in the upper reaches of Littabella Creek estuary.

Chapter 4 Performance indicators and objectives

14 Performance indicators for environmental flow objectives

The performance indicators for the environmental flow objectives are the following—

(a) mean annual flow;

(b) median annual flow.

15 Environmental flow objectives

The environmental flow objectives for this plan are stated in schedule 4.

Chapter 5 Strategies for achieving outcomes

Part 1 Preliminary

16 Decisions to be consistent with environmental flow objectives

Decisions about the allocation or management of water in the plan area, other than a decision about a water permit, must be consistent with the environmental flow objectives stated in schedule 4.

17 Assessing impact of decisions

(1) The IQQM computer program's simulation for the simulation period is used to assess consistency with the objectives.

(2) If it is not practicable to use the IQQM computer program, another assessment method approved by the chief executive may be used.

(3) The chief executive may approve an assessment method for subsection (2) only if the chief executive is satisfied the method will assess consistency with the objectives at least as accurately as the IQQM computer program.

18 Decisions are not to increase amount of water taken

(1) The chief executive is not to make a decision about the allocation or management of water in the plan area that would increase the average volume of water allowed to be taken under any authorisation in the plan area.

(2) Subsection (1) does not apply to a decision about—

(a) a water permit; or

(b) reinstating an expired water licence; or

(c) replacing an original licence if the licence is to be replaced with 2 or more water licences; or

(d) replacing an expired licence with 1 or more licences; or

(e) unallocated water.

(3) In this section—

average volume, of water allowed to be taken under an authorisation, means the total volume of water simulated to have been taken under the authorisation during the simulation period if the authorisation was in existence for the whole of the simulation period, divided by the number of years in the simulation period.

19 Measuring devices

A measuring device is to be used to measure the volume of water taken under a water entitlement to take water from a watercourse, lake or spring.

Editor's note—

For the compulsory use of meters for taking water in the State, see the *Water Regulation 2002*, part 7.

Part 2 Unallocated water

Division 1 Continued moratorium and interim arrangements for applications

20 Continued effect of moratorium notice—Act, s 46(3)

(1) This section continues, in part, the effect of the moratorium notice published on 16 July 2004 and amended on 27 September 2008.

(2) Until the resource operations plan is approved, an application made under the Act will not be accepted, if granting the application would have 1 or more of the following effects on water to which this plan applies—

(a) increase the amount of water that may be taken;

(b) change the location from which water may be taken;

(c) increase the rate at which water may be taken;

(d) change the flow conditions under which water may be taken;

(e) increase or change the interference with the water.

(3) Subsection (2) does not apply to an application—

(a) for a water permit; or

(b) to replace an expired water licence; or

(c) to subdivide an existing water licence or amalgamate 2 or more existing water licences; or

(d) for a water licence to interfere with water in Bottle Creek at Wills Road made by the Gladstone Regional Council; or

(e) mentioned in section 22(2).

21 Particular applications made before 16 July 2004

(1) This section applies to an application—

(a) for a water licence to take or interfere with water in the plan area; and

(b) made under the Act, or the repealed Act, before 16 July 2004; and

(c) not finally decided before the commencement of this plan.

(2) The application must be refused if granting the application would have 1 or more of the following effects on water to which this plan applies—

(a) increase the amount of water that may be taken;

(b) change the location from which water may be taken;

(c) increase the rate at which water may be taken;

(d) change the flow conditions under which water may be taken;

(e) increase or change the interference with the water.

(3) This section does not apply to an application to—

(a) reinstate, under section 221 of the Act, an expired water licence; or

(b) amalgamate, under section 224 of the Act, 2 or more water licences; or

(c) replace, under section 225 of the Act, an original licence with 2 or more water licences; or

(d) replace, under section 229 of the Act, an expired licence with 1 or more licences.

22 Interim arrangements for applications about unallocated water

(1) This section applies until the resource operations plan states a process for dealing with unallocated water.

(2) An application for a water licence, made under section 206 of the Act, may be accepted and dealt with if the application relates to the use of unallocated water for—

(a) a State purpose; or

(b) stock or domestic purposes.

(3) Any volume of water allocated to a successful application mentioned in subsection (2) must be granted from—

(a) for water to be used for a State purpose—the strategic or general reserve; or

(b) for water to be used for stock or domestic purposes—the general reserve.

Division 2 Unallocated water reserves

Subdivision 1 Strategic and general reserves

23 Unallocated water held as strategic reserve and general reserve

Unallocated water in the plan area is divided into a strategic reserve and a general reserve.

Subdivision 2 Unallocated water held as strategic reserve

24 Purpose for which unallocated water held as strategic reserve may be granted

Unallocated water held as a strategic reserve may be granted only if the water is to be taken for a State purpose.

25 Volumetric limits

The total of the annual volumetric limits for all water licences to take unallocated water granted from the strategic reserve in a catchment area mentioned in schedule 5, part 1, column 1 is stated in schedule 5, part 1, column 2 opposite the area.

26 Period for which water is granted for particular State purpose

(1) This section applies to the volume of water granted from the strategic reserve for either of the following State purposes—

(a) a project of State significance;

(b) a project of regional significance.

(2) The volume of water is granted only for the life of the project and on conclusion of the project the volume of water returns to the strategic reserve.

27 Projects that may be considered to be of regional significance

The chief executive may consider a particular project to be a project of regional significance for the plan area only if the chief executive considers the project is significant having regard to the following—

(a) the outcomes under chapter 3;

(b) the economic or social impact the project will have on the region;

(c) the public interest and the welfare of people in the region;

(d) any other relevant consideration.

Subdivision 3 Unallocated water held as general reserve

28 Purpose for which unallocated water held as general reserve may be granted

Unallocated water held as a general reserve may be granted for any purpose.

29 Volumetric limits

The total of the annual volumetric limits for all water licences to take unallocated water granted from the general reserve in a catchment area mentioned in schedule 5, part 2, column 1 is stated in schedule 5, part 2, column 2 opposite the area.

Division 3 Other limitations on granting unallocated water

30 Restrictions on taking water from lakes

A water licence to take unallocated water, granted from either the strategic or general reserve, must not authorise the taking of water from a lake.

31 Pass flow conditions for taking unallocated water

(1) Water licences to take water from a watercourse granted from the strategic or general reserve must include a pass flow condition.

(2) In deciding the pass flow condition, the chief executive must consider—

(a) existing downstream entitlement holders; and

(b) the daily volumetric limit to be stated on the licence; and

(c) the minimum pass flow under subsection (3).

(3) The minimum pass flow must be at least—

(a) for the Baffle Creek catchment area, the greater of—

(i) the flow, expressed in megalitres a day, worked out by multiplying the catchment area upstream of the proposed point of take, expressed in square kilometres, by 0.3561; or

(ii) 86.4 megalitres a day; or

(b) for the Littabella Creek, Broadwater Creek, Eurimbula Creek or Worthington Creek catchment areas—86.4 megalitres a day.

(4) This section does not apply to a water licence to take water from an impoundment.

Division 4 Dealing with unallocated water under the resource operations plan

32 Process for dealing with unallocated water

(1) The resource operations plan includes the process for dealing with unallocated water in the plan area.

(2) In preparing and implementing the process the chief executive is to consider the following—

(a) the purpose for which the water is required;

(b) the efficiency of existing and proposed water use practices;

(c) the extent to which water is being taken under existing authorisations in the plan area;

(d) the availability of an alternative water supply for the purpose for which the water is required;

(e) the impact the proposed taking of, or interfering with, the water may have on existing water users in the plan area;

(f) whether the proposed taking or interfering is likely to have a direct adverse effect on groundwater flows;

(g) the streamflows required to maintain the following—

(i) the longitudinal connectivity of low flow habitats throughout river systems in the plan area;

(ii) the wetted habitats at riffles and other stream bed features;

(iii) the natural seasonality of flows and zero flows;

(iv) the replenishment of refuge pools that enable movement of in-stream biota;

(v) the lateral connectivity between rivers in the plan area and their adjacent riverine environments including floodplains;

(h) the impact the taking of, or proposed taking of, water may have on the following—

(i) water quality;

(ii) the natural movement of sediment;

(iii) the bed and banks of a watercourse or lake;

(iv) riparian vegetation;

(v) habitats for native plants and animals;

(vi) the movement of fish and other aquatic species;

(vii) the recreational and aesthetic values of the plan area;

(viii) cultural values including, for example, cultural values of the traditional owners of the plan area;

(ix) the ecological values of watercourses, lakes or springs.

(3) Subsection (2) does not limit the matters the chief executive may consider.

Part 3 Interference with water in a watercourse, lake or spring

33 Application of pt 3

This part applies to applications, made under section 206 of the Act, for a water licence to interfere with water in a watercourse, lake or spring by impounding the flow of water.

34 Limitations on interference with water

(1) The water licence may be granted only if the proposed impoundment is to be used to—

(a) supply water for stock or domestic purposes; or

(b) provide a pumping pool to enable water to be taken under an existing authorisation.

(2) However, the water licence may also be granted if the proposed impoundment is related to a proposed water licence to take water that is allocated under the process mentioned in section 32(1).

35 Interference with water for the provision of a pumping pool

(1) This section applies if the proposed interference with water is to provide a pumping pool to enable water to be taken under an existing authorisation.

(2) The proposed storage capacity of the pumping pool must not be greater than the capacity required to enable the pump to function properly while minimising the impact the proposed interference may have on the following—

(a) in-stream water levels;

(b) a matter mentioned in section 32(2)(h)(i) to (ix).

(3) In deciding the application the chief executive must also consider any alternative methods for providing for the operation of the pump that may minimise the impact mentioned in subsection (2).

Example—

a pump well constructed in bed sand

36 Interference with water related to the granting of unallocated water

(1) This section applies if the proposed interference with water is related to the granting of unallocated water.

(2) The interference must not be greater than is necessary for the purpose of taking the unallocated water.

(3) In deciding the application, the chief executive must consider the impact the proposed interference may have on in-stream water levels and the matters mentioned in section 32(2)(h)(i) to (ix).

(4) A water licence to interfere with water, granted in association with a water licence to take water granted from the release of unallocated water, must include a pass flow condition.

(5) In deciding the pass flow condition mentioned in subsection (4), the chief executive must consider—

(a) existing downstream entitlement holders; and

(b) for interfering with water in the Baffle Creek, Broadwater Creek or Littabella Creek catchment areas—the minimum pass flow under section 31(3) for the area.

37 Interference with water in Baffle Creek, Eurimbula Creek catchment and Worthington Creek catchment

There must not be any interference with water by impounding the flow of water in any of the following—

(a) Baffle Creek;

(b) Eurimbula Creek catchment area;

(c) Worthington Creek catchment area.

Part 4 Replacing authorities and granting water licences

38 Water licences to replace local government authorities

The chief executive will replace the authority mentioned in schedule 6, column 1, and continued under section 1037 of the

Act, with the water licence to take water stated for the authority in schedule 6, column 2.

39 Granting particular water licences to relevant entity

(1) A relevant entity is allocated water under a water licence to take water from Bottle Creek for domestic use if the entity gives the chief executive notice in the approved form, and any further information requested by the chief executive, of any existing works to take water from Bottle Creek within 60 business days after the commencement of this plan.

(2) However, a grant of water under subsection (1) is subject to the limitations mentioned in schedule 7, part 1, item 1, and imposed by the chief executive in granting a water licence for taking the water under section 212 of the Act.

(3) In this section—

relevant entity means an entity, mentioned in section 213(e)(viii) of the Act, using existing works to take water from Bottle Creek for domestic use.

40 Granting particular water licences to owner of relevant lots

(1) The owner of a relevant lot is allocated water under a water licence to take water from lakes on the relevant lot if the owner gives the chief executive notice in the approved form, and any further information requested by the chief executive, of any existing works to take water from the lakes within 60 business days after the commencement of this plan.

(2) However, any grant of water under subsection (1) is subject to the following limitations imposed by the chief executive in granting a water licence for taking the water under section 212 of the Act—

(a) for lot 54 on RP865516—the limitations mentioned in schedule 7, part 2, item 1; or

(b) for lot 32 on FD109—the limitations mentioned in schedule 7, part 2, item 2.

(3) In this section—

relevant lot means—

(a) lot 54 on RP865516; or

(b) lot 32 on FD109.

Part 5 Water licences to take water from watercourse, lake or spring

Division 1 Form of water licences to take water from watercourse, lake or spring

41 Elements of water licences to take water from watercourse, lake or spring

(1) A water licence to take water from a watercourse, lake or spring in the plan area must state—

(a) 1 of the following purposes for which the water may be taken under the licence—

(i) stock and domestic;

(ii) rural;

(iii) any; and

(b) the maximum rate at which the water may be taken under the licence; and

(c) the daily volumetric limit for the licence; and

(d) the annual volumetric limit for the licence; and

(e) the conditions, if any, for the licence, including flow conditions and conditions for storing water taken under the licence; and

(f) the monthly volumetric limit, if any, for the licence.

(2) However, subsection (1)(d) does not apply to a water licence granted under the process under section 40 or the water licence commonly known as licence 46952B.

Division 2 Criteria for amending existing water entitlements to achieve plan outcomes

42 Definition for div 2

In this division—

amended water licence means an existing water licence to take water from a watercourse, lake or spring amended under section 217 of the Act.

43 Purpose to be stated on water licence

The purpose stated on an amended water licence is to be—

(a) if the purpose stated on the existing licence is stock or domestic—'stock and domestic'; or

(b) if the purpose stated on the existing licence is agriculture, irrigation, stock intensive or a similar purpose—'rural'; or

(c) otherwise—'any'.

44 Maximum rates for taking water

(1) The maximum rate at which water may be taken under an amended water licence is—

(a) for an existing water licence that states a maximum rate—the stated rate; or

(b) for an existing water licence that does not state a maximum rate but for which a related development permit—

(i) states a pump size mentioned in schedule 8, column 1—the rate stated in schedule 8, column 2 for the pump size; or

(ii) states a pump size other than a pump size mentioned in schedule 8, column 1—the rate decided by the chief executive having regard to the rates stated for similar pump sizes in schedule 8, column 2; or

(c) for another existing water licence—the rate decided by the chief executive having regard to—

(i) the purpose of the licence; and

(ii) an estimate or measurement of the rate at which water can be taken under the licence.

(2) However, for subsection (1)(b), if the licence holder satisfies the chief executive that the maximum rate at which water has been taken is different from the rate decided under the subsection, the maximum rate is the rate decided by the chief executive having regard to the following—

(a) the conditions under which the water may be taken;

(b) the water taking capacity of the pump to which the development permit relates (the ***existing pump***);

(c) the irrigation or water distribution system related to the existing pump during the period of not more than 10 years immediately before the commencement of this plan;

(d) the efficiency of the water use associated with the existing pump or system mentioned in paragraph (c).

45 Daily volumetric limit

(1) The daily volumetric limit for an amended water licence is—

(a) for an existing water licence that states the volume of water that may be taken in a day—the stated volume; or

(b) for an existing water licence that does not state a volume but for which a related development permit—

(i) states a pump size mentioned in schedule 8, column 1—the daily volumetric limit stated in schedule 8, column 3 for the pump size; or

(ii) states a pump size other than a pump size mentioned in schedule 8, column 1—the daily volumetric limit decided by the chief executive having regard to the daily volumetric limits stated for similar pump sizes in schedule 8, column 3; or

(c) for another existing water licence—the daily volumetric limit decided by the chief executive having regard to—

(i) the purpose of the licence; and

(ii) an estimate or measurement of the rate at which water can be taken under the licence.

(2) However, for subsection (1)(b), if the licence holder satisfies the chief executive that the water taking capacity of the pump is different from the daily volumetric limit decided under the subsection, the daily volumetric limit is the volume decided by the chief executive having regard to the following—

(a) the conditions under which the water may be taken under the licence;

(b) the water taking capacity of the pump to which the development permit relates (the ***existing pump***) under normal operating conditions;

(c) the irrigation or water distribution system related to the existing pump during the period of not more than 10 years immediately before the commencement of this plan;

(d) the efficiency of the water use associated with the existing pump or system mentioned in paragraph (c).

(3) The chief executive must ensure the daily volumetric limit for a water licence is not more than the total volume that could be taken in a day at the maximum rate decided, for the licence, under section 44.

46 Annual volumetric limit

The annual volumetric limit for an amended water licence is—

(a) for an existing water licence that states the volume of water that may be taken in a period of 12 months—the stated volume; or

(b) for an existing water licence that states the area that may be irrigated—the volume decided by the chief executive having regard to the volume of water required for the licence's intended purpose, but not more than the volume, expressed in megalitres, calculated by multiplying the area, in hectares, by—

(i) for the Baffle Creek catchment area—12; or

(ii) for the Littabella Creek catchment area—9; or

(iii) for the Blackwater Creek subcatchment area—5; or

(iv) for the Deepwater Creek subcatchment area—10; or

(c) for another existing water licence—the volume decided by the chief executive having regard to the following—

(i) the conditions under which water may be taken under the licence;

(ii) the water taking capacity of any works for taking water under the licence;

(iii) the volume required for the licence's intended purpose;

(iv) the annual volumes of water estimated by the chief executive to have been taken under the licence during the period, of not more than 10 years, immediately before the commencement of this plan;

(v) the efficiency of the use of the water mentioned in subparagraph (iv).

47 Monthly volumetric limit

(1) This section applies to an existing water licence that states an area that may be irrigated.

(2) The monthly volumetric limit for the amended water licence is the volume decided by the chief executive having regard to the volume of water required for the licence's intended purpose, but not more than the volume, expressed in megalitres, calculated by multiplying the area, in hectares, by 2.

48 Conditions for amended water licences

(1) In deciding the conditions, including flow conditions under which water may be taken under an amended water licence, the chief executive must consider the conditions stated on the existing water licence being amended.

(2) Water licence 46952B is to have the following conditions—

(a) pumping from a lake is prohibited if the water level in the lake is less than 2 metres below full supply level;

(b) water taken under the authority of the licence must not be placed in storage.

(3) Water licence 35284B is to have the condition that water must not be taken under the authority of the licence unless there is a passing flow of 1 megalitre a day over the barrage at Blackwater Creek.

49 Storing water taken under a water licence

(1) This section applies if the chief executive decides to impose a condition on an amended water licence that states the works that may be used to store the water taken under the licence.

(2) The chief executive must consider the capacity of any existing overland flow works being used to store the water.

Part 6 Regulating overland flow water

50 Limitation on taking overland flow water—Act, s 20(6)

(1) This section limits the overland flow water that may be taken under section 20(6) of the Act.

(2) A person may only take overland flow water—

(a) for stock or domestic purposes; or

(b) for another purpose if the works for taking the overland flow water have a capacity of not more than 5ML; or

(c) under a water licence; or

(d) of not more than the amount necessary to satisfy the requirements of—

(i) an environmental authority issued under the *Environmental Protection Act 1994*; or

(ii) a development permit for carrying out an environmentally relevant activity, other than a mining or petroleum activity, under the *Environmental Protection Act 1994*; or

(e) that is contaminated agricultural runoff water; or

(f) under section 52.

(3) In this section—

contaminated agricultural runoff water has the meaning given by the 'Code for assessable development for operational works for taking overland flow water'.

Editor's note—

A copy of the code is available on the department's website.

51 Notification of particular existing overland flow works

(1) This section applies to the owner of land on which existing overland flow works with a capacity of more than 5ML are situated.

(2) The owner must give the chief executive notice of the works, in the approved form, and any other information about the works reasonably required by the chief executive.

52 Taking water using particular existing overland flow works authorised

(1) This section applies to the owner of land on which existing overland flow works are situated, other than works for taking only the overland flow water that may be taken under section 50(2)(a) to (e).

(2) The owner may—

(a) continue to use the existing overland flow works to take overland flow water for 1 year after the commencement of this plan; and

(b) if the owner complies with section 51, further continue to use the works to take overland flow water.

(3) In this section—

existing overland flow works includes works that—

(a) are a reconfiguration of existing overland flow works (the ***original works***); and

(b) do not increase the average annual volume of water taken above the average annual volume taken using the original works.

53 Granting water licences for using particular existing overland flow works

(1) This section applies if the resource operations plan states a process, under section 212 of the Act, for the allocation of water under a water licence to replace an authority under section 52(2)(b).

(2) Under the process, the chief executive—

(a) must consider—

(i) the average annual volume of overland flow water that could have been taken, immediately before the commencement of this plan, using the existing overland flow works to which the authority relates; and

(ii) the annual volumes of overland flow water estimated by the chief executive to have been taken using the works during the period, of not more than 10 years, immediately before the commencement of this plan; and

(b) may consider the extent to which the works, immediately before the commencement of this plan, allowed—

(i) the taking of other water under another authorisation; or

(ii) the storage of other water taken under another authorisation.

(3) The process may require the authority or licence holder to give the chief executive a certificate, from a registered professional engineer, stating information about the works including the capacity of the works and the rate at which the works may take water.

(4) In this section—

registered professional engineer means a person registered as a registered professional engineer under the *Professional Engineers Act 2002*.

54 Water licences to take overland flow water

A water licence to take overland flow water is to state—

(a) 1 of the following purposes for which water may be taken under the licence—

(i) rural;

(ii) any; and

(b) at least 1 of the following—

(i) the maximum rate at which water may be taken under the licence;

(ii) the daily volumetric limit for the licence;

(iii) the annual volumetric limit for the licence;

(iv) the maximum volume of water that may be stored under the licence; and

(c) the conditions, if any, for the licence.

55 Relationship with Sustainable Planning Act 2009

(1) Works that allow the taking of overland flow water are assessable development for the *Sustainable Planning Regulation 2009*, schedule 3, part 1, table 4, item 3(c)(i).

(2) Subsection (1) does not apply to—

(a) works mentioned in subsection (3); or

(b) the repair or maintenance of either of the following works if the repair or maintenance does not alter the design of the works—

(i) works to which section 51 applies;

(ii) works constructed under a development permit.

(3) The following works that allow the taking of overland flow water are self-assessable development for the *Sustainable Planning Regulation 2009*, schedule 3, part 2, table 4, item 1(b)(ii)—

(a) works for taking overland flow water only for stock or domestic purposes;

(b) works mentioned in section 50(2)(b);

(c) works for taking only the overland flow water mentioned in section 50(2)(d).

Chapter 6 Monitoring and reporting requirements

56 Monitoring

(1) The monitoring requirements for this plan are—

(a) water monitoring for—

(i) stream flows; and

(ii) taking and diverting water; and

(b) natural ecosystems monitoring for—

(i) volume, frequency, duration and timing of stream flows; and

(ii) information on hydraulic habitat requirements of ecological assets in the plan area; and

(c) groundwater developments; and

(d) other water and natural ecosystem monitoring required by the chief executive.

(2) The monitoring requirements are to be achieved by—

(a) monitoring programs administered by the chief executive and relevant State agencies; and

(b) other monitoring programs considered by the chief executive to be relevant to the matters mentioned in subsection (1).

57 Minister's report on plan—Act, s 53

(1) The Minister's report on this plan must be prepared—

(a) for the first report—for the financial year in which the resource operations plan commences; and

(b) for subsequent reports—for each subsequent financial year this plan is in force; and

(c) for each report—within 6 months after the end of the financial year to which the report relates.

(2) If the Minister is satisfied about any of the matters mentioned in section 60, the report, in its assessment of the effectiveness of the implementation of the plan in achieving the plan's outcomes, must include a consideration of the matters.

Chapter 7 Implementing and amending this plan

58 Implementation schedule

(1) This section states the proposed arrangements for implementing this plan.

(2) Within 1 year after the commencement of this plan, it is proposed to prepare a resource operations plan to—

(a) amend existing water licences to be consistent with this plan; and

(b) establish a process to deal with unallocated water available for future water requirements in the plan area; and

(c) establish a process for granting water under water licences for taking overland flow water; and

(d) implement the monitoring requirements mentioned in chapter 6.

59 Minor or stated amendment of plan—Act, s 57

The following types of amendment may be made to this plan under section 57(b) of the Act—

(a) an amendment or addition of a node;

(b) an amendment to subdivide a catchment area or subcatchment area;

(c) an amendment of the capacity mentioned in section 50(2)(b);

(d) an amendment or addition of a monitoring or reporting requirement under chapter 6;

(e) an amendment of section 20 if notice of the amendment is published as if it were a moratorium notice under section 26 of the Act.

60 Amending or replacing plan

The Minister must consider amending this plan or preparing a new plan to replace this plan if the Minister is satisfied—

(a) in relation to this plan's general outcomes under section 11—

(i) water licences in the plan area are not sufficient to meet water needs sourced from the plan area having regard to—

(A) the extent to which water is being taken under the licences; and

(B) the efficiency of present, and expected future, water use; and

(C) emerging requirements for additional water; and

(D) water savings that may be made from improvements in the efficiency of water use or the use of water from other sources including, for example, recycled water; and

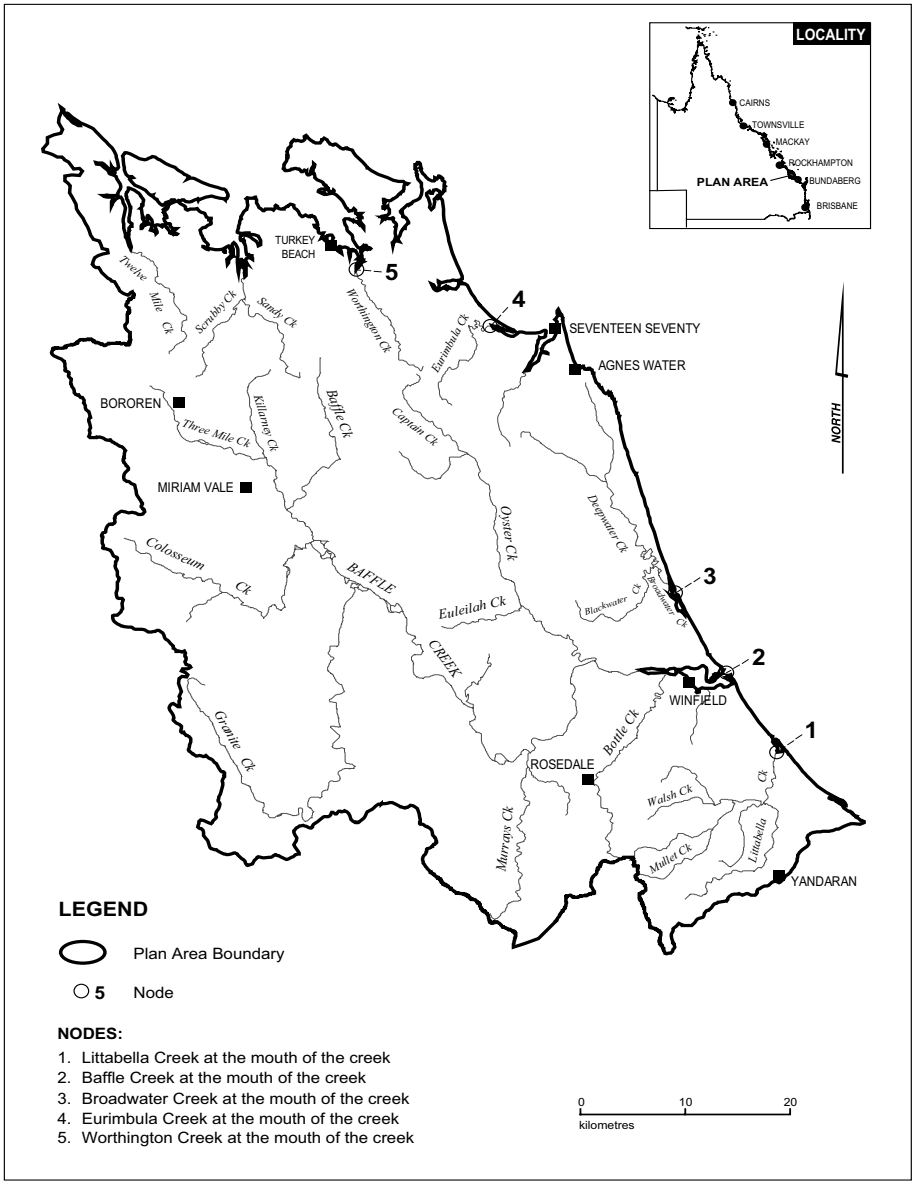
(E) the likely timeframe in which additional water will be required; and

(ii) there are economically viable and ecologically sustainable uses for additional water; or

(b) this plan's ecological outcomes under section 12, or specific ecological outcomes under section 13, are not being achieved.

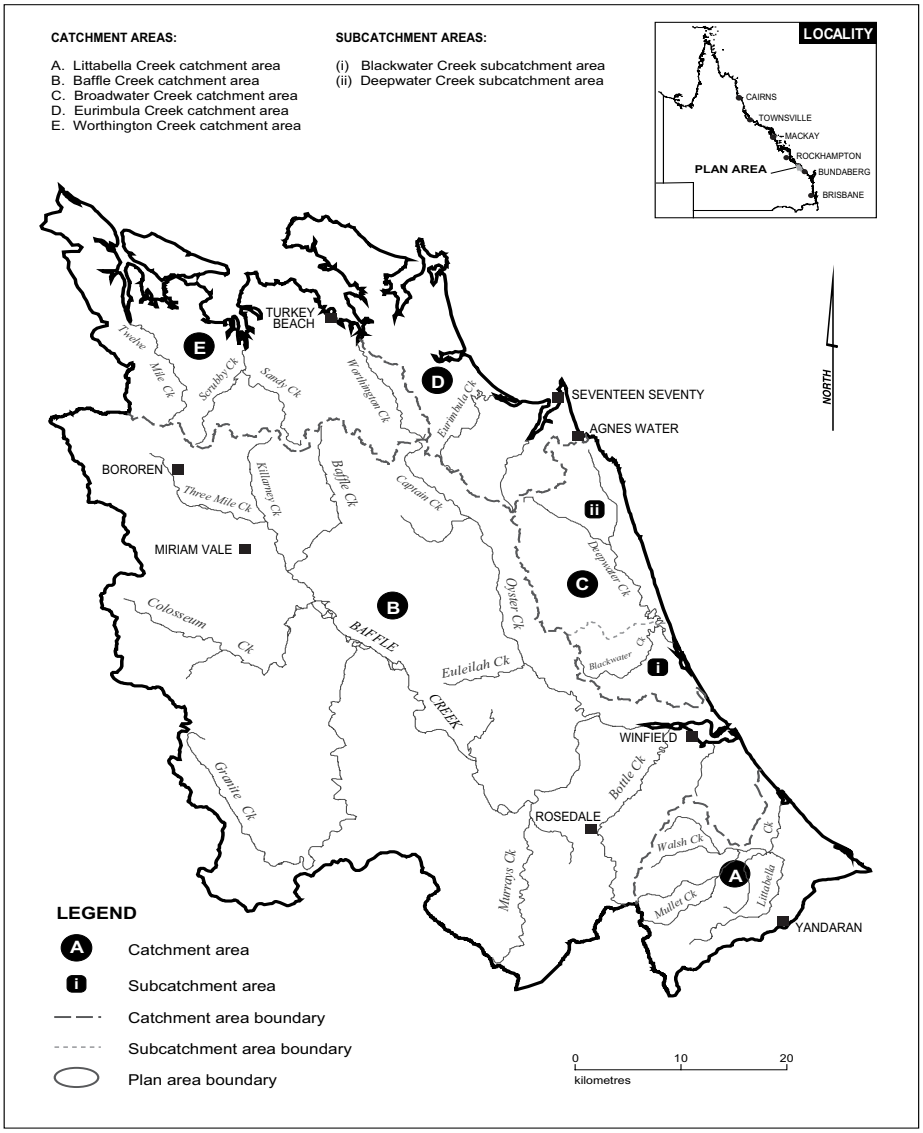
Schedule 1 Plan area

sections 4 and 8



Schedule 2 Catchment areas and subcatchment areas

sections 5 and 6



Schedule 3 Nodes

section 8

Column 1	Column 2
Node	**Location**
1	Littabella Creek at the mouth of the creek
2	Baffle Creek at the mouth of the creek
3	Broadwater Creek at the mouth of the creek
4	Eurimbula Creek at the mouth of the creek
5	Worthington Creek at the mouth of the creek

Schedule 4 Environmental flow objectives

section 15

Part 1 Basin-wide flow objectives

At any point on a watercourse in the plan area—

(a) the mean annual flow, expressed as a percentage of the mean annual flow for the pre-development flow pattern, be at least 70%; and

(b) the median annual flow, expressed as a percentage of the median annual flow for the pre-development flow pattern, be at least 60%.

Part 2 Specific flow objectives

At each node mentioned in column 1 of the table below—

(a) the mean annual flow, expressed as a percentage of the mean annual flow for the pre-development flow pattern, be at least the percentage stated for the node in the table, column 2; and

(b) the median annual flow, expressed as a percentage of the median annual flow for the pre-development flow pattern, be at least the percentage stated for the node in the table, column 3.

Table

Column 1	Column 2	Column 3
Node	**Mean annual flow percentage**	**Median annual flow percentage**
1	84	73
2	97	95
3	95	91
4	98	98
5	99	99

Schedule 5 Total volumes for unallocated water

sections 25 and 29

Part 1 Strategic unallocated water

Column 1	Column 2
Catchment area	**Total volume**
Baffle Creek catchment area	3000ML

Part 2 General unallocated water

Column 1	Column 2
Catchment area	**Total volume**
Baffle Creek catchment area	5000ML
Worthington Creek catchment area	100ML
Eurimbula Creek catchment area	500ML
Broadwater Creek catchment area	1000ML
Littabella Creek catchment area	5000ML

Schedule 6 Water licence to replace local government authority

section 38

Column 1	Column 2
Continued authority	**Water licence to take water**
The authority granted in the Order in Council published in the gazette on 7 October 1967, at page 470, authorising the Miriam Vale Shire Council to take water from Baffle Creek	**licensee**—Gladstone Regional Council **period**—10 years **location**—lot 163 on FD876 **purpose**—any **maximum rate**—25 litres/second **daily volumetric limit**—0.5ML **annual volumetric limit**—73ML **water year**—1 July to 30 June

Schedule 7 Limitations on particular licences

sections 39 and 40

Part 1

Item	Limitation
1	**period**—10 years **location**—Bottle Creek **purpose**—any **maximum rate**—20 litres/second **daily volumetric limit**—1.4ML **annual volumetric limit**—10ML **water year**—1 July to 30 June

Part 2

Item	Limitation
1	**period**—10 years **location**—lot 54 on RP865516 **purpose**—rural **maximum rate**—210 litres/second **daily volumetric limit**—15.1ML **maximum drawdown limit**—2m **condition**—water taken under this licence must not be placed in storage
2	**period**—10 years **location**—lot 32 on FD109 **purpose**—rural **maximum rate**—20 litres/second **daily volumetric limit**—1.4ML **maximum drawdown limit**—2m **condition**—water taken under this licence must not be placed in storage

Schedule 8 Rates and pump sizes

sections 44 and 45

Column 1	Column 2	Column 3
Pump size (millimetres)	**Maximum rate (litres/second)**	**Daily volumetric limits (megalitres/day)**
32	10	0.7
40	16	1.1
50	31	2.2
65	55	4
80	78	5.6
100	114	8.2
125	139	10
150	179	12.9
200	264	19
250	360	25.9
300	416	30
350	466	35
375 to 400	575	43.2
450	733	55
500	838	65.8
600 to 610	1100	86.4
660	1683	132
800	2237	184

Schedule 9 Dictionary

section 3

adopted middle thread distance means the distance in kilometres, measured along the middle of a watercourse, that a specific point in the watercourse is, at the commencement of this plan, from—

(a) the watercourse's mouth; or

(b) if the watercourse is not a main watercourse—the watercourse's confluence with its main watercourse.

AMTD means adopted middle thread distance.

annual flow volume, for a point on a watercourse or a node, means the total volume of flow, at the point or node, in a period of 12 months starting on 1 July.

annual volumetric limit, for a water licence, means the maximum volume of water that may be taken under the licence in the water year for the licence.

authorisation means a water licence, water permit or other authority to take water given under the Act or the repealed Act, other than a permit for stock or domestic purposes.

catchment area see section 5.

daily volumetric limit, for a water licence, means the maximum volume of water that may be taken under the licence in a day.

ecological assets includes a species, a group of species, a biological function, an ecosystem and a place of natural value.

existing overland flow works means works that allow the taking of overland flow water that—

(a) were in existence on 27 September 2008; or

(b) were started by, but not completed, on 27 September 2008 and—

(i) if a variation to a moratorium notice was granted for the works under section 27 of the Act—have been, or are being, completed in accordance with the moratorium notice, as varied; or

(ii) if subparagraph (i) does not apply—were completed by 27 March 2009; or

(c) for works mentioned in the moratorium notice mentioned in section 20(1) as works to which the moratorium notice does not apply—were started before the commencement of this plan.

existing water licence means a water licence in force immediately before the commencement of this plan.

flow regime means the entire range of flows at a point in a watercourse including variations in the watercourse height, discharge, seasonality, annual variability and event duration.

general reserve means a volume of unallocated water available for allocation for any purpose.

hydraulic habitat requirements, of an ecological asset, means the hydraulic or physical attributes of the flow regime that are—

(a) required for a particular biological process or response to happen in relation to the asset; or

(b) necessary to maintain the long-term biological integrity of the asset.

IQQM computer program means the department's Integrated Quantity and Quality Modelling computer program, and associated statistical analysis and reporting programs, that simulate daily stream flows, flow management, storages, releases, instream infrastructure, water diversions, water demands and other hydrologic events in the plan area.

maximum drawdown limit means the water level, below the water level for full supply, at which pumping from a lake is prohibited.

mean annual flow, at a point on a watercourse or a node, means the total volume of flow at the point or node in the

simulation period, divided by the number of years in the simulation period.

median annual flow, at a point on a watercourse or a node, means the annual flow volume at the point or node that is equalled or exceeded in 50% of the years in the simulation period.

monthly volumetric limit, for a water licence, means the maximum volume of water that may be taken under the licence in a month.

node see section 8.

pass flow condition means a condition on a water licence which states the passing flow required during the taking or interfering with water.

passing flow means the flow in a watercourse, expressed in megalitres a day, past a specific location.

plan area means the area shown as the plan area on the map in schedule 1.

pre-development flow pattern means the pattern of water flows, during the simulation period, decided by the chief executive using the IQQM computer program as if—

(a) there were no dams or other water infrastructure in the plan area; and

(b) no water was taken under authorisations in the plan area.

project of regional significance means a project the chief executive considers, under section 27, to be a project of regional significance for the plan area.

project of State significance means a project declared under the *State Development and Public Works Organisation Act 1971*, section 26, to be a significant project.

pumping pool means a pool of water near a pump in a watercourse, lake or spring that ensures the water level of the watercourse, lake or spring is appropriate to enable the pump to function properly.

resource operations plan means the resource operations plan to implement this plan.

simulation period means the period from 1 July 1889 to 30 June 2007.

started, for existing overland flow works, means—

(a) construction of the works had physically begun or, if construction had not physically begun, a contract had been entered into to begin construction; and

(b) an independently verifiable construction program existed for progressive construction towards completion of the works; and

(c) detailed design plans existed showing, among other things, the extent of the works; and

(d) if a permit under the *Local Government Act 1993*, section 940, was required for the works—the permit had been issued; and

(e) if a development permit was required for the works—the permit had been given.

State purpose means—

(a) a project of State significance; or

(b) a project of regional significance; or

(c) town water supply.

strategic reserve means a volume of unallocated water available only for allocation for a State purpose.

subcatchment area see section 6.

this plan means this water resource plan.

traditional owners, of an area, means the Aboriginal people who identify as descendants of the original inhabitants of the area.

unallocated water means water available for allocation in the plan area.

waterhole means 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.

works that allow the taking of overland flow water include—

(a) storages, sumps, drains, embankments, channels and pumps for taking, or that can be used for taking, overland flow water; and

(b) storages that are connected to the works mentioned in paragraph (a); and

(c) works that make, or that can be used to make, the original connection between the storages mentioned in paragraph (b) and the works mentioned in paragraph (a).

ENDNOTES

1 Approved by the Governor in Council on . . .

2 Notified in the gazette on . . .

3 Laid before the Legislative Assembly on . . .

4 The administering agency is the Department of Environment and Resource Management.