Natural Resources and Water
Managing Queensland's natural resources
... for today and tomorrow

Annual Report 2007–08

Queensland's Water Resource Plans

Barron River
Border Rivers
Boyne River
Burnett Basin
Calliope River
Cooper Creek
Fitzroy Basin
Georgina and Diamantina
Great Artesian Basin
Moonie River
Pioneer Valley
Warrego, Paroo, Bulloo and Nebine

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Minister's foreword

Queensland's water resource planning process has been in place for over 10 years, and water resource plans and resource operations plans have been completed for a large percentage of the state. As subordinate legislation under the *Water Act 2000,* water resource plans are valid for 10 years after their commencement. Before expiry, an existing plan must be reviewed and a new water resource plan put in place to continue water management arrangements. The Fitzroy Basin and Cooper Creek water resource plans are the first plans to be reviewed, with an expiry date of 1 September 2010. The monitoring undertaken throughout the life of the water resource plans and the performance of the plans—reported annually in this report—will underpin the review and replacement process.

These annual reports fulfil a requirement under the *Water Act 2000*—that is, to report on water resource plans and confirm whether the plans around the state are achieving their objectives, or highlight where plans need improvement. Data collated in the annual reports will be used to review the plans.

The report this year includes extra information required for the five-year review of the Moonie, Border Rivers, Warrego, Paroo, Bulloo and Nebine water resource plans. The requirement for a five-year review is particular to catchments in south-west Queensland only. Also included in this year's annual report are the results of the Pioneer Valley water accounting pilot exercise. This will demonstrate how water monitoring and reporting may occur in the future with the introduction of national standards.

Other changes this year include a more detailed description than last year of the outcomes of the Environmental Flows Assessment Program. This program is being implemented across the state to assess the water requirements of valued ecological assets with critical links to environmental flows.

The water resource plans annual reports will continue to expand in the future as our level of knowledge across all areas of water monitoring and water resource planning increases. The Department of Natural Resources and Water is committed to making this report as useful and informative to readers as possible, and your feedback is appreciated. You can provide feedback using the form at the end of this report.

Craig Wallace
Minister for Natural Resources and Water and
Minister Assisting the Premier in North Queensland

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1. Introduction

1.1 What is the water planning process?

Water resource plans (WRPs) are subordinate legislation to the *Water Act 2000* (the Act).

A WRP establishes a framework for sustainable water resource management for domestic, irrigation and industrial purposes and environmental water requirements. The framework specifies outcomes for managing the water and establishes management strategies that deal with environmental flow objectives, water entitlement security objectives, and water and ecosystem monitoring requirements.

In general terms, a WRP specifies the outcomes that must be met under sustainable water management arrangements in the plan area, and how they will be achieved. It is intended to provide security for:

- environmental water requirements
- water users
- water infrastructure operators
- future water-related development.

Under section 53 of the Act, the minister must report periodically on the implementation of each WRP, which is typically implemented through a resource operations plan (ROP). This WRP Annual Report 2007–08 fulfils this function.

1.2 Water resource plan reviews

A WRP expires 10 years after its commencement. This encourages review of the existing plan and development of a new WRP.

As the *Water Resource (Fitzroy Basin) Plan 1999* (Fitzroy WRP) is approaching the end of its 10-year lifespan, a requirement under the Act is to assess the existing plan to determine its effectiveness and develop a new plan using findings from the assessment. Monitoring, assessment and reporting on the effectiveness of WRPs in achieving outcomes are statutory requirements under the Act.

The new Fitzroy WRP is due to commence on 1 September 2010. It will replace the current WRP and have full effect. For the replacement WRP, the department is conducting the environmental assessment using information gathered during the life of the existing plan. Independent peer review of the environmental assessment work undertaken by the department will be sought to ensure that the best available science has been used in the review. The *Water Resource (Cooper Creek) Plan 2000* review is also underway, with the WRP expiring on 1 September 2010.

More detail on the review of the Fitzroy WRP is provided in the Fitzroy WRP chapter (Chapter 10).

1.3 Purpose and scope of the report

This report summarises the implementation of the state's WRPs, and assesses the effectiveness of their implementation—through the ROPs—in achieving the general and specific ecological outcomes of the WRP. This includes whether the objectives are continuing to promote ecologically sustainable development. The report includes information on:

- changes to the plans
- the number of water entitlements and figures on water use
- water trading and pricing
- water operations, including the impact of storage operation on downstream ecosystems
- a summary of research and monitoring undertaken under the plan
- emerging water management issues.

The objectives stated in the WRP are intended to be achieved over the long term; therefore, not all objectives will necessarily be met in a given year. However, the Department of Natural Resources and Water (NRW) can investigate instances where the environmental or water security objectives are not meeting the WRP outcomes.

As more information becomes available each year, NRW can progressively assess the long-term effectiveness of the WRP in achieving WRP outcomes and sustainable water management. This will assist in the WRP review process and provide a basis for any changes that need to occur.

1.4 Catchments covered in the report

This document reports on all WRPs across the state that have a ROP in place. Last year, 10 catchments were reported on. This year, there are two more catchments, bringing the total to 12. The Border Rivers and Calliope River WRPs will be reported on for the first time in this report. Table 1.1 below lists the dates of approval for all the WRPs covered in this report.

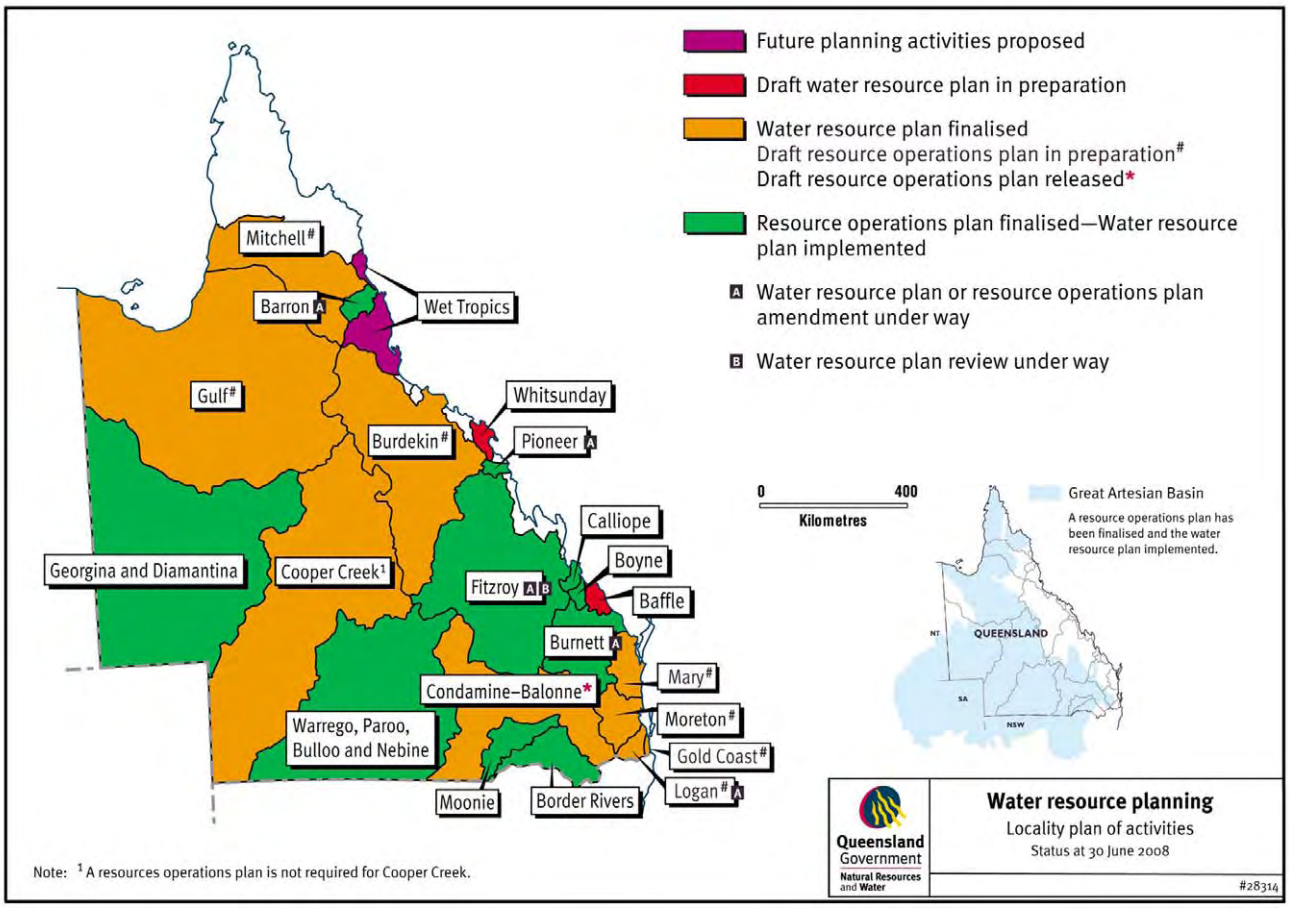
For progress on WRPs in other parts of the state, see the water resource planning website at ‹www.nrw.qld.gov.au/wrp›.

Table 1.1 Reporting catchments and approval dates

WRP catchments	WRP approved	ROP approved
Barron	19.12.02	16.06.05
Border Rivers	14.06.07	14.03.08
Boyne	14.12.00	24.07.03
Burnett	14.12.00	29.05.03
Calliope	15.12.06	02.05.08
Cooper Creek	07.02.00	N/A
Fitzroy	23.12.99	09.01.04
Georgina Diamantina	05.08.04	13.07.06
Great Artesian Basin	31.03.06	23.02.07
Moonie	04.12.03	20.01.06
Pioneer	19.12.02	16.06.05
Warrego, Paroo, Bulloo and Nebine	04.12.03	20.01.06

The newest catchments to be added to the water resource planning agenda are the Wet Tropics, for which a WRP may be prepared.

Figure 1.1 shows what stage each part of Queensland is at in the water planning process by catchment.



2. Water resource plan highlights

2.1 2007–08 highlights

- Two new ROPs were completed and are now being implemented. They are the Border Rivers ROP and the Calliope ROP, and are being reported on for the first time in this edition of the minister's WRP Annual Report.
- In November 2007, the minister announced the finalisation of amendments to the Burnett Basin WRP to include the Coastal Burnett Groundwater Management Area.
- For the Cooper Creek WRP, the planning process to prepare a new draft water resource plan has commenced.
- Permanent water trading and seasonal water assignments for supplemented water schemes continued among the catchments, in the Barron, Border Rivers, Burnett, Fitzroy, Pioneer and Warrego, Paroo, Bullo and Nebine (WPBN) catchments.
- Relocations (permanent trade) of Great Artesian Basin (GAB) water licences under the GAB ROP occurred for the first time, totalling 323 ML of water over seven relocations.
- Above average rainfall was experienced in the Pioneer Valley over the wet season.
- Annual flow past Cunnamulla in the WPBN catchment was the highest recorded.
- Operating licences in the Burnett Basin were metered during the reporting period, and 53 meters on bores were installed in the Mulgildie management area for the GAB WRP.

2.2 Number of surface water entitlements

Table 2.1 summarises surface water entitlements for the reporting catchments.

2.3 Water trading

Supplemented and unsupplemented permanent water trading dealings occurred in four WRP catchments over the 2007–08 financial year—in the Burnett, Barron, Fitzroy and Pioneer WRPs. The Border Rivers and WPBN WRPs did not have any trading occur in the 2007–08 year.

The Burnett WRP held the most permanent trades over the last financial year, with 84 permanent unsupplemented and supplemented water allocation transfers. This is a substantial decrease from the last reported financial year, from 428 trades in total.

The weighted average price per megalitre ranged from $229 to $1494, with the highest and lowest average price being in the Fitzroy WRP.

For a summary of all trades, with the volume transferred please see the relevant sections of each catchment chapter or the Tables 2.2 and 2.3.

Table 2.1 Number of surface water entitlements in the reporting period

WRP area	Number of allocations		Number of surface water licences
	Supplemented	Unsupplemented	
Barron	2 014	N/A	288
Border Rivers	288	N/A	267
Boyne	2	N/A	27
Burnett	4 330	441	N/A
Calliope	N/A	N/A	51
Cooper	N/A	N/A	126
Fitzroy	1 124	209	
Georgina–Diamantina	N/A	N/A	4
Moonie	N/A	32	N/A
Pioneer	838	43	1 116
WPBN	27	76	N/A

Table 2.2 Supplemented permanent water trading transfers

Resource operations plan area	Number of transfers	Total volume transferred (ML)	Price1 ($/ML)	Percentage turnover2 (%)
Barron	74	4078	$574	1.99
Border Rivers	0	N/A	N/A	N/A
Burnett	121	9694	$1307	1.92
Fitzroy	29	6287	$1494	1.62
Pioneer	8	724	$769	0.51
WPBN	0	N/A	N/A	N/A
Total	232	20783	$1124	1.54

Notes:
'Transfers' refers to transfers of legal and beneficial ownership.
'0' refers to the fact that no transfers were made in a particular catchment for this period.
'N/A' data not available at time of publication.
[1] Refers to weighted average price paid per megalitre (ML). A value of $0/ML indicates transfers for nil consideration e.g. by way of gift.
[2] Percentage of the total volume of water allocations traded separately to land in the reporting period.

Table 2.3 Unsupplemented permanent water trading transfers

Resource operations plan area	Number of transfers	Total volume ransferred (ML)	Price[1] ($ML)	Percentage turnover [2] (%)
Burnett	10	782	$318	2.77
Border Rivers	0	N/A	N/A	N/A
Fitzroy	3	556.5	$229	0.61
Moonie	0	N/A	N/A	N/A
Pioneer	0	N/A	N/A	N/A
WPBN	0	N/A	N/A	N/A
Total	13	1338.5	$281	2.79

Notes:
'Transfers' refers to transfers of legal and beneficial ownership.
'0' refers to the fact that no transfers were made in a particular catchment for this period.
'N/A' data not available at time of publication.
[1] Refers to weighted average price paid per megalitre (ML). A value of $0/ML indicates transfers for nil consideration e.g. by way of gift.
[2] Percentage of the total volume of water allocations traded separately to land in the reporting period.

The most number of changes to supplemented permanent water trading dealings occurred again in the Burnett, with 26 changes and 82 subdivisions. The Border Rivers had one change and one subdivision occur in the past financial year.

The number of changes to unsupplemented permanent water trading was considerably less, with the most occurring in the Fitzroy, with three subdivisions. The WPBN had one change occur in the unsupplemented permanent water trading dealings. See Table 2.4 for a summary of supplemented permanent water trading dealings from July 2007 to June 2008.

Table 2.4 Supplemented water trading dealings

Resource operations plan area	Number of changes[1]	Number of subdivisions	Number of amalgamations
Barron	4	16	0
Border Rivers	1	1	0
Burnett	26	82	0
Fitzroy	3	20	4
Pioneer	2	7	0
WBPN	0	0	0
Total	36	126	4

Note:
[1] A change refers to a change to some aspect of a water allocation's attributes (e.g. nominal volume; location; purpose of use).

2.4 *Seasonal water assignments*

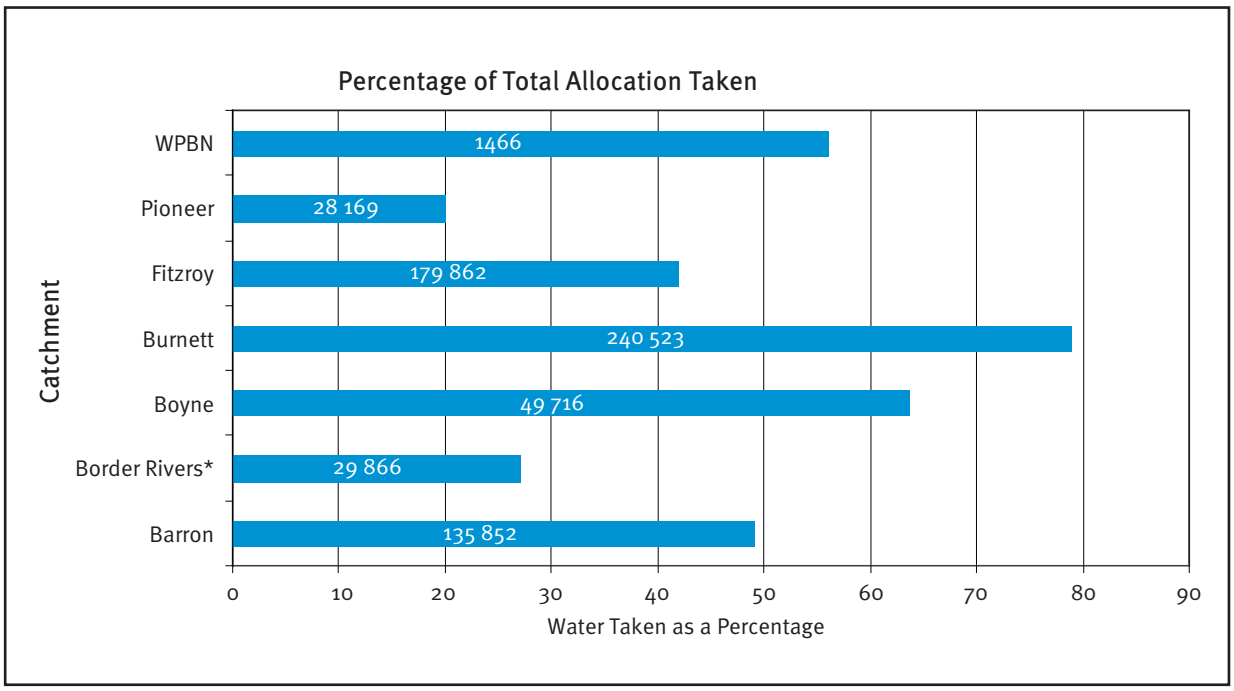
Table 2.5 summarises the number and volume of seasonal water assignments. The Fitzroy WRP had the most entitlements, totalling 291, and the WPBN WRP had the least number, totalling three.

Table 2.5 Seasonal water assignments

WRP area	Number	Volume (ML)
Burnett	251	1 669
Fitzroy	291	35 329
Pioneer	35	223
Border Rivers	162	14 719
Barron	215	13 217
Warrego, Paroo, Bulloo and Nebine	3	843

2.5 *Total supplemented water use*

Figure 2.1 summarises total supplemented water use over the reporting period.



* This value excludes transfers to NSW, 10% reduction volume and bulk releases between the Border Rivers Water Supply Scheme and the Macintyre Brook Water Supply Scheme

2.6 *Critical water supply arrangements*

The water service provider—or water licence holder in some supplemented systems—is required under the ROP to submit a proposal for critical water supply arrangements for NRW's approval. These rules provide for water supply during periods of critical water shortage while taking into account different user priorities.

Currently, the Burnett, Border Rivers, Fitzroy and Pioneer WRPs have approved critical water supply arrangements. There is still ongoing negotiation between NRW (the regulator) and the resource operations licence holder in the Barron, and critical water sharing arrangements were not implemented in that catchment. Critical water supply arrangements were triggered in the following catchments:

- Burnett: The Barker Barambah, Upper Burnett, Bundaberg and Boyne–Tarong Water Supply Schemes were under critical water supply arrangements (CWSA) until February 2008, and as such the availability of water to medium priority water allocation holders was significantly restricted until inflows occurred in February 2008.
- Fitzroy: Critical water supply water sharing rules were activated in the Dawson Valley Lower Subscheme from 1 July 2008. Critical water supply water sharing rules were activated at the beginning of 2007–08 for the Nogoa Mackenzie Water Supply Scheme with the medium priority announced allocations being zero.

3. State monitoring and research

NRW performs monitoring and assessment activities under the Act for planning purposes. NRW monitors and records data (surface and groundwater) on water quantity and quality, rainfall data and ecological data to help assess WRPs.

The Department of Primary Industries and Fisheries, the Environmental Protection Agency and other regional bodies also conduct monitoring programs that NRW may find useful in assessing the effectiveness of a WRP.

The use of the data collected from these monitoring programs, undertaken by NRW and other agencies, is primarily to assess the performance of each WRP in achieving its general and ecological outcomes.

3.1 Surface water and groundwater assessment networks

NRW collects, manages and delivers data on surface water quantity and quality (at specific sites) of the state's freshwater resources. The department achieves this through a network of 426 surface water gauging stations and 127 monitoring (telemetry) bores.

The data is the foundation for water resource planning, used in modelling for WRP objectives. It is also used for quantity and quality condition and trend monitoring, ROP monitoring compliance, water harvesting announcements and flood warnings.

Gauging station information and streamflow data summaries are available at ‹www.nrw.qld.gov.au/watershed›.

3.2 Water quality assessment

NRW monitors and records water quality through a number of programs. The major programs where water quality is monitored include the Stream and Estuary Assessment Program (SEAP), the Surface Water Assessment Network (SWAN) and the Ecosystem Health Monitoring Program (EHMP).

SEAP looks at the effect of multiple drivers on ecosystem condition using a pressure-stressor-response model, enabling an assessment of the effects of flow management. It ensures that conditions and trends of ecosystems is known, but also identifies potential causes of ecosystem condition decline. The program is divided into 'bioprovinces' around the state, with the Queensland Central Region bioprovince being implemented this year and findings currently being assessed. Other bioprovinces will be implemented and assessed once the central region has been completed, the next being the Wet Tropics.

The Surface Water Ambient Network (SWAN) is a network that collects continuous streamflow and water quality data at rivers and streams throughout the state. This data is used for NRW's own water resource planning and water management programs and is available to the public. Regional natural resource management bodies, water service providers, local governments and community groups use the data for a range of planning and operational needs. This network fulfils a departmental obligation under the *Water Act 2000*. The information obtained from this program is also used to assist the SEAP.

Event monitoring is also carried out by NRW to provide input into monitoring for the Great Barrier Reef and the EHMP. Sampling is carried out across Queensland in 10 catchments that drain into the Great Barrier Reef lagoon. For EHMP, sampling is undertaken two times per year of over 120 freshwater sites in South East Queensland for five indicators—fish, macroinvertebrates, benthic metabolism, nutrients and algal bioassay. The results are reported twice a year to the Moreton Bay Catchment and Waterways Partnership. An annual report card on the ecosystem health of South East Queensland waterways and an annual technical report are produced. Event monitoring is likely to produce information that will be used in the review of WRPs.

Other monitoring conducted by NRW includes the loads-based program for South East Queensland and the Great Barrier Reef catchments. The Great Barrier Reef program monitors sediment and nutrient loads discharged to the Great Barrier Reef to meet the department's commitments under Activity I5 of the Reef Water Quality Protection Plan. The South East Queensland program uses the same methodology developed for the Great Barrier Reef catchments to monitor sediment and nutrient loads discharged from SEQ catchments. At present, the department's commitment to this program is for 12 monitoring sites in the Lockyer, Bremer and Logan–Albert catchments based at the end of valley and subcatchments. Samples will be collected during high flow events and analysed for nutrients and suspended sediment. Samples will also be taken at base flow on at least five occasions each year.

Streamflow and physiochemical data is available online and downloaded daily (at most gauging stations), and is available from ‹www.nrw.qld.gov.au/water/monitoring/current_data/map_qld.php›.

3.3 *Ecological assessment: natural ecosystems*

NRW is responsible for overseeing the Environmental Flows Assessment Program (EFAP) in Queensland, which assesses the rules and strategies specified in WRPs and their effectiveness in achieving the intended ecological and community outcomes. To assess the delivery of water for ecological outcomes, ecological assets that represent ecological outcome and have critical links to flow are identified for each WRP area. The purpose of EFAP is to:

- confirm the critical water requirements of ecological assets to build scientific knowledge to underpin water management decisions
- determine whether current flow management strategies are providing critical water requirements
- determine the risk to ecological assets and evaluate whether ecological outcomes in a WRP are likely to be met under current flow management strategies.

For the purposes of assessing a WRP, an ecological asset is defined as a species, biological function or place of value for which water is known to be critical. The term critical means that water is necessary to maintain the biological integrity of the asset. Ecological assets should naturally occur in a plan area and be linked to the ecological outcomes of the plan. Ecological assets are used as indicators of an ecosystem.

As it is not possible to monitor all parts of an ecosystem to build knowledge of critical water requirements, the intention is to select a range of assets that adequately represent the ecological outcomes for a plan area, and are representative of the ecosystem as a whole. Ecological assets that have been considered and selected will be listed in this year's edition of the WRP reports.

Together, the ecological assets selected represent the ecosystem and enable a manageable method for monitoring whole ecosystem outcomes of water management.

The assessment program involves several activities undertaken by the state's regional biologists, including:

- identifying ecological assets in the WRP area that have a critical link to streamflow
- conducting research to increase certainty or fill knowledge gaps about critical water requirements
- measuring or estimating the aspects of flow that are relevant for the critical requirements
- assessing risk to ecological assets from water management.

Monitoring under this program will build information on the critical water requirements of specific ecological assets potentially at risk from water management. It will also assess long-term risk to selected ecological assets in a WRP area, which will inform the review of each WRP as it approaches its 10-year review.