

*Dumaresq-Barwon
Border Rivers Commission*



***Annual Report
2016-17***

In accordance with the provisions of Clause 15(c) of the New South Wales-Queensland Border Rivers Agreement, the Dumaresq-Barwon Border Rivers Commission has the honour to present its report for the year ended 30 June 2017.

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Dumaresq-Barwon Border Rivers Commission
c/- PO Box 318
Toowoomba Q 4350

The Honourable Dr Anthony Lynham, MP
Minister for State Development and Minister for Natural Resources and Mines
PO Box 15216
CITY EAST Q 4002

Dear Dr Lynham

Pursuant to the provisions of the New South Wales-Queensland Border Rivers Act 1946 I have pleasure in enclosing, for presentation to the Parliament, the Annual Report and Financial Statements of the Dumaresq-Barwon Border Rivers Commission for 2016-17.

I certify that this Annual Report complies with the prescribed requirements of the Financial Accountability Act 2009 and the Financial and Performance Management Standard 2009.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Warren Martin', written in a cursive style.

Warren Martin
Chair

A handwritten signature in blue ink, appearing to read 'Paul Sanders', written in a cursive style.

Paul Sanders
Commissioner for Queensland



Dumaresq-Barwon Border Rivers Commission
c/- PO Box 318
Toowoomba Q 4350

The Honourable Niall Blair, MLC
Minister for Primary Industries, Minister for Regional Water &
Minister for Trade and Industry
GPO Box 5341
SYDNEY NSW 2001

Dear Mr Blair,

Pursuant to the provisions of the New South Wales-Queensland Border Rivers Act 1947 and the Annual Reports (Statutory Bodies) Act 1984, I have pleasure in enclosing, for presentation to the Parliament, the Annual Report and Financial Statements of the Dumaresq-Barwon Border Rivers Commission for the year ended 30 June 2017.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Warren Martin', with a long, sweeping tail.

Warren Martin
Chair

Contents

2016 -17 at a glance.....	1
Chair’s Report	3
The Commission	5
The water infrastructure	9
The water resources.....	11
The business and our customers	20
Financial Statements for the year ended 30 June 2017	23

The Dumaresq-Barwon Border Rivers Commission was established by the governments of Queensland and New South Wales under an agreement made in November 1946 called the New South Wales-Queensland Border Rivers Agreement. That agreement was subsequently ratified by legislation in both states.

The Commission is responsible for controlling, on behalf of the two states, the operation and maintenance of Glenlyon Dam, Boggabilla Weir and a number of other small weirs and regulators in the border catchments and arranging for certain river flows and groundwater levels in the border catchments to be monitored.

It is also responsible for implementing the agreements made between the two states in relation to sharing the waters of the Border Rivers and providing advice in relation to water infrastructure and water sharing in all the border catchments.

As the “owner” of a referable dam in Queensland, the Commission is also a registered water service provider under the Queensland *Water Supply (Safety and Reliability) Act 2008*.

The Commission is funded jointly by the state governments of Queensland and New South Wales on a 50:50 basis.

2016-17 at a glance

Meetings

The Commission met once during the year and dealt with all other business out-of-session.

Commissioners

The previous Chair, Mr Warren Martin was reappointed for a period of five years until October 2021.

The State Commissioner and Deputy Commissioner positions for New South Wales were filled by Ms Monica Morona and Dr Christobel Ferguson respectively, also for a period of five years.

Institutional Reform

The Portfolio Ministers, having responsibility for the statutory oversight of the Commission's institutional management, endorsed in principle a Commission recommendation to advance proposed reform of the Commission's future role, rights and accountabilities.

Constraints within the Agreement

SunWater continued to express concerns of the constraint in the current Border Rivers Agreement limiting their commercial powers.

Improving the operating environment

The Commission undertook a series of activities to maintain and improve its operating environment. These included continuing with the Institutional Reform process and funding the development of a new Border Rivers Groundwater model for the shared alluvial resource.

Emergency event operations

With Glenlyon Dam remaining below 75% capacity throughout the year, there were no flows over the spillway and subsequently no emergency flow events recorded. No water quality or environmental emergencies occurred.

Water Sharing

With Glenlyon Dam commencing the year at approximately 26% capacity, limited volumes of regulated water were available to be extracted with 115,257 megalitres and 20,417 megalitres being diverted by New South Wales and Queensland respectively. These quantities fell within the approved allocations.

Pumping from flows in the Border Rivers not regulated by a major dam was above average with 110,116 megalitres of supplementary water and 210,000 megalitres of unsupplemented water being taken from the Border Rivers by New South Wales and Queensland respectively, again within approved announced allocations.

Groundwater use was below that in recent years with 3,138 megalitres and 4,706 megalitres taken from the Dumaresq River alluvial groundwater by New South Wales and Queensland respectively. The groundwater monitoring network funded by the Commission showed there has been a slight upward trend in groundwater levels within the Border Rivers Alluvium over the last 12 months.

Water Resource Management

In contrast to previous years, 2016-17 was relatively dry across all the catchments in the border region, evidenced by extended periods of low or no flow during the year.

At the end of 2016-17 Glenlyon Dam was at 75% capacity with the majority of private on-farm storages in the border region also at 75% of capacity or greater.

Beardmore Dam environmental, stock and domestic releases and intersecting streams behaviour

Releases for stored environmental, stock and domestic (ESD) water commenced in September 2016 for a two week period followed by a fortnight of waterharvesting. The release resulted in a flow-through-event on the Culgoa, Narran, Birrie and Bokhara river systems in late October. Further releases were made in February and March 2017. The releases in March were followed by 11 days of waterharvesting. These release resulted in a flow through of the Culgoa and Narran River systems. The Birrie and Bokhara River systems had flows reach downstream of the Goodooga river gauges. No significant inflows occurred to Beardmore Dam for the remainder of the water year. A total of 54,500 megalitres of ESD water was released across the 2016/17 year.

Financial position

The Commission during 2016-17:

- Received total revenue of \$2,732,000 comprising the call-up from the states of \$2,600,000, investment revenue of \$104,000 and other revenue of \$28,000;
- Had expenses due to ordinary activities of \$4,467,000 which included depreciation of \$1,886,000;
- Achieved a net operating deficit of \$3,041,000 and
- Had a cash balance of \$3,920,000 as at 30 June 2017, which will be available to fund future works and their operations over the shorter term.

Chair's Report

Over 2016-17, the Commission continued to successfully manage its statutory responsibilities associated with financial, water operations, asset management and water resources management functions.

The Queensland Audit Office reported no significant internal control deficiencies for 2016-17 but did identify actions necessary to address several risk exposures. The Commission has addressed these issues.

The Commission formally met on one occasion during the year in June 2017. Individual Commissioners, not acting as the Commission, met during the year on several occasions to participate in discussions on several key matters, two of which required further attention.

The first of these two matters related to the potential institutional reform of the Commission. In 2016, we obtained approval from both the Queensland and New South Wales Ministers to advance the preparation of a reform package. There was a meeting with members of a Working Group from New South Wales and Queensland agencies, who are charged with progressing the reform agenda.

The other matter was in relation to our business relations with SunWater, which provides the Commission with engineering and asset management services under a fee for service arrangement. In two meetings and teleconferences with management representatives of SunWater, provision of services in 2016-7 and 2017-18 were addressed and we moved toward resolution. Further dialogue with SunWater is continuing at officer and Commissioner level.

There is expectation, through more affirmative approaches, that each matter will be well advanced this year, with the most optimistic outcomes hopefully near resolution.

2016-17 was characterised by a change in the representation on the Commission. Two new New South Wales Commissioners, Ms Monica Morona, as the NSW Commissioner, from DPIWater, and Dr Christobel Ferguson, as the NSW Deputy Commissioner, also from that agency were appointed in September and October respectively. My term as Chair expired in October 2016 and I was reappointed in December 2016 until 2021.

The annual "call-up" from each State to fund the Commission's activities was increased to \$1.3 million this financial year and is the first such increase in eight years.

I wish to thank SunWater and WaterNSW for their operation and management of the Commission's works and delivery of water to the states during the year and the NSW Department of Primary Industries, Water and the Queensland Department of Natural Resources and Mines for their support during 2016-17.

I also thank the States' Commissioners and Deputy Commissioners, the Commission's Accountant and Secretary/Project Officer and members of the

Management Committee and the Border Standing Committee and other departmental staff from both States, for their dedication, efforts and support during the year.

Special thanks go to Mr Chris Dunbar, our Accountant and Mr Steve Goudie, Chair of our Management Committee, each of whom has stepped down after providing much useful advice to the Commission over many years.

The Border Rivers Commission does not participate in compliance management of water users along the Border Rivers as that role rests with each State's agency. The Commission's compliance audit role is in relation to each State's bulk water use and I advise that each state did not divert in 2016-17 more water than its allotted share.

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Warren Martin
Chair
Dumaresq Barwon Border Rivers Commission

The Commission

Purpose

The Commission was established by the States of New South Wales and Queensland to give effect to the New South Wales-Queensland Border Rivers Agreement (the Agreement) 1946 as ratified by the *New South Wales-Queensland Border Rivers Act 1946* (Queensland) and the *New South Wales-Queensland Border Rivers Act 1947* (New South Wales).

Commission's duties and functions

In summary, the statutory functions and duties of the Commission are to:

- determine the quantities of water available to the states, under the agreed water sharing arrangements, from the Border Rivers and from the shared dams and weirs
- control the construction, operation and maintenance of works taken over or constructed through the Commission under the Agreement
- investigate matters to enable the Commission to exercise the powers and discharge the duties conferred upon it by the Agreement
- report and make recommendations to the governments of New South Wales and Queensland regarding the construction/maintenance of works, sharing the waters of the Intersecting Streams, sharing groundwater and other matters
- arrange for river flows and groundwater levels to be effectively monitored.

In addition to its statutory functions the Commission has arranged for water quality in the Border Rivers and the Intersecting Streams to be monitored by agencies in New South Wales and Queensland.

Operational area

The Commission's operational area of responsibility includes:

- Glenlyon Dam on Pike Creek in Queensland
- the "Border Rivers" which includes the parts of the Dumaresq, Macintyre and Barwon Rivers that constitute the boundary between New South Wales and Queensland from Mingoola to Mungindi
- the "Intersecting Streams" which include the Moonie, Bokhara, Narran, Culgoa, Ballandool, Warrego, and Paroo Rivers and their effluents and tributaries, and any stream or watercourse which forms part of the Darling River drainage system and crosses the New South Wales-Queensland border west of the town of Mungindi
- the Border Rivers alluvial groundwater shared resource upstream from Keetah bridge to the junction of the Dumaresq and Mole Rivers.

The Commission

The Commission consists of three commissioners. One is appointed by the Governor of Queensland; another by the Governor of New South Wales; while the third, the Chair, who must be a person not in the service of either government, is appointed by the Premiers of the two states. Each commissioner is appointed for a term not exceeding five years. Each state may also appoint a deputy commissioner to act in the case of illness or absence of a commissioner.

The Commissioners

Mr WH (Warren) Martin

Commissioner and Chair of the Commission

Mr Martin was reappointed as Chair until 7 October 2021. Mr Martin is a civil engineer with significant experience in hydrology and water resources management including the development and implementation of water resources policy and institutional reforms.

Mr PR (Paul) Sanders

Commissioner representing Queensland

Mr Sanders is currently appointed to the position until 29 June 2021. During 2016-17 Mr Sanders was Regional Manager, Water Services, South Region in the Queensland Department of Natural Resources and Mines.

Commissioner representing New South Wales

Ms Monica Morona was appointed to the position of Commissioner representing New South Wales from 7 September 2016 until 6 September 2021. During 2016-17, Ms Morona was Director Intergovernmental and Strategic Stakeholder Relations, in the New South Wales Department of Primary Industries, Water.

The States' Deputy Commissioners

Ms A (Audrey) Van Beusichem

Deputy Commissioner representing Queensland

Ms Audrey Van Beusichem is currently appointed to the position until 29 June 2021. During 2016-17 Ms Van Beusichem was Director, Water Planning(South) in the Department of Natural Resources and Mines.

Dr C (Christobel) Ferguson

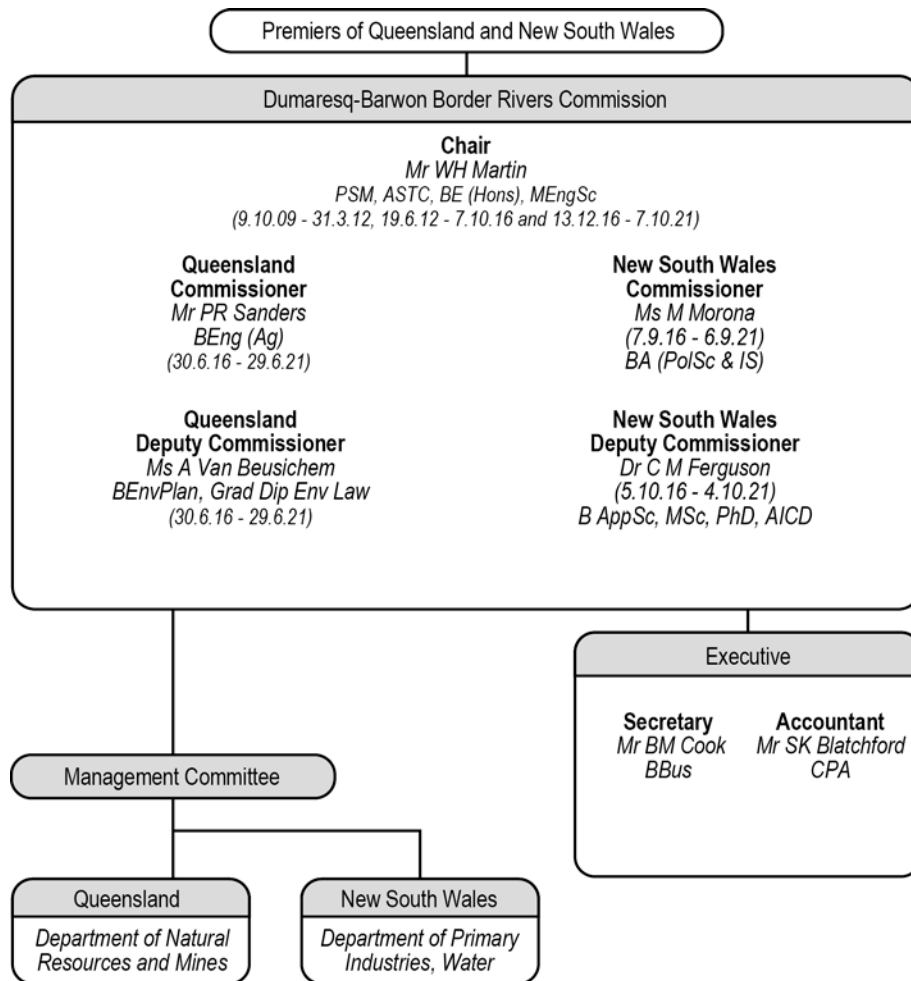
Deputy Commissioner representing New South Wales

Dr Ferguson was appointed to the position for the period from 5 October 2016 to 4 October 2021. During 2016-17, Dr Ferguson was Director Water Information & Insights in the New South Wales Department of Primary Industries, Water.

Administrative Support

Administrative support to the Commission was provided by its secretary Mr Brian Cook, and its accountant, Mr Stephen Blatchford. Mr Cook and Mr

Blatchford are employees of the Queensland Department of Natural Resources and Mines.



Meetings

The Commission met formally on one occasion during the year. Meeting No 180 of the Commission was held in Brisbane on 23 June 2017. The Chair, Mr Martin, and all Commissioners and Deputy Commissioners attended this meeting. All other business during the year was conducted out-of-session.

Management Committee

A Management Committee, comprising staff from the Queensland Department of Natural Resources and Mines, the Queensland Department of Energy and Water Supply and the New South Wales Department of Primary Industries, Water manages the day-to-day affairs of the Commission on its behalf.

During 2016-17 the management committee consisted of Ms AP (Anna) Bailey and Mr AJ (Andrew) Scott both of the New South Wales Department of Primary Industries, Water and Mr CA (Craig) Gordon of the Queensland Department of Energy and Water Supply and Mr SL (Steve) Goudie of the Queensland Department

of Natural Resources and Mines. The chair of the management committee is traditionally rotated between the states at two yearly intervals with Ms Bailey being the chair in 2016-17. The management committee met formally on two occasions during the year on 16 November 2016 and 30 May 2017. Other business during the year was conducted out-of-session.

Access

The Commission may be contacted through its secretary as follows:

The Secretary

Dumaresq-Barwon Border Rivers Commission

c/- Department of Natural Resources and Mines

PO Box 318

Toowoomba Q 4350

Phone: (07) 4529 1242

Fax: (07) 4529 1554

Email: brc@dnrm.qld.gov.au.

Web: www.brc.gov.au.

The water infrastructure

OBJECTIVES

Plan for and develop ways to conserve, manage and deliver water for beneficial use.

Operate structures safely and manage the delivery of water to ensure each state's share of the waters is supplied in a timely, equitable and cost-efficient manner.

Maintain the integrity of the works to defined asset management standards.

Protect the investment of the states in the works under the control of the Commission.

Provide public access to a range of water-based leisure and recreation opportunities.

STRATEGIC FOCUS

Under the provisions of the Border Rivers Agreement, the Commission is responsible for controlling the operation and maintenance of Glenlyon Dam, Boggabilla Weir and a number of other small weirs and regulators which it either took over when it was established or constructed after the date of the Agreement. The Commission aims to ensure the infrastructure it controls is operated and maintained in accordance with best practice, dam safety conditions and standards and the relevant Asset Management Plans, Risk Management Policies, Operations and Maintenance Manuals, Standing Operating Procedures and Emergency Action Plans as outlined in the Strategic Asset Management Plan.

The Commission has arrangements with the Queensland water service provider, SunWater Limited, and the New South Wales water service provider, WaterNSW, to provide asset facility management and river management services respectively on its behalf.

Further details of the infrastructure controlled by the Commission may be found in its report, *Annual Statistics 2016-17*, which is available from the Commission or from its web site.

KEY OUTCOMES DURING 2016-17

Dam safety

To meet the required dam safety provisions for Glenlyon Dam, the annual periodic inspection and also the annual reviews of the Data Book, Emergency Action Plan, Standing Operating Procedures and Operations and Maintenance Manual were completed.

Regular and routine dam surveillance activities were performed at all other works in accordance with industry standards and best practice. There were no major issues arising from such surveillance.

Emergency event operations

With Glenlyon Dam remaining below full capacity throughout the year, there were no flows over the spillway and subsequently no emergency flow events recorded. No environmental emergencies were recorded.

Water service provider obligations

There were no water quality matters experienced with the Glenlyon Dam town water supply system during 2016-17.

Planned maintenance and renewals

The Commission continued its program of planned maintenance and renewals to maintain the infrastructure under its control in good order, as advised by its service provider, SunWater Limited.

Asset management

The Commission undertook its annual scheduled maintenance program with the majority of work being performed at Glenlyon Dam and Boggabilla Weir by SunWater.

Public access and recreation

The Commission continued to provide and maintain recreation facilities at Glenlyon Dam to cater for the public interested in picnicking, swimming, recreational fishing, boating and water skiing. The caravan park and camping area are operated by private lessees and they provide facilities for those wishing to stay longer. It was estimated that approximately 33,000 people visited Glenlyon Dam during the year, which was a slight increase over the previous year.

FUTURE DIRECTIONS

Works to be commenced, advanced and/or completed during 2017-18 include:

- continuing to seek governments' resolution of the submission made in 2015-16 to reform the institutional management of the Border Rivers Commission;
- contractual arrangements with SunWater Ltd;
- installation of a concrete plinth to strengthen Bonshaw Weir; and
- continue activity to advance the re-engineering of the outlet works at Whyenbah Bifurcation Weir.

Water resources management

OBJECTIVES

Provide timely and relevant advice to the states on water sharing and water management issues.

Measure flows in accordance with defined standards to support water resource planning and development, effective water sharing, management and delivery.

Monitor the water quality in streams to identify emerging aquatic issues affecting river health.

Investigate and monitor the quality and quantity of the underground water resources in the Border Rivers regions and provide advice to the states on the quantities available for use.

STRATEGIC FOCUS

The Commission is accountable for overseeing the implementation of the agreed arrangements for sharing the waters of the Border Rivers between the states as prescribed in the New South Wales-Queensland Border Rivers Agreement (the Agreement) and the New South Wales-Queensland Intergovernmental Agreement 2008.

In addition, the Commission is responsible for ensuring that effective and uniform systems are in place to monitor and record river heights and flows in the Border Rivers and Intersecting Streams and groundwater levels in the alluvial aquifers associated with the Dumaresq River.

New South Wales and Queensland agencies undertake the required monitoring funded by the Commission. The data obtained is utilised for assessing the quantities of water available for sharing by the States, regulating flow in the Border Rivers to meet environmental and economic use, as well as input to each states' water resource planning and management activities.

Whilst it is not a statutory requirement under the Agreement, the Commission supports a coordinated program undertaken by the states to monitor water quality in both the Border Rivers and the Intersecting Streams to obtain an ongoing record of key water quality indicators and to identify emerging water quality issues.

In 2016-17, the Commission has continued to focus on reforms to the institutional framework under which it performs its statutory responsibilities. The Commission is of the opinion it is time to resolve a number of concerns within that framework, which the two governments have agreed in principle to address.

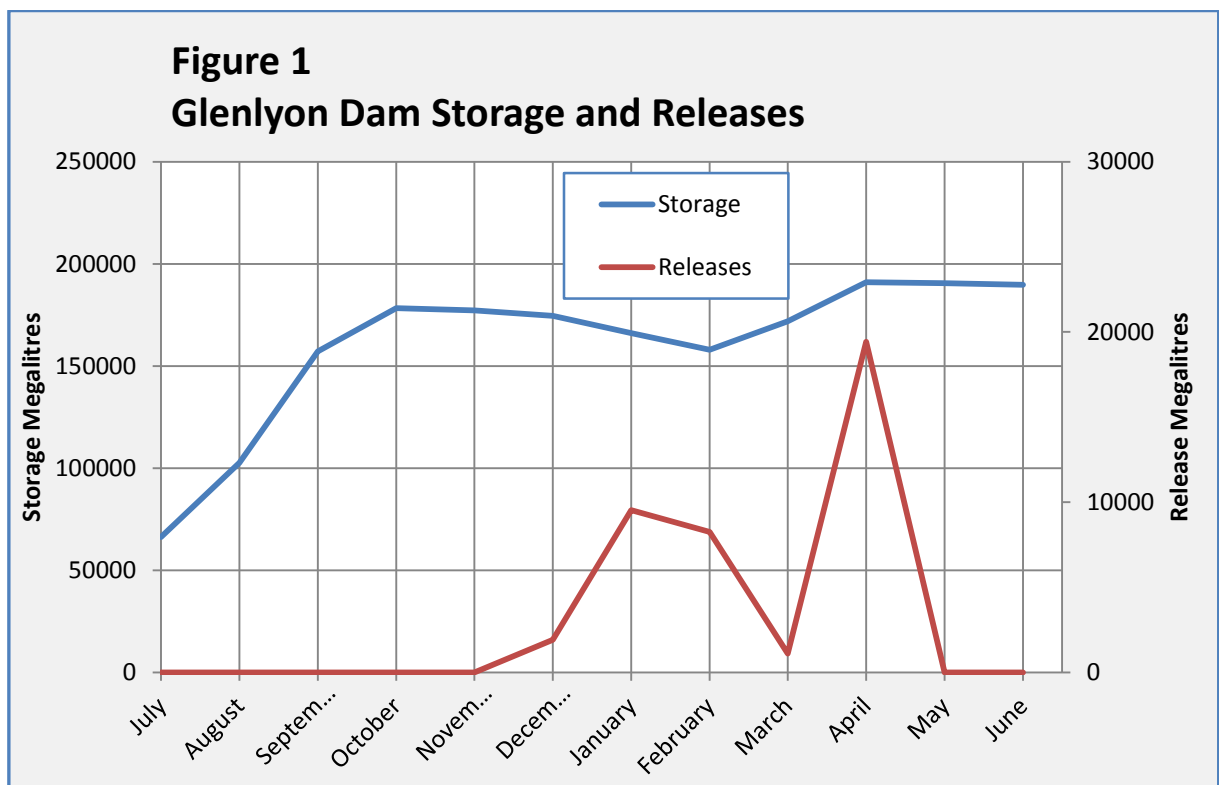
KEY OUTCOMES DURING 2016-17

Water sharing

Resource assessments were routinely carried out by the Commission at least once per month, and more often when required, to calculate the volumes of regulated water in the Border Rivers available to be shared between the two states. During the year, the total volume of water that was distributed to New South Wales and Queensland accounts were 430,940 megalitres and 98,550 megalitres respectively.

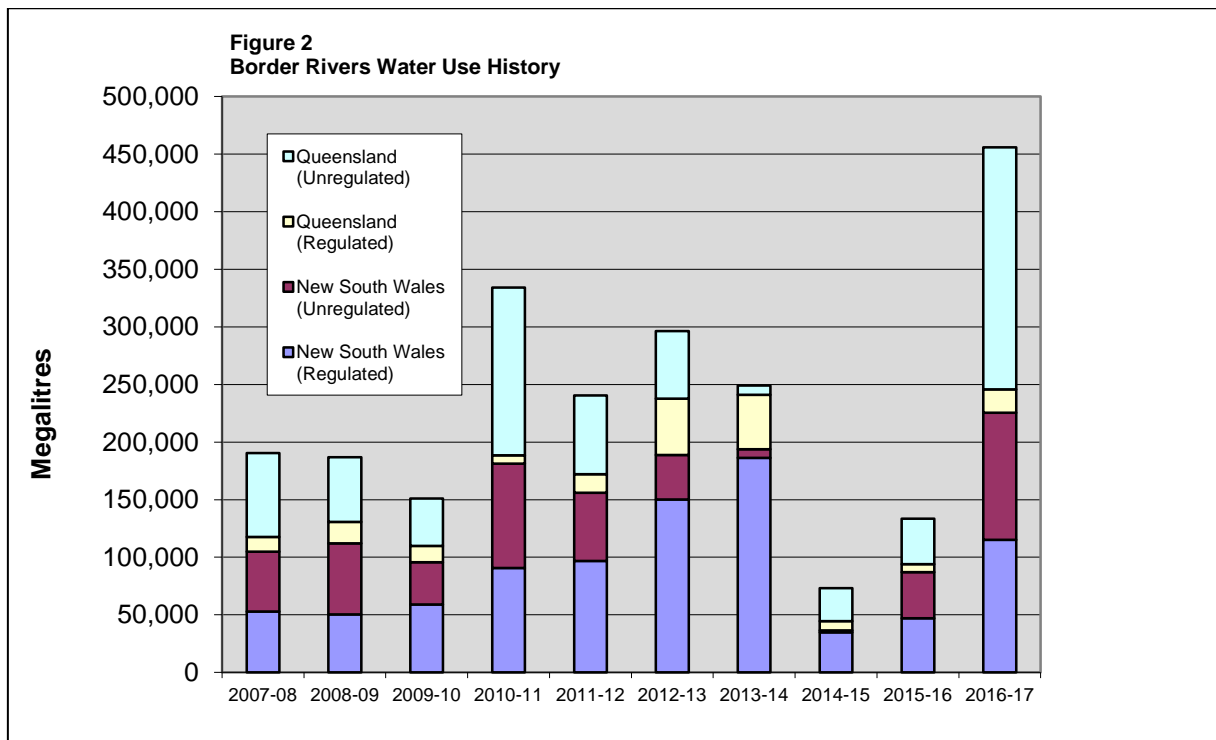
Favourable climatic conditions during the year saw the storage level at Glenlyon Dam rise significantly during the months of August through to October as shown in Figure 1.

During the year, the volume of water distributed to the general use accounts in New South Wales and Queensland were 301,240 megalitres and 60,850 megalitres respectively. The volume of regulated water diverted by New South Wales and Queensland water users were 115,250 megalitres and 20,420 megalitres respectively.



During the year water users were granted opportunities to pump unregulated water from the Border Rivers with New South Wales and Queensland diverting 110,000 megalitres and 210,000 megalitres respectively. These diversions fell within the approved announced volumes.

Figure 2 illustrates the history of regulated and unregulated water use by both states from the Border Rivers since 2008.



Beardmore Dam environmental, stock and domestic releases

Releases for stored environmental, stock and domestic (ESD) water commenced in September 2016 for a two week period followed by a fortnight of waterharvesting. The release resulted in a flow-through-event on the Culgoa, Narran, Birrie and Bokhara river systems in late October. Further releases were made in February and March 2017. The releases in March were followed by 11 days of waterharvesting. These release resulted in a flow through of the Culgoa and Narran River systems. The Birrie and Bokhara River systems had flows reach downstream of the Goodooga river gauges. No significant inflows occurred to Beardmore Dam for the remainder of the water year. A total of 54,500 megalitres of ESD water was released across the 2016/17 year.

Stream gauging and flow history

The Commission continued to provide funding to the New South Wales Department of Primary Industries, Water and the Queensland Department of Natural Resources and Mines to operate and maintain a network of 49 river gauging stations including 26 in the Border Rivers catchment and 23 on the Intersecting Streams to the west of Mungindi. In accordance with the Agreement, the states provided the Commission with the streamflow data it required for river operations and water sharing purposes.

Flow in the Border Rivers

The prevailing weather conditions across the Border Rivers catchment was generally consistent with average recordings for the entire 2016/17 water year. While there were a number of meaningful rainfall episodes recorded during the year, there were two (2) particular periods where catchment runoff resulted in significant stream flow events. These events occurred either side of the summer season in spring 2016 (Sept/Oct) and autumn 2017 (Mar/Apr). This is reflected in the above average flow of 1,624,000 megalitres (or 1.5 times the average annual flow) passing Goondiwindi and good inflow to the three major headworks storages. In addition to this, the end of

system flow passing Mungindi for the water year was 398,000 megalitres for the year.

Flow in the intersecting streams

The recorded flows across the intersecting streams were generally higher than for the previous year. While all catchments benefitted from a rainfall event in September 2016, only the catchments to the east benefitted from the effects of cyclone Debbie in March/April 2017 (i.e. Condamine Balonne, Moonie and Border Rivers). The western catchments of Warrego, Paroo, Bulloo and Nebine have experience extremely dry conditions with either sporadic low flow or no flow in the 6 month period from January to June 2017.

Runoff across the intersecting streams have resulted in significant differences in the cross border flows for those streams: -

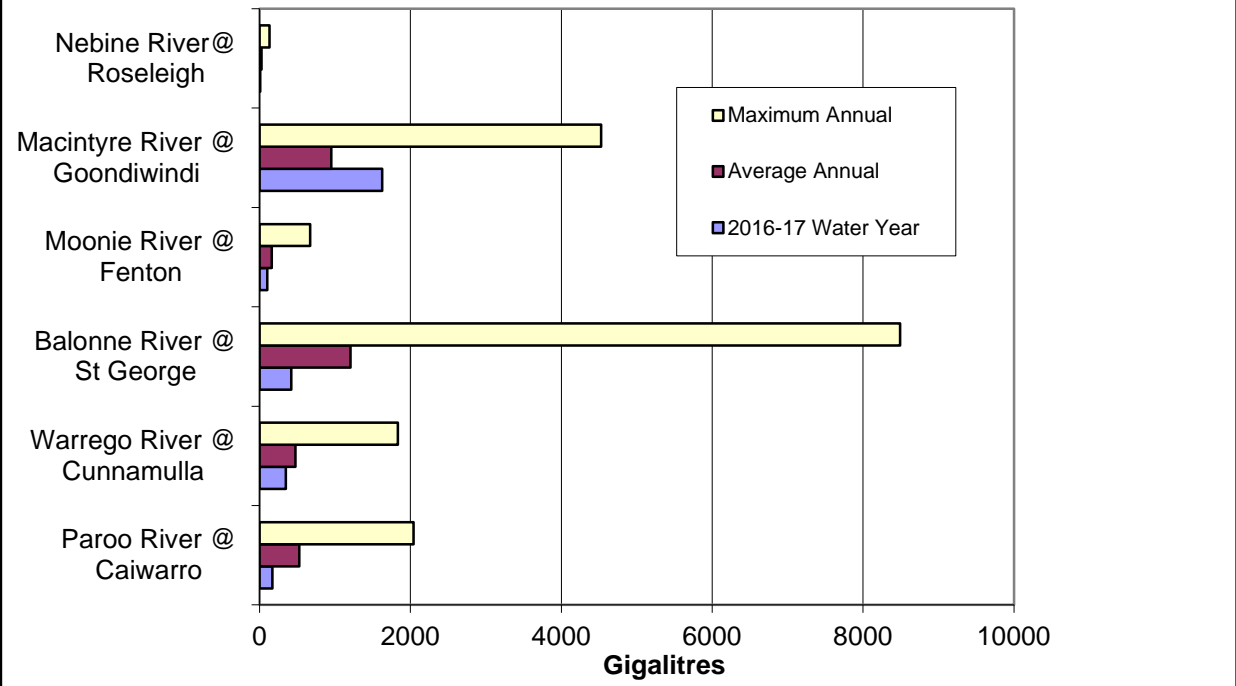
- The largest flow was recorded in the Warrego River with 346,000 megalitres passing the Cunnamulla stream gauging station;
- The smallest flow was recorded in the Nebine Creek with 10,000 megalitres passing the Roseleigh stream gauging station;
- In the Lower Balonne Distributary System, a total of 118,000 megalitres passed the stream gauging stations on the Narran, Bokhara, Ballandool and Culgoa Rivers, immediately upstream of the New South Wales – Queensland border.

Refer to Figure 3 for details of this range.

Unregulated flow events

In the Border Rivers there were two very sizable flow events, (a prolonged flow event extending from the latter part of winter into spring and another in the early part of autumn). These flow events were declared to be unregulated by the Border Rivers Commissions and water users in each state were allowed access to an equivalent of 24 days and 9.5 days respectively. During the second event in autumn 2017, many of the water users in New South Wales had reached their annual volumetric limit and did not take full advantage of this announced access.

Figure 3
Border & Intersecting Streams - Selected Flow Comparisons



Water Quality

The Border Rivers catchment covers almost 50,000 square kilometres and forms a part of the Murray Darling Basin (MDB) (Qld DNRM, 2002). The New South Wales-Queensland border divides the catchment in roughly equal parts, with the Dumaresq / Macintyre River forming the boundary between the two states. The Border Rivers are regulated by three dams, Glenlyon Dam on Pikes Creek (Qld), Coolmunda Dam on Macintyre Brook (Qld) and Pindari Dam on the Severn River (NSW) (Burrell *et al.*, 2013).

The Intersecting Streams includes the Narran, Bokhara Culgoa, Narran-Bokhara, Birrie, Paroo and Warrego Rivers. These rivers originate in Queensland flowing south and intersecting with the state border to join with the Barwon-Darling River system. Having a semi-arid climate, the rivers of the Intersecting Streams are largely ephemeral in nature, mostly characterised by large flow events followed by periods with little or no flow, drying down to a series of persistent waterholes in the drier times.

The Border Rivers and Intersecting Streams water quality programs were established in the early 1990s as a coordinated catchment-based water quality program (DBBRC, 2010). The programs aim to provide a long-term quality assured dataset to describe the baseline condition of the river systems and identify emerging issues. WaterNSW delivers and manages these two programs on behalf of the Dumaresq-Barwon Border Rivers Commission (DBBRC).

Water quality monitoring is undertaken at sixteen sites in the Border Rivers and six sites in the Intersecting Streams on a monthly basis. The water quality parameters used for this report are electrical conductivity, turbidity, total nitrogen and total phosphorus.

Electrical Conductivity

Oaky Creek, Macintyre Brook and Pike Creek at the Glenlyon Dam tail water recorded the highest medians of electrical conductivity within the Border Rivers. All these sites had medians that were above 390 $\mu\text{s}/\text{cm}$. The highest individual value recorded was also at Oaky Creek during July 2016 with 670 $\mu\text{s}/\text{cm}$.

In the Intersecting Streams the highest values for electrical conductivity occurred in the Bokhara River with a maximum reading of 436 $\mu\text{s}/\text{cm}$ occurring in April 2017 and having a median value of 260 $\mu\text{s}/\text{cm}$. The end of system site, Barwon River at Mungindi recorded a median value of 213 $\mu\text{s}/\text{cm}$.

With the exception of the highest recorded value at Oaky Creek, all the values for the Intersecting Streams and Border Rivers were below the ANZECC 2000 guideline for irrigation of salt sensitive crops of 650 $\mu\text{s}/\text{cm}$. This indicates that the water from these rivers was suitable to irrigate most crops grown in the Border Rivers and Intersecting Streams catchment areas during 2016-2017.

When comparing the 2016-2017 electrical conductivity medians to that of the past five years for both Border Rivers and Intersecting Streams, the median values are generally a little lower than that of the previous years for most sites. Electrical conductivity is generally strongly correlated to river flow and it is likely that these lower values for 2016-2017 are the result of a different flow regime for 2016-2017 than that of the previous years. This assumption would require more investigation to be more definitive.

Turbidity

All the turbidity results clearly reveal an increasing trend as the sample sites progress further downstream and further West of the Great Dividing Range. There is a sharp rise in turbidity once the river passes Boggabilla in the mid-catchment where the Macintyre-Barwon River changes morphology to an agriculturally productive floodplain environment.

The least turbid site in the Border Rivers for 2016-2017 was Pike Creek below Glenlyon Dam with a median of 9.0 NTU. This low result is to be expected as the water captured by the storage allows most of the sediments to drop out of suspension before the water is released from the dam. The highest median recorded was from the Weir River with a median result of 465 NTU. The highest recorded individual result also occurred in the Weir River. This was from September 2016 with a result of 2,000 NTU, likely coinciding with a flow event also recorded during September 2016. The end of system site at Barwon River at Mungindi recorded a median result of 93 NTU.

The highest individual result for turbidity in the Intersecting Streams occurred in the Warrego River during June 2017 with a result 1,927 NTU. Interestingly this does not coincide with any notable flow events. The sediments at this site are very fine by nature and tend to be easily suspended in the water column.; It is likely this result could be due to high winds or local animals disturbing the sediments.

Medians for the Border Rivers were not that largely different to the previous years. The Intersecting Streams have historically returned high turbid results and this year was no different, with medians generally similar to the previous years. One

exception was the Bokhara River whose median was 604 NTU. The turbidity medians for this site have been progressively increasing over the last five years.

Nutrients

In the Border Rivers, it was the Weir River that had the highest turbidity levels and not surprisingly this site also returned the highest individual results for total phosphorous (TP) and total nitrogen (TN) with 0.364 mg/L for TP and 2.26 mg/L for TN. These high values occurred in June 2017. This high result coincides with dwindling rivers flows of less than 15ML/day. The median results for the Weir River were 0.17 mg/L for TP and 1.42 mg/L for TN.

The end of system site for the Border Rivers is the Barwon River at Mungindi. Analyses of samples collected from this site shows that the medians for TN at Mungindi have steadily climbed from 0.66 mg/L in 2011-12 to 0.92 mg/L in 2016-17. TP for Mungindi is also up on previous years with a median result of 0.11 mg/L. This result may indicate the increasing agricultural activity in the catchment.

The highest median results for both TP and TN in the Intersecting Streams were in the Bokhara River which returned a TP median of 0.27 mg/L and a TN median of 1.27 mg/L. The highest recorded result for TP 0.71 mg/L occurred in the Warrego River during January 2017 and for TN it was in the Paroo River with a result of 2.87 mg/L occurring in April 2017. When comparing TP and TN to historical medians, the Intersecting Streams gave no surprises with all sites similar to previous years.

For the intersecting streams and the Border Rivers the sites that had the highest medians for turbidity also had the highest medians for both of the nutrients TP and TN. However the highest individual results recorded in the Intersecting Streams were not from the sites that returned the highest medians.

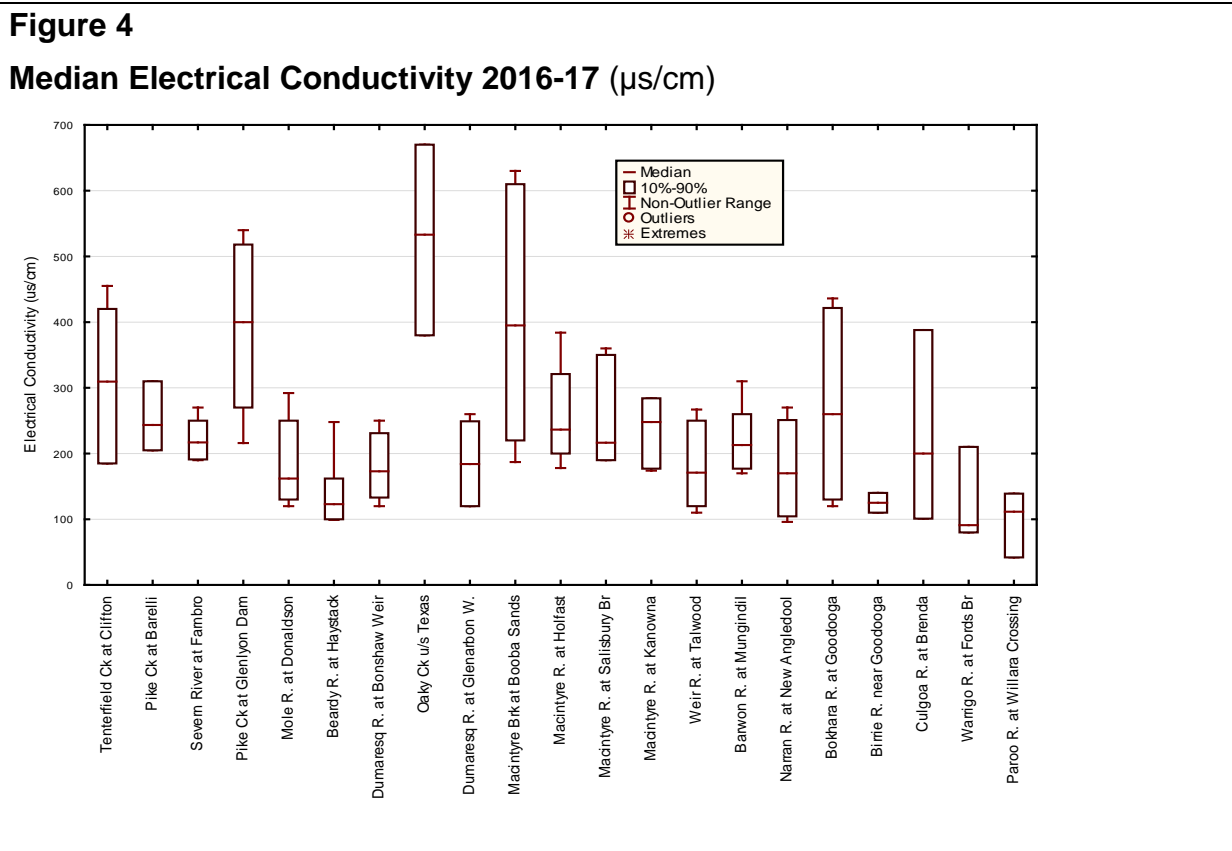
Major findings

All the electrical conductivity values for both the Intersecting Streams and Border Rivers projects, with the exception of the highest value recorded at Oaky Creek, were under the guideline for irrigation of salt sensitive crops. This indicates that water from these rivers was suitable for most crops grown in the Border Rivers and Intersecting Streams catchment areas during 2016-2017.

Turbidity in the Bokhara River has been progressively increasing over the last five years. Weir River continues to be the most turbid site in the Border Rivers. There is a sharp rise in turbidity once the river passes Boggabilla in the mid-catchment where the Macintyre River changes morphology to an agriculturally productive floodplain environment.

Weir River had the highest medians for total phosphorous and total nitrogen in the Border Rivers while the Bokhara River had the highest medians of these two nutrients in the Intersecting Streams. Results for Barwon River at Mungindi revealed that the medians for total nitrogen at Mungindi have steadily climbed over the last five years and that total phosphorous for Mungindi is also up on previous years. This may be indicative of increasing agricultural activity in the catchment could possibly warrant further investigation.

Figure 4 illustrates the variations in conductivity at a number of the water quality monitoring stations in the Border Rivers catchment and in the intersecting streams.



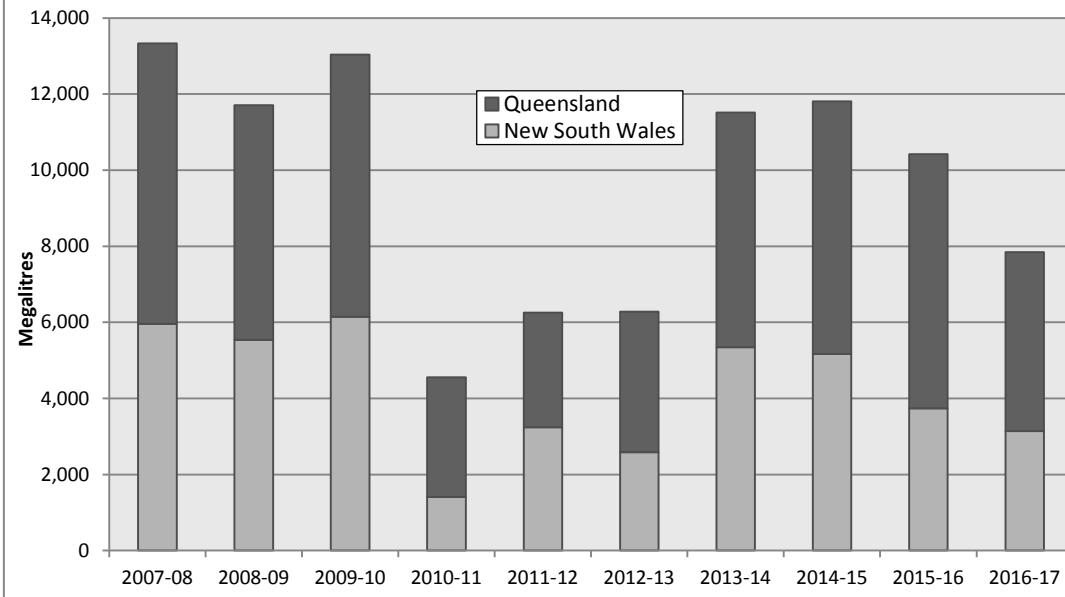
Groundwater

During the year, irrigators in the New South Wales and Queensland sections of the Border Rivers Alluvial shared resource used 3138 megalitres and 4706 megalitres of groundwater respectively. This represented approximately 20 per cent of entitlement for New South Wales and 32 per cent for Queensland. This level of use was lower than that of the previous water year for both New South Wales and Queensland as illustrated in Figure 5.

On 1 June 2012 the *Water Sharing Plan for the New South Wales Border Rivers Unregulated and Alluvial Water Sources* commenced under the *Water Management Act 2000*. The area covered by the plan includes the New South Wales Border Rivers Upstream of Keetah Bridge Alluvial Groundwater Source. The legislation facilitates the separation of water licence from the land title. Water entitlement can now be traded independent of land ownership. The total number of unit shares of the resource will remain the same and usage will be restricted to the long term average extraction limit.

In Queensland, the Water Resource (Border Rivers) Plan 2003 was amended to incorporate groundwater (above the Great Artesian Basin) in December 2014. It is not planned to provide for tradable water entitlements until the current transitional resource operations plan is replaced and accredited in accordance with the Basin Plan timeframe of 2019.

Figure 5
Dumaresq River Groundwater Area Use 2007-08 to 2016-17



The Queensland Department of Natural Resources and Mines continued to monitor groundwater levels on the Commission’s behalf in the shared alluvial aquifers associated with the Dumaresq River in both New South Wales and Queensland via a network of monitoring bores consisting of 52 piezometers in 36 bores located in the area between Mingoola and Keetah.

Work continues on the development of a new Border Rivers Alluvial Groundwater Model which the Commission agreed to fund. The Queensland Department of Science, Information Technology and Innovation has been contracted via the Queensland Department of Natural Resources and Mines to produce the new model. Its completion, including peer review and implementation is planned for late 2017.

FUTURE DIRECTIONS

With respect to the management of the water resources of the Border Rivers and Intersecting Streams, the Commission under current arrangements will continue to:

- ensure that the agreed water sharing arrangements are implemented
- ensure the structural and hydraulic integrity of its water infrastructure is maintained through asset management plans, which cover routine maintenance, regular planned inspections and risk assessments
- provide funding to the states to operate and maintain the existing stream gauging and groundwater monitoring networks
- monitor water quality at sixteen sites on the Border Rivers and six sites on the Intersecting Streams and
- finalise the development of a new model for the Border Rivers shared alluvial groundwater resource.

The business and our customers

OBJECTIVES

Provide responsible and accountable management of the Commission's assets and the Border River systems water resources in a cost effective and businesslike manner.

Implement change to address the water reform agendas of the shareholding governments as per the 1994 COAG Agreement and National Water Initiatives.

Promote awareness of and involve customers and the public in water sharing and water management issues.

STRATEGIC FOCUS

The Dumaresq Barwon Border Rivers Commission manages a "business" responsible for securing and providing bulk water services to two customers, the State of Queensland and the State of New South Wales.

Traditionally the work of operating and maintaining the Commission's infrastructure was undertaken on the Commission's behalf by the two state departments responsible for water. However, as a result of the water reforms and the institutional changes in both states, the state departments no longer have the responsibility to operate and maintain major water infrastructure. SunWater Ltd and WaterNSW have undertaken these roles for a number of years now.

As a result, the Commission now employs SunWater Limited and WaterNSW to provide commercial services to operate and maintain its works on its behalf. The two state departments responsible for water management, the New South Wales Department of Primary Industries, Water and the Queensland Department of Natural Resources and Mines, continue to undertake resource-monitoring activities on behalf of the Commission and to assist in administrative management. From July 2016, WaterNSW has provided the monitoring services in New South Wales.

The Commission's five year forward projections indicate that annual expenditure will be directed 50% to infrastructure refurbishment/maintenance and river operations; 35% per cent to surface water and groundwater monitoring and 15% to planning and administration.

KEY OUTCOMES DURING 2016-17

Summary of financial results

During 2016-17, the Commission received total revenue of \$2,732,000 comprising the call-up from the states of \$2,600,000, investment revenue of \$104,000 and other revenue of \$28,000. Total expenses due to ordinary activities were \$4,467,000 which included depreciation of \$1,886,000. The Commission's net operating result for 2016-17 was a deficit of \$3,041,000.

The Commission had a cash balance of \$3,920,000 as at the 30 June 2017, which will be available to fund future works and their operations.

Consultation

It was necessary during 2016-17 for the Commission to ensure close working relationships were maintained with personnel in SunWater and WaterNSW, each

being engaged in managing the Commission's assets and/or in delivering water through the border river system.

There were structured liaison arrangements in place to ensure that the Commission was regularly advised of decisions and actions undertaken through the *Border Standing Committee*. Significant issues raised in 2016-17 were:-

- the transfer of functions from DPIWater to WaterNSW;
- advances by SunWater Limited to seek formal service contracts in delivering services to the Commission and
- constraints in the tools available to develop the failure flood footprint from Glenlyon Dam along the border river.

In other areas of responsibility Commission personnel have maintained liaison with the Murray Darling Basin Authority and various other departments in both states.

The Commission was not approached by water users, nor did it approach water users during 2016-17.

Arrangements for the provision of services to the Commission

Discussions continued again during 2016-17 with SunWater Limited, which provides the majority of the asset management and operation services required by the Commission about the arrangements under which it provides these services. SunWater has previously advocated that its service provider relationship with the Commission should be formalised through a contract. The Commission, not being a corporate entity, cannot enter into contracts in its own right. It is anticipated implementation of the institutional reform of the Commission will successfully address this.

External initiatives relating to water management of the Border Rivers System

Implementation of the Murray-Darling Basin Plan continued to be a strong focus in 2016-17. The Murray-Darling Basin Authority, with support from the Commonwealth, Queensland and New South Wales governments and other stakeholders finalised the Northern Basin Review which investigated whether the water recovery targets in the northern valleys of the Murray Darling Basin set by the Basin Plan should be altered. The review recommendations included a reduction in the water recovery target across the Northern Basin from 390 gigalitres to 320 gigalitres on the basis that the Australian, Queensland and New South Wales governments agree to implement a number of so-called 'toolkit measures' designed to improve water management. The MDBA have also recommended a suite of toolkit measures to deliver improved ecological outcomes in river systems. These measures included:

- targeted recovery of water, both in terms of geographic location and the class of entitlement, to improve environmental benefits;
- improvements to state water management arrangements to safeguard low flows across the north (particularly in the Condamine-Balonne and Barwon-Darling);
- implementation of a proposed infrastructure measure at the Gwydir wetlands;
- installation of works, such as fishways and cold water pollution mitigation mechanisms, to promote native fish health through improving their ability to move through the river system and access habitat in the northern Basin

- a preference for water recovery based on irrigation infrastructure improvements rather than through water entitlement purchasing
- consideration of support for measures to address the concerns of Aboriginal people in the northern Basin
- consideration by governments for further support to impacted communities, particularly for Dirranbandi and Warren.

The MDBA has proposed an amendment to the Murray-Darling Basin Plan to give effect to the change in the Sustainable Diversion Limit and has conducted a formal public submission process. The amendment to the Basin plan remains an ongoing process.

Commonwealth water recovery activities across 2016-17 focused on on-farm infrastructure programs^[1] rather than direct purchase with an increase in Commonwealth Environmental Water Office (CEWO) holdings. State agencies continue to work with the CEWO on the management of these entitlements to achieve Basin Plan outcomes. Environmental outcomes from the use of Commonwealth held water are reported by the CEWO.

In addition to the Northern Basin Review, during 2016-17 New South Wales and Queensland formally commenced the review of the States Water Resource Plans for accreditation under the Murray-Darling Basin Plan. During the year Queensland formally submitted the Water Resource Plan for the Warrego-Paroo-Nebine to the MDBA for accreditation. These plan reviews are scheduled for completion by June 2019 and further significant progress is planned for the 2017-18 year.

Institutional reform investigations

Progress continued to be made in regards to Institutional Reform this year with the Commission receiving in-principle support from both State Ministers.

A key focus of the Commission during 2017-18 will be to advance the institutional reform to the Commission's roles, rights and obligations using resources and facilities provided by the States. A working group has been formed with members from both States water departments and others to progress the reform agenda.

Website

The Commission's website at <www.brc.gov.au> was updated during the year as required to include the latest editions of the Commission's Annual Report and Annual Statistics report. Copies of the Annual Statistics, dating back to the first year of publication in 1999, were also made available on the site. The website framework is regularly examined and updated for currency and scope.

^[1] Queensland: Healthy HeadWaters Water Use Efficiency program

New South Wales: Sustaining the Basin: Irrigated Farm Modernisation program

Consultants

Because the Commission is not a corporate body, its ability to enter into contracts is uncertain and therefore any organisations providing services to the Commission, including consultants, are engaged on the Commission's behalf by one or other of the states' water service providers or by the relevant New South Wales or Queensland government departments. No consultants were engaged on the Commission's behalf during 2016-17.

Insurance

The Commission's assets are insured under policies held on the Commission's behalf by the Queensland Department of Natural Resources and Mines and the New South Wales Department of Primary Industries, Water through the Queensland Government Insurance Fund (QGIF) and the New South Wales Treasury Managed Fund (TMF) respectively. The Commission, its servants and the departments are covered in those arrangements with respect to any public liability claim. No claims were made during 2016-17

Internal audit and risk management

The Commission has in place a three-part strategy for managing risk, namely

- Firstly, the Commission maintains a risk register to record identified institutional and business risks and to detail risk treatment strategies for each of those risks;
- Secondly, from time to time, the Department of Natural Resources and Mines undertakes an internal audit of the Commission's financial processes and practices on its behalf; and
- Thirdly, SunWater as the Commission's operations and maintenance service provider, maintains on the Commission's behalf a best practice risk management system relating to the Commission's infrastructure.

Payment of accounts

The Commission paid all accounts during the year in a timely manner so as not to incur any interest for late payment.

Freedom of information/Right to Information

No right to information requests were received during the year.

Privacy management

The Commission complies with the privacy management requirements applying to the Queensland Department of Natural Resources and Mines and the New South Wales Department of Primary Industries, Water. No complaints were received during the year.

Overseas travel

No Commissioners, officers of the Commission or employees of the Controlling Authorities who support the activities of the Commission undertook any overseas travel during 2016-17 related to any Commission related activity.

Other legislative requirements

The Commission complies with the requirements of other relevant legislation in Queensland and New South Wales through the adoption of the practices and procedures implemented by the Queensland Department of Natural Resources and Mines and the New South Wales Department of Primary Industries, Water. No evident breach of compliance occurred during 2016-17.

Production of the Annual Report

Due to new Annual Reporting guidelines in both states and the fact the report was compiled and printed in-house, the cost of printing the 2016-17 Annual Report and 2016-17 Annual Statistics was minimal.

Copies of Annual Report

Paper copies of the Commission's Annual Report may be obtained by contacting the Secretary of the Dumaresq-Barwon Border Rivers Commission at 203 Tor Street or PO Box 318 Toowoomba Q 4350, by phoning 07 4529 1242 or by email at <brc@dnrm.qld.gov.au>. Alternately, the Commission's Annual Report may be viewed on or downloaded from the Commission's website. The address of the Commission's website is <www.brc.gov.au>.

FUTURE DIRECTIONS

Apart from the Commission continuing to meet its statutory responsibilities, significant projects/activities in relation to our business and our customers which will be commenced, advanced and/or completed during 2017-18 include:

- continued dialogue with the Controlling Authorities and other relevant agencies in both states and Border River water users to progress the Institutional Reform process;
- completion of the new Border Rivers Alluvial Groundwater Model;
- completion of key performance indicators for those Commission activities not likely to be subject to significant institutional reform;
- design and installation of a new regulator on Whyenbah Weir and
- installation of a concrete plinth to strengthen Bonshaw Weir.

