Review of Cap Implementation 2004/05
Report of the Independent Audit Group

Including Special Audit of the Barwon-Darling/Lower Darling and Responses by the five States and Territory Governments

M A R C H 2 0 0 6
## Integrated catchment management in the Murray–Darling Basin

A process through which people can develop a vision, agree on shared values and behaviours, make informed decisions and act together to manage the natural resources of their catchment: their decisions on the use of land, water and other environmental resources are made by considering the effect of that use on all those resources and on all people within the catchment.

### Our values

We agree to work together, and ensure that our behaviour reflects the following values.

**Courage**
- We will take a visionary approach, provide leadership and be prepared to make difficult decisions.

**Inclusiveness**
- We will build relationships based on trust and sharing, considering the needs of future generations, and working together in a true partnership.
- We will engage all partners, including Indigenous communities, and ensure that partners have the capacity to be fully engaged.

**Commitment**
- We will act with passion and decisiveness, taking the long-term view and aiming for stability in decision-making.
- We will take a Basin perspective and a non-partisan approach to Basin management.

**Respect and honesty**
- We will respect different views, respect each other and acknowledge the reality of each other’s situation.
- We will act with integrity, openness and honesty, be fair and credible, and share knowledge and information.
- We will use resources equitably and respect the environment.

**Flexibility**
- We will accept reform where it is needed, be willing to change, and continuously improve our actions through a learning approach.

**Practicability**
- We will choose practicable, long-term outcomes and select viable solutions to achieve these outcomes.

**Mutual obligation**
- We will share responsibility and accountability, and act responsibly, with-fairness and justice.
- We will support each other through necessary change.

### Our principles

We agree, in a spirit of partnership, to use the following principles to guide our actions.

**Integration**
- We will manage catchments holistically; that is, decisions on the use of land, water and other environmental resources are made by considering the effect of that use on all those resources and on all people within the catchment.

**Accountability**
- We will assign responsibilities and accountabilities.
- We will manage resources wisely, being accountable and reporting to our partners.

**Transparency**
- We will clarify the outcomes sought.
- We will be open about how to achieve outcomes and what is expected from each partner.

**Effectiveness**
- We will act to achieve agreed outcomes.
- We will learn from our successes and failures and continuously improve our actions.

**Efficiency**
- We will maximise the benefits and minimise the costs of actions.

**Full accounting**
- We will take account of the full range of costs and benefits, including economic, environmental, social and off-site costs and benefits.

**Informed decision-making**
- We will make decisions at the most appropriate scale.
- We will make decisions on the best available information, and continuously improve knowledge.
- We will support the involvement of Indigenous people in decision-making, understanding the value of this involvement, and respecting the living knowledge of Indigenous people.

**Learning approach**
- We will learn from our failures and successes.
- We will learn from each other.
Review of Cap Implementation 2004/05

Report of the Independent Audit Group

Including Special Audit of the Barwon-Darling/Lower Darling and Responses by the five States and Territory Governments

Independent Audit Group Members

Dr Wally Cox (Chair)
Paul Baxter
Denis Flett

M A R C H  2 0 0 6
Acknowledgments

The Independent Audit Group appreciated the cooperation of State and Territory Government agencies and the Murray-Darling Basin Commission.

The implementation of the Cap continues to challenge the ingenuity and resources of Government administrators.

Information continues to be freely provided and the issues and the options for resolving them were discussed openly.
March 2006

The Hon Peter McGauren MP
Chairman
MF26, First Floor
Ministerial Wing
Parliament House
Canberra ACT 2600

Dear Minister

We have pleasure in submitting to you our Review of Cap Implementation 2004/05. Report of the Independent Audit Group.

Council established the Cap in 1995 and set the operating framework in 1996.

There has been considerable progress in implementing the Cap in South Australia and Victoria, however as of October 2005 Cap arrangements have still not been finalised by the ACT and Queensland and for the Border Rivers and intersecting streams within New South Wales.

Development of, and calibration of models for predicting annual climate adjusted diversions as a basis of comparing with actual diversions and Cap compliance are critical to successful Cap implementation. We continue to encourage states and the ACT to submit models for audit and accreditation.

The only river valley to exceed the Schedule F trigger for a Special Audit in 2004/05 was the combined Barwon-Darling/Lower Darling (for the second year in a row) and the IAG after a Special Audit, as requested by the Commission, determined that the valley continues to be in breach of the Cap.

Yours sincerely

[Signatures]

DR WALLY COX
Chairman

PAUL BAXTER
Member

DENIS FLETT
Member
Contents

Report of the IAG

Executive Summary 1

1. Introduction 5

2. Background 7

3. Audit Process 9

4. Audit of 2004/05 Cap Implementation 11

4.1 South Australia 11
   4.1.1 The Cap 11
   4.1.2 2004/05 Usage 11
   4.1.3 Administration of the Cap 11
   4.1.4 Monitoring and Reporting 12
   4.1.5 Proposals to Refine Implementation in 2005/06 12
   4.1.6 IAG Assessment 13
   4.1.7 Conclusions/Recommendations 14

4.2 Victoria 15
   4.2.1 The Cap 15
   4.2.2 2004/05 Diversions 15
   4.2.3 Administration of the Cap 19
   4.2.4 Proposals to Refine Implementation in 2005/2006 20
   4.2.5 IAG Assessment 21
   4.2.6 Conclusions/Recommendations 21

4.3 New South Wales 22
   4.3.1 The Cap 22
   4.3.2 2004/05 Usage 22
   4.3.3 Monitoring and Reporting 31
   4.3.4 Administration of the Cap 32
   4.3.5 IAG Assessment 32
   4.3.6 Conclusions/Recommendations 32

4.4 Queensland 34
   4.4.1 The Cap 34
   4.4.2 2004/05 Diversions 34
   4.4.3 Progress with the Planning Process 38
   4.4.4 IAG Assessment 41
   4.4.5 Conclusions/Recommendations 41
4.5 Australian Capital Territory
4.5.1 The Cap
4.5.2 Administration of the Cap
4.5.3 Issues with Adoption of the Cap
4.5.4 Discussion of Issues
4.5.5 Monitoring and Reporting
4.5.6 2004/05 Diversions
4.5.7 Other Issues
4.5.8 IAG Assessment
4.5.9 Conclusions/Recommendations

5. Diversions from the Murray-Darling Basin in 2004/05

Appendix 1 Responses by the Five State and Territory Governments

South Australia

Victoria

New South Wales

Queensland

Australian Capital Territory

Glossary

Special Audit Report of NSW Barwon-Darling/Lower Darling Cap Valley

Introduction

Audit Process

Audit Outcome

Attachment A
Executive Summary

Following the adoption of Schedule F by the Council for operationalising, monitoring and reporting on Cap implementation, this audit was conducted in line with the requirements of Clause 13 of the Schedule.

At 7884 GL, diversion from rivers in the Murray-Darling Basin was the lowest in the period since 1983/84 reflecting drought conditions throughout most of the Basin.

The 2004/05 audit identified progress in each of the States and the ACT in establishing and/or operationalising the Cap. There is however a number of strategic issues that need to be addressed. Some of these have been raised in previous reports but remain unresolved. The issues are:

- the establishment of Cap targets in Queensland, New South Wales and the ACT;
- accreditation of models for Cap assessment.

At present, no Cap figures have been established for the Murray-Darling Basin valleys in Queensland, the ACT and the Border Rivers in New South Wales. Following a breach of Cap in 2003/04 and again in 2004/05 New South Wales has also proposed a revised procedure for implementing the Cap for the combined Barwon-Upper Darling and Lower-Darling Valleys.

Queensland is progressing the final stages of establishing Cap figures, and the Resource Operation Plans for Warrego/Paroo/Bulloo/Nebine and the Moonie are expected to be finalised by the end of 2005, for the Border Rivers by early 2007 and Condamine-Balonne by June 2007. Subsequent auditing and accreditation of models should lead to a fully operational Cap system in time for the 2007 audit and the first compliance report in October 2008.

Following considerable progress towards an Inter-Governmental Agreement between New South Wales and Queensland for the Border Rivers, it would be reasonable to expect a Cap for the New South Wales Border Rivers by early 2007.

There has been little progress in establishing a Cap by the ACT.

The IAG recommends that the ACT, New South Wales and Queensland Governments finalise their Cap arrangements as a priority to provide confidence that there is accountability and transparency in performance against Ministerial Council objectives for the Murray-Darling Basin river systems.

There continues to be substantial progress in developing and finalising models in Victoria, New South Wales and Queensland. Since 2002/03 the IAG has recommended that each State and the ACT where relevant, submit valley models for independent verification and accreditation. In 2003/04 the IAG recommended that South Australia and Victoria have all models accredited by 30 June 2005, New South Wales by June 2006 and Queensland by June 2007. These targets (with exception of South Australia) have not or are unlikely to be met although substantial progress has been made.

The IAG continues to recommend audit and accreditation of all models with modified targets of July 2006 for Victoria and New South Wales (except for Border Rivers by June 2007) and December 2007 for Queensland.

The IAG has noticed a considerable culture change in all States and the ACT reflecting a commitment not only to establish and achieve Cap targets but to manage water resources for multiple values including the achievement of environmental outcomes. The IAG is now also required to audit The Living Murray program further reinforcing the increasing emphasis on achieving multiple outcomes.

The IAG is pleased to note that the Murray-Darling Basin Commission has responded to the Audit of the Cap Data Management System by supporting a number of projects to improve data quality and processing including building an open registry of large off-takes and up-grading the Data Management System Protocol. This addresses one of the key issues identified by the IAG’s 2003/04 report.

The conclusions and recommendations reached by the Audit Group for the 2004/05 year by State and Territory are:

South Australia

- Diversions in 2004/05 were heavily constrained as a result of restrictions and were within the annual Cap targets for Metropolitan Adelaide, Country Towns and All Other Purposes Cap valleys;
- Diversions for the Lower Murray Swamps Cap valley are not currently metered and are assumed to equal the Cap;
- South Australia has a reliable measuring system, which continues to improve, for urban and irrigation use;
A new Water Information and Licensing Management Application (WILMA) has been implemented and provides information on licences and water use;

The South Australian All Other Purposes Cap model was approved by the Commission in November 2004, the second such model to achieve that distinction;

A revised proposal has been discussed with the IAG for the consideration of metro Adelaide growth and associated water management and accounting within the Cap framework. The IAG will prepare a response to this ‘out-of-session’ following receipt of a detailed submission; and

The IAG recommends that the Interstate Water Trade Board address the issue of differential treatment of carry-over water and its impact on trade.

**Victoria**

- Diversions for the Murray/Kiewa/Ovens Valley, Goulburn/Broken/Loddon, Campaspe and Wimmera Mallee in 2004/05 were all below annual climate and trade-adjusted Cap triggers;
- Cumulative diversions since 1997 for all valleys are in credit;
- Accreditation of the Goulburn/Broken/Loddon and Campaspe Valleys is now expected by July 2006;
- Bulk water entitlements have been finalised for major valleys and are expected to be granted for the Loddon by December 2005;
- Significant changes for Cap management and implementation are expected as a result of changes agreed to as part of the National Water Initiative and The Living Murray project particularly in relation to provision for water for the environment resulting from water saving projects and other initiatives; and
- Victoria flagged that it will be proposing a Cap for the Wimmera-Mallee based on the Bulk Water Entitlement which will ensure that diversions will always be less than 1993/94 levels of development.

**New South Wales**

- Diversions in 2004/05 were 3670 GL compared to 4120 GL in 2003/04;
- IQQM Cap models have now been prepared for all river valleys, with the exception of the Murray. Some further re-calibration is required for the Macquarie IQQM model before it is submitted for final approval;
- The Lachlan and Namoi IQQM model have been approved by the Murray-Darling Basin Commission under the Schedule F procedures;
- The preliminary Schedule F accounting for the 1997/98 – 2004/05 period indicates that diversions in the combined Barwon-Darling/Lower Darling Valleys are cumulatively 154 GL above Cap, and above the combined trigger for Special Auditing of 62 GL. Therefore a Special Audit is required for this valley although the IAG notes that the combined Barwon-Darling/Lower Darling Valleys has already been declared to be in breach of the Cap and the NSW authorities, in acknowledging the breach, advise that they have no additional information beyond that already provided to the IAG that would be relevant to a further Special Audit at this time;
- Following the Special Audit on the basis of available information, the IAG determines that the combined Barwon-Darling/Lower Darling Cap valley continues to be in breach of the long-term diversion Cap;
- The IAG has been unable to assess the Cap compliance of the NSW Border Rivers because the Cap has not been defined in that valley. The IAG has previously expressed concern that the Border Rivers will be found to be in breach once a Cap is defined. Finalisation of a Cap together with agreed Water Management Plans is expected in 2005/06;
- Diversions have been below Cap levels for other valleys in NSW;
- Upon completion of the integrated 1993/94 and current conditions model for the Border Rivers, NSW should submit the proposed Cap for that system for assessment by the IAG of the appropriate allowance for the enlarged Pindari Dam; and
- The IAG notes the current status of negotiations between NSW and the ACT on trading rules and other related matters.
**Queensland**

- Diversions in 2004/05 are estimated at 455 GL;
- Cap figures for Queensland Murray-Darling Basin valleys have not yet been set and as a consequence no comparison between actual use and Cap targets is possible;
- Draft Resource Operations Plans for the Warrego, Paroo, Bulloo and Nebine and Moonie catchments were released for public comment in February 2005 and following consideration of issues are expected to be gazetted by the end of 2005;
- Work has commenced on the Resource Operations Plan for the Border Rivers, and Queensland advise that a draft plan will be released for commencing consultation in the first half of 2006 with completion by early 2007;
- Following the establishment of the Lower Balonne Ministerial Water Resources Advisory Council and the Upper and the Middle Condamine ROP Advisory Group, Queensland advised the IAG that a draft Resource Operations Plan for the Condamine-Balonne is expected to be released for public comment by late 2006 with a view to finalising by June 2007;
- Queensland is developing Resource Operation Plans and the associated models should be submitted for audit and subsequent accreditation by the Murray-Darling Basin Commission;
- If these timelines are adhered to, Queensland should have in place Caps as per Schedule F for all valleys in its portion of the Murray-Darling Basin by June 2007;
- There is also an expectation by the Murray-Darling Basin Ministerial Council that Queensland will place a proposal for Cap figures for each valley before Council before finalising the statutory process; and
- A metering program will ensure reliable information on water use is available as the Resource Operation Plans are implemented.

**Australian Capital Territory**

- The ACT has reaffirmed its commitment to establishing a Cap although no Cap presently exists for the ACT;
- Net diversions of 27.1 GL in 2004/05 are below the average usage between 1989 and 2001 of 31 GL and are also less than a possible climate-adjusted annual Cap target of 35 GL. The ACT would have a cumulative credit of 58 GL if the Cap of 38 GL notionally used proposed by the IAG had applied since July 1997;
- The IAG encourages the ACT to complete its consideration of the form of a Cap to apply to the ACT and its discussions with NSW in supply arrangements for urban areas surrounding the ACT; and
- The IAG supports the concept of the ACT Cap being seen in the context of a wider valley Cap and notes the implications of this on the current review of the need for, and the form of, additional water capture arrangements for the ACT.
1. Introduction

In November 1996, the Independent Audit Group (IAG) submitted its report Setting the Cap (the IAG Report) to the Murray-Darling Basin Ministerial Council (the “Council”). This report addressed a number of issues arising out of the Council’s decision to introduce an immediate moratorium on further increases in diversions of water from the rivers of the Murray-Darling Basin and cap the future level of diversions.

The Council in finalising Schedule F agreed that the IAG should have a role in auditing the implementation of the Cap.

In March 2005 the Commission agreed to continue the role of the IAG in auditing Cap compliance until 2009.

In October 2005 the two person IAG comprising Dr Wally Cox and Paul Baxter was expanded by the Commission to include Denis Flett. This reflected the decision by Council to require the IAG to also undertake the audit of The Living Murray project and the need for succession planning. This audit is reported in a separate report The Living Murray – Implementation Audit 2004/05.

The Council has also asked the IAG to review the Queensland Water Resource Planning process, and in time the outcomes of the process. This process, which involves significant community participation in both Queensland and northern NSW, was due for completion about the middle of 1998 but has been delayed. It will be the foundation for determining the balance in Queensland between consumptive and in-stream use and the Council has supported the auditing of both the process and outcomes.

Thus the Review of Cap Implementation 2004/05 by the IAG has been prepared in response to the Council’s request and is based upon information made available to the IAG by each of the States and the ACT. The report sets out the broad background to the review and the process used by the IAG in forming its views and final conclusions. It then comments on the current status of compliance with the Cap in each of the five jurisdictions involved. It should be noted that Cap targets for the ACT, Queensland and Border Rivers within New South Wales are still to be established.

The IAG team wishes to thank all States and the ACT for their cooperation in making both the data and officers available and for the open and frank way in which the review was conducted. The IAG also wishes to acknowledge the assistance provided by the officers of the Murray-Darling Basin Commission (MDBC) in the preparation of this report. The findings however are entirely those of the IAG.
2. Background

The Council at its June 1995 meeting decided to introduce a Cap on diversion of water from the Murray-Darling Basin. A Cap on the volume of diversions associated with the 1993/94 level of development was seen as an essential first step in establishing management systems to achieve healthy rivers and sustainable consumptive uses.

The two primary objectives driving the decisions to implement the Cap were:

1. to maintain and, where appropriate, improve existing flow regimes in the waterways of the Murray-Darling Basin to protect and enhance the riverine environment; and
2. to achieve sustainable consumptive use by developing and managing Basin water resources to meet ecological, commercial and social needs.

The adopted definition of the Cap on diversions, leaving aside equity issues, is:

The Cap is the volume of water that would have been diverted under 1993/94 levels of development.

- to protect water quality and preserve the health of the river system, the Cap should ensure there is no net growth in diversions from the Murray-Darling Basin;
- the level of development against which to test for growth in water diversions be equivalent to 1993/94 levels of development;
- under the Cap, the amount of water that States would be entitled to divert from regulated streams in any year would be quantified using analytical models that incorporate weather conditions and which take into account:
  - the water supply infrastructure in place in 1993/94;
  - the water allocation and system operating rules which applied in 1993/94;
  - the entitlements that were allocated and the extent of their utilisation at 1993/94 levels of development;
  - the underlying level of demand for water in 1993/94; and
  - the system operating efficiency in 1993/94.

The Council also acknowledged that:

- for South Australia, Victoria, and New South Wales, Cap management will be in accordance with the agreed outcomes as specified by the Cap definition above;
- for the ACT the Cap will be defined following a review by the IAG and negotiations with the ACT Government; and
- for Queensland, any final agreement for the targeted outcomes will need to await the completion of the Water Allocation and Management Planning (WAMP) (now called Water Resource Plans - WRP) process being undertaken by that State, the outcome of which will be subject to consideration by the Council.

For Queensland, the Council has agreed that the WRP process should ensure that Queensland balances consumptive and in-stream use. The IAG has supported the WRP process noting that:

- it must accommodate in-stream use not only in Queensland but also in the Border Rivers under the control of the Border Rivers Commission and the rest of the Murray-Darling Basin;
- a management regime needs to be developed that includes pricing, property rights and measuring and reporting;
- the WRP be fully implemented, including assessment of downstream impacts in NSW;
- the Precautionary Principle be applied through the establishment of an allocation to be held in reserve to minimise the risk of over allocation for consumptive use; and
- the final independent audit of the WRP process is conducted, including modelling of impacts on downstream Basin flows.

After considering a number of equity issues, the Cap may be adjusted for certain additional developments, which occurred after 1993/94.

The Cap should restrain diversions, not development. With the Cap in place, new developments should be allowed, provided that the water for them is obtained by improving water use efficiency or by purchasing water from existing developments.

Because irrigation demand varies with seasonal conditions, the diversions permitted under the Cap will vary from year to year. The system used to manage diversions within the Cap will therefore need to be flexible.
In Queensland, for unregulated rivers with high seasonal variability, the Council agreed that the Cap may be described in terms of end-of-valley flows and supporting flow management rules including diversion entitlements until December 2002. After this the Cap in Queensland, as in all other States and the ACT, was to be specified as diversion limits on a valley by valley basis. A Cap for Queensland rivers is yet to be determined.

Following the Inter-Government Agreement to establish *The Living Murray project*, the IAG with an expanded membership was asked to undertake both audits. *The Living Murray project* will lead to modifications in setting and modifying Cap targets to reflect water saved and/or purchased for environmental use.

<table>
<thead>
<tr>
<th><strong>The 2003/04 Review of Cap Implementation identified that:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Caps were still to be finalised for the ACT, Queensland and Border Rivers of New South Wales:</strong></td>
</tr>
<tr>
<td><strong>Diversions for South Australia were within the annual Cap target for metropolitan Adelaide and Country Towns; within the trade-adjusted Cap for the Lower Murray Swamps and the trade-and climate – adjusted annual Cap for All Other Purposes:</strong></td>
</tr>
<tr>
<td><strong>Diversions for the Murray/Kiewa/Ovens Valley, Goulburn/Broken/Loddon, Campaspe and Wimmera-Mallee in Victoria were all below annual climate and trade-adjusted Cap targets:</strong></td>
</tr>
<tr>
<td><strong>Diversions from the New South Wales Murray, Murrumbidgee, Lachlan, Namoi/Pee were within the climate-and trade-adjusted Caps:</strong></td>
</tr>
<tr>
<td><strong>A Special Audit of water use of the combined Barwon-Darling and Lower Darling valleys was recommended following a 124 GL exceedance of the Cap and exceedance of the combined trigger for Special Auditing:</strong></td>
</tr>
<tr>
<td><strong>A lack of resources was constraining finalisation of Cap models in New South Wales and it was suggested that the Murray-Darling Basin Commission consider providing support to enable the models to be finalised:</strong></td>
</tr>
<tr>
<td><strong>Diversion of 804 GL in the Queensland valleys of the Murray-Darling basin was the highest recorded since 1993-94. This was in a year of average rainfall and flow and reflects the very large increase in water storage capacity:</strong></td>
</tr>
<tr>
<td><strong>Water Resource Plans for the Border Rivers, Moonie and Paroo/Warrego/Nebine became law in 2003 and Condamine/ Balonne in August 2004:</strong></td>
</tr>
<tr>
<td><strong>ACT net diversion of 27.8 GL was below the average usage between 1989 and 2001 of 31 GL and is also less than a possible climate – adjusted annual Cap target of 42 GL:</strong></td>
</tr>
<tr>
<td><strong>There was a need for an updated Data Management System’s Protocol to ensure consistency and reliability within and between states in measuring, recording and reporting on diversions:</strong></td>
</tr>
</tbody>
</table>
3. Audit Process

For the purposes of this 2004/05 audit of progress with the implementation of the Cap, the IAG has adopted a consultative approach designed to:

- clarify expected Cap outcomes for each State;
- gather available statistical information on actual levels of diversions in 2004/05 as a means of quantifying overall diversions and commenting on Cap compliance;
- identify progress made in implementing the proposed management rules for capping water diversions;
- highlight particular problems being encountered by the relevant jurisdictions as regards the finalisation or implementation of the management rules; and
- update the status of the Queensland Water Resource Plans and finalisation of Cap figures for the ACT, Queensland and the Border Rivers in New South Wales.

The IAG met with representatives of each of the States and the ACT during the period 25 to 28 October 2005. The format of each meeting was to compare water usage in 2004/05 with Cap targets, to discuss progress with the establishment of models and management frameworks to achieve targets and to discuss issues of possible concern.

For the southern Murray-Darling Basin States (New South Wales, Victoria, South Australia), the ACT and Commonwealth, the IAG also discussed progress in implementing The Living Murray project and a ‘framework’ for future audits. The results of these discussions are reported separately in The Living Murray – Implementation Audit 2004/05.

The IAG drafted its observations and conclusions on progress being made within each State and the ACT and then invited the States concerned and the ACT to make comments of a factual nature upon the IAG’s findings. These observations on factual points were then considered by the IAG prior to finalising the report.

While acknowledging the valuable contribution made by each of the States, the ACT and the members of the MDBC staff, the findings and conclusions presented in this report are entirely those of the IAG.
4. Audit of 2004/05 Cap Implementation

4.1 South Australia

4.1.1 The Cap

As a result of decisions by the Ministerial Council in December 1996 and March 2001 and the finalisation of Schedule F, the components of the South Australian Cap unadjusted for trade are:

- a five-year rolling non-tradeable allocation of 650 GL for metropolitan Adelaide;
- a tradeable allocation of 50 GL per year for country towns;
- an allocation of 103.5 GL per year for the lower Murray Swamps with the following components:
  - 9.3 GL per year for highlands with unrestricted trade*;
  - 72 GL per year for swamp use with unrestricted trade; and
  - 22.2 GL per year non-tradeable environmental entitlement
- an average of 440.6 GL per year for All Other Purposes in South Australia which is fully tradeable.

* The 9.3 GL per year for highlands accounted for under the Lower Murray Swamps is now accounted for under the All Other Purposes Cap. This component was transferred as part of the Lower Murray Swamps rehabilitation.

4.1.2 2004/05 Usage

South Australian diversions in 2004/05 were within the annual Cap targets for Metropolitan Adelaide, Country Towns and All Other Purposes designated valleys. Diversions for the Lower Murray Swamps were the same as their trade-adjusted target. All designated valleys remain in cumulative Cap credit (Table 1).

4.1.3 Administration of the Cap

South Australia continues to be well placed to manage the Cap. Water diverted from the Murray River for urban use is reliably measured and licences have been issued to SA Water for an allocation of 50 GL per year for country urban water and a non-tradeable 650 GL over a rolling five-year period for Adelaide.

The issue of Quality Assurance is being addressed. Licensing and diversion data has been audited, a Water Licensing Manual documents processes and a new software package has been developed (WILMA – Water Information and Licensing Management Application). It has been in use since 1 July 2004.

A Cap model for calculating the climate-adjusted annual Cap target for SA’s All Other Purposes (commonly called Highland irrigation) has been developed. Following recommendation from the Independent Auditor of cap models, this model has been approved by the Murray-Darling Basin Commission in November 2004 as a Cap model under Schedule F, the second such model to achieve that distinction.

Table 1: South Australian Diversions for 2004/05 (GL)

<table>
<thead>
<tr>
<th></th>
<th>Original Long Term Average Cap</th>
<th>Climate Adjusted Annual Cap Target</th>
<th>Adjustment to Annual Diversion target due to permanent trade</th>
<th>Adjustment to annual diversion due to temporary trade</th>
<th>Adjusted Cap target for (for perm and temp trade) 2004/05</th>
<th>Cap Credits (Cap Target less diversion)</th>
<th>Cumulative since 1 July 1997</th>
<th>20% Schedule F Trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adelaide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- current year</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>8.9¹</td>
<td>62.7</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>- rolling 5 years</td>
<td>650</td>
<td>—</td>
<td>0</td>
<td>41.8</td>
<td>462.7</td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Country towns</td>
<td>50</td>
<td>—</td>
<td>0</td>
<td>-5.0</td>
<td>45.0</td>
<td>38.3</td>
<td>6.7</td>
<td>67.7</td>
</tr>
<tr>
<td>Reclaimed Swamps</td>
<td>103.5</td>
<td>-39.9³</td>
<td>-6.0</td>
<td>60.6</td>
<td>60.6</td>
<td>0.0</td>
<td>0.0</td>
<td>—</td>
</tr>
<tr>
<td>All Other Purposes</td>
<td>440.6</td>
<td>412.5</td>
<td>54.6</td>
<td>9.4</td>
<td>476.5</td>
<td>462.2²</td>
<td>13.6</td>
<td>403.6</td>
</tr>
<tr>
<td>Total</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>1.6</td>
<td>—</td>
<td>623.8</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

1 This is temporary transfer against a first use Metro Adelaide Licence held in All Other Purposes Cap valley
2 The diversion includes the volume of temporary transfer described in 1
3 Includes transfer of Reclaimed swamp highland component to All Other Purposes Cap
Due to the impacts of the ongoing drought being experienced across the Murray-Darling Basin, the predicted flow to South Australia at the start of 2004/05 was significantly below South Australia’s Entitlement Flow of 1,850 GL necessitating the South Australian Government to implement water restrictions on River Murray water users. The initial level of restriction was set at 70% of licensed allocation and was subsequently relaxed to 95% licensed allocation in January 2005.

Again in 2004/05 there was a significant amount of permanent trades from the swamps to highlands. A total of 10.9 GL was permanently transferred to the All Other Purposes Cap, due to the continued rehabilitation of the Lower Murray Swamps. In addition the 9.3 GL highland component of the swamps was transferred to the All Other Purposes Cap. Diversions from these areas will from this year be recorded as All Other Purposes diversions. In addition there was 6 GL traded temporarily from the Swamps to All Other Purposes.

There was net permanent trade of 4.8 GL into All Other Purposes from interstate and a net temporary trade out of the State of 1.7 GL. It is noticeable that there is significant temporary trade out-of South Australia into New South Wales during the period May-June. This could reflect the different regulatory regimes as New South Wales allows ‘carry over’ of unused water. The IAG understands Victoria has banned temporary trading into NSW after February. This issue needs to be addressed as part of the interstate trade framework to ensure there are no unintended consequences on other users or the environment.

For permanent interstate trade only, the South Australian Cap increases or decreases by 0.9 GL for every 1 GL traded into or out of the State. South Australia has indicated that it intends to revisit this issue but the Cap factor has been used in the 2004/05 assessment.

South Australia, through SA Water, transports water from the Murray to other Basins, i.e., Barossa Valley, Clare Valley. The IAG supports the accounting of diversions and trades as specified in Schedule F and notes that South Australia debits this against the originating allocation.

Temporary trades of 12 GL in 2001/02, 11 GL in 2002/03 and 9.9 GL in 2003/04 were made from Country Towns to Metropolitan Adelaide. In 2004/05, 8.9 GL was temporarily transferred to the Metro-Adelaide’s proposed ‘first use licence’ Cap. Of this volume, 5 GL came from Country Towns and 3.9 GL from All Other Purposes. The diversion of 8.9 GL under the ‘first use licence’ is included in the diversion of 462.2 GL accounted for and reported under the All Other Purposes Cap valley. This is an interim measure until new Cap Management arrangement is endorsed by the IAG.

4.1.4 Monitoring and Reporting

The IAG was advised that a modified computer based system for licensing and monitoring of water use (WILMA) provides the basis for reporting water allocation and use.

Urban consumption (metro Adelaide and Country Towns) and irrigation consumption in the All Other Purposes rehabilitated irrigation areas are reliably metered (97% metered). Complete rehabilitation was achieved in the Highland region during the 2004/05 water-year. South Australia continues to make improvements to ensure that the standard of metering of direct diversions is maintained at satisfactory levels.

Metering diversions from the Lower Murray Swamps is currently underway as part of a comprehensive rehabilitation program in that region and is expected to be finalised by June 2007.

4.1.5 Proposals to Refine Implementation in 2005/06

South Australia will continue to improve its capacity to manage to Cap targets. In particular it was proposed to finalise a water management and allocation system, including in 2004/05 direct measurement of water supply, for the Lower Murray Swamps. This project has been delayed but the full metering of off-takes in this region is anticipated to be completed by June 2007.
4.1.6 IAG Assessment

Consumption in South Australia in 2004/05 was heavily constrained as a result of significant below average river flows. Diversions for Country Towns, Metro Adelaide and All Other Purposes were below the Cap. Diversions for the Lower Murray Swamps are not currently metered and assumed to equal the Cap.

Metropolitan Adelaide consumption over the last five years was 462.7 GL compared with the target of 650 GL. Compliance with this Cap has been further enhanced by the transfer over the last four years of 42 GL from All Other Purposes designated valleys under a proposed ‘first use licence’. The diversions against this licence are being accounted in All Other Purposes Cap valley in the interim.

SA Water has again raised the issue of provision of additional water for Adelaide over and above the water it holds against licences in other areas which is transported through SA Water infrastructure.

The rolling target of 650 GL over a five-year period for metro Adelaide assumes a 99% reliability of water supply for Adelaide. Any growth in consumption arising from a growth in demand or reduced yield from the Mount Lofty Ranges catchments will reduce the reliability of supply unless additional water is purchased from other users and transferred as permanent Cap.

This issue was addressed in part in the IAG’s 2003/04 report with in-principle agreement that:

- the 12 GL in 2001/02 and 11 GL in 2002/03 temporary transfers would be recognised for use against metropolitan Adelaide consumption;
- a separate licence is to be maintained for any water traded to the Adelaide system;
- first water used each water-year to metropolitan Adelaide should be accounted as use by the separate licence; and
- reporting should be in accordance with Clause 11 of Schedule F.

A formal submission was received from the Department of Water, Land and Biodiversity Conservation, in October 2004. It proposed the following principles:

- For areas supplied with water extracted under the Metro Adelaide Cap, growth in consumer demand beyond that existing in the year 2000 will be provided for separately to the original cap of 650 GL over 5 years. This is in line with the IAG recommendations in the 1996 report “Setting The Cap” (recommendation 32, page xiv).
- Growth in demand from the River Murray will be assessed by reference to the total demand in the area supplied by the Swan Reach – Stockwell, Mannum – Adelaide and the Murray Bridge – Onkaparinga pipelines, taking account of changes in yield and access to resources for urban use from the Mount Lofty Ranges Catchments.
- The growth component will be accounted for under a separate “first use” licence. Water extracted for Adelaide will be assumed to be used firstly from this licence with the balance being accounted against the original Cap licence.
- The full volume of the allocation on the “first use” licence as at 30 June in any water-year will be utilised to account for the growth component.
- Water can be traded in or out of the “growth” licence provided that the cumulative volume of allocation provided under this licence (measured at 30 June in each water-year) equals or exceeds the growth requirement. South Australia will report on this annually as part of the cap reporting.
- The estimate of growth will be reviewed every five years, but where appropriate the review may take into account more than just the previous five years data.

The IAG responded to the South Australian submission and this in turn has resulted in South Australia providing advice that a revised concept will be submitted for ‘out of session’ IAG consideration. Depending on progress, a report will appear in the 2005/06 IAG report.

South Australia remains best placed of all the States to quantify the Cap and reliably report against it.

Reliable consumption measurement is in place for both SA Water and the rehabilitated Highland irrigation areas with improvements projected for the Lower Murray Swamps.

The IAG again commends South Australia for the work that has been done in implementing the Cap and putting in place the necessary administrative framework.
4.1.7 Conclusions/Recommendations

- Diversions in 2004/05 were heavily constrained as a result of restrictions and were within the annual Cap targets for Metropolitan Adelaide, Country Towns and All Other Purposes Cap valleys;
- Diversions for the Lower Murray Swamps Cap valley are not currently metered and are assumed to equal the Cap;
- South Australia has a reliable measuring system, which continues to improve, for urban and irrigation use;
- A new Water Information and Licensing Management Application (WILMA) has been implemented and provides information on licences and water use;
- The South Australian All Other Purposes Cap model was approved by the Commission in November 2004, the second such model to achieve that distinction;
- A revised proposal has been discussed with the IAG for the consideration of metro Adelaide growth and associated water management and accounting within the Cap framework. The IAG will prepare a response to this ‘out-of-session’ following receipt of a detailed submission; and
- The IAG recommends that the Interstate Water Trade Board address the issue of differential treatment of carry-over water and its impact on trade.
4.2 Victoria

4.2.1 The Cap

Victoria is using computer simulation models, calibrated to 1993/94 level of development, to calculate annual Cap targets for the major regulated systems. Regression models are being used for the smaller systems.

There have been no changes in the model used to calculate Cap targets for the Goulburn/Broken/Loddon and Campaspe valleys since the 2003/04 Cap audit. Documentation of model assumptions, final model and calibration results have been submitted to the model auditor for accreditation of the model. This interim model has been used to calculate the 2004/05 Cap targets and the cumulative credits since 1997.

The model used to calculate the Murray component of the Murray/Kiewa/Ovens valley Cap target is being re-calibrated by the MDBC to reflect revised estimates of historical diversions. An interim version of this model has been used to calculate the Murray Cap target. Regression relationships with rainfall and temperature have been developed by the MDBC to calculate the Kiewa and Ovens components of the Cap targets. The three models were used to calculate the 2004/05 Cap target and the cumulative credits since 1997.

A model of the Wimmera-Mallee system has been developed as part of the recent Bulk Entitlement conversion process. Various stages of the Northern Mallee Pipeline Project have also been included in the model. As these savings have significantly reduced diversions and allowed increased environmental entitlements to be specified in the Bulk Entitlement, Grampians Wimmera Mallee Water have proposed that Cap compliance in the Wimmera-Mallee Valley be based on compliance with Bulk Entitlements and will submit a format proposal for IAG consideration.

As a result of minor corrections to model input data, Cap targets for Goulburn/Broken/Loddon and Campaspe valleys back to 1997/98 have changed slightly compared with figures reported in previous years’ reports. These changes are not large (at most, 5% of the long-term Cap) but should be noted. Similarly due to re-calibration of the Murray model undertaken over the last year, Cap targets for Murray/Kiewa/Ovens valley back to 1997/98 are slightly different from figures reported in previous years’ reports (maximum of 7% of the long-term Cap).

Victoria remains committed to the ongoing development and improvement of Cap models for calculating annual Cap targets.

4.2.2 2004/05 Diversions

Irrigation areas supplied from the Goulburn, Murray, Loddon and Campaspe systems experienced low to very low water availability during 2004/05 due to a combination of low carryover storage volumes from 2003/04 and below average inflows during 2004/05. There was no water available for irrigation at the start of July 2004 for the Goulburn, Loddon and Campaspe systems. Opening allocations for the Murray and Broken systems were 46% and 49% of water right/licensed volume respectively. The Minister for Water, as in 2003/04, qualified rights to water in a number of areas early in the year to enable essential supplies to continue until conditions improved.

As resources improved, seasonal allocations progressively increased on all systems. On the Broken system, the maximum possible allocation of 170% of licensed volume was reached in early spring. While the allocation on the Murray, Goulburn and Loddon systems reached 100% of water right/licensed volume in late spring, no sales allocation was available in 2004/05. The allocation reached only 39% of water right/licensed volume for the Campaspe system (the lowest final allocation on record).

Rainfalls during the spring months were mixed, varying from below average to well above average in some months. Overall, the summer was relatively wet but with little runoff to storages and all areas reported below average rainfall during the autumn.

None of the major storages on the Goulburn, Campaspe, Loddon and Murray systems filled to capacity. Inflows to these storages were below average for the year, despite yearly rainfall being close to average. In some cases, notably storages on the Campaspe and Loddon systems, inflows were significantly less than 50% of average. Annual inflows to Eildon, Hume and Dartmouth storages were in the range 70% to 80% of annual average. Inflows to storages on the Campaspe and Loddon systems were only about 20% and 30% of annual average respectively.

Only storages on the Buffalo, King, Broken and upper Loddon systems filled to capacity during the spring. Heavy rain in February 2005 resulted in storages on the Buffalo, King and Broken systems spilling for the second time during the year.
At the end of the irrigation season, the major irrigation storages had again been drawn down to very low levels. Lake Eildon was drawn down to 26% of capacity. After reaching 13% of capacity in late November 2004, Lake Eppalock on the Campaspe system was holding only 5% of capacity by early June 2005. Cairn Curran and Tullaroop storages on the Loddon system were drawn down to near record low levels. Dartmouth and Hume storages were holding 45% and 30% of capacity by the end of June 2005.

Diversions from the Murray/Kiewa/Ovens, Goulburn/Broken/Loddon and Campaspe valleys were each below their Cap targets for 2004/05. While Cap targets are not yet available for the Wimmera-Mallee valley, significant water savings have been achieved through the Northern Mallee Pipeline Project and some of these savings have been allocated to the environment. Environmental releases from these new entitlements were made in 2004/05 ensuring that diversions in the Wimmera-Mallee valley remain below 1993/94 levels.

All other Victorian valleys have cumulative Cap credits up to 30 June 2005 (Table 2).

It should be noted that, due to model re-calibration and/or minor changes to model inputs, Cap targets (and therefore Cap credits) back to 1997/98 have changed slightly compared with figures reported in previous years’ reports.

**Goulburn/Broken/Loddon**

**Resource availability**

While rainfall at Eildon was average for 2004/05, the inflow to the storage was only 72% of average. Eildon recorded above average rainfall in the months of August, September, November, December, February and June during 2004/05. The cumulative inflow to Lake Eildon since October 1996 has been the lowest eight-year inflow on record. After peaking at 43.3% of capacity in mid December 2004, Lake Eildon was drawn down to 26.4% of capacity by mid May 2005.

The unregulated flow between Eildon and Goulburn Weir for 2004/05 was only 56% of average. The diversion efficiency at Goulburn Weir for the year was 96%. Unregulated spills occurred in September, November and February with the peak flow passing Goulburn Weir reaching almost 10000 ML/day following heavy rain in February 2005.

River Murray Water called on Inter Valley Trade (IVT) water during the period from late January 2005 to end of March 2005. The IVT transfer was suspended for most of February 2005 following heavy rain. Most of the IVT water was transferred to the River Murray via the Goulburn River but small volumes were transferred via the lower Broken Creek and the lower Campaspe River to provide environmental benefits for these streams.

**Table 2: 2004/05 Diversions (preliminary values) compared with Schedule F Targets (GL/year)**

<table>
<thead>
<tr>
<th>Valley</th>
<th>Long-term Cap</th>
<th>2004/05 Cap Target</th>
<th>Net Adjustment to Cap because of trade</th>
<th>Diversion</th>
<th>Cap Credits (Cap target less diversion)</th>
<th>Cumulative since 1 July 1997</th>
<th>20% Schedule F Trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goulburn/Loddon/Broken</td>
<td>2034</td>
<td>1737</td>
<td>–71</td>
<td>1540</td>
<td>126</td>
<td>133</td>
<td>–407</td>
</tr>
<tr>
<td>Murray/Kiewa/Ovens</td>
<td>1697</td>
<td>1590</td>
<td>49</td>
<td>1476</td>
<td>163</td>
<td>860</td>
<td>–339</td>
</tr>
<tr>
<td>Campaspe</td>
<td>123</td>
<td>80</td>
<td>—</td>
<td>40</td>
<td>40</td>
<td>76</td>
<td>–25</td>
</tr>
<tr>
<td>Wimmera-Mallee</td>
<td>162</td>
<td>N/A</td>
<td>—</td>
<td>52</td>
<td>N/A</td>
<td>N/A</td>
<td>–32</td>
</tr>
<tr>
<td>Interim Mokoan allowance</td>
<td>22</td>
<td>22</td>
<td>—</td>
<td>22</td>
<td>176</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3108</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The initial 2004/05 allocation on the Goulburn system was zero but it increased to 26% by 15 August 2004 and then to 100% of water right by 15 November 2004. No “sales” allocation was announced for the seventh consecutive year in a row.

Despite inflows to Lake Nillahcootie being only 36% of the annual average, the storage filled in the spring and again in late summer. Lake Mokoan was used to harvest unregulated flows downstream of Lake Nillahcootie within the filling limits imposed in recent years. In early October 2004, Lake Mokoan filled to 35.8% of capacity and was drawn down to 22.4% of capacity by late May 2005. Releases from Lake Mokoan continued throughout the year, as there were no serious problems with blue-green algae. The total release from Lake Mokoan was 42.02 GL, of which 23.85 GL was used to supplement supplies to diverters on the lower Goulburn River.

Very low carryover volumes combined with inflows well below average resulted in the Cairn Curran and Tullaroop reservoirs both reaching only 22.8% and 28.1% of capacities respectively in late spring. Carryover volumes in each of these two storages at end of year were very close to the lowest on record.

The poor Loddon resource position resulted in no Loddon supplement being available to the Boort area, which had to rely entirely on Goulburn resources. The opening Loddon allocation was zero but it increased to 100% of licensed volume by mid November 2004, with no further increase. The 2004/05 final allocation on Loddon system shared with 2001/02 as being the equal third lowest on record.

Cap compliance

Diversion from the Goulburn/Broken/Loddon valley was 1540 GL, which is 126 GL (8%) below the Cap target of 1666 GL (with preliminary adjustment for trade). Diversions were 24% below the long-term Cap of 2034 GL/year.

Due to minor corrections in model inputs, the carry-over Cap credit for this valley has been revised from 26 GL (the 2003/04 cumulative Cap credit reported last year) to 8 GL Cap credit. The 2004/05 cumulative Cap credit since July 1997 for the Goulburn/Broken/Loddon valley is 133 GL.

The above calculations do not include the 22 GL/year interim allowance for the full utilisation of Lake Mokoan.

Murray/Kiewa/Ovens

Resource availability

Unregulated inflows to Dartmouth and Hume reservoirs were 75% and 77% of the annual average. Dartmouth reservoir reached 50% of capacity in late September 2004 while Hume reservoir filled to 54% in November 2004. The poor recovery of Lake Hume meant that 859 GL was needed to be transferred from Dartmouth reservoir. During the irrigation season there were a number of rain interruptions leading to a rapid reduction in releases from Hume reservoir. River Murray Water did not declare surplus flows during the year.

Lake Victoria almost filled in early December 2004, however inflows to the Menindee Lakes were very low. As a result the total volume held in the Menindee Lakes did not rise above the 640 GL storage volume required to provide a regulated supplement to the River Murray. This is the third year in a row that there has been no supplement to the Murray from the Menindee Lakes.

The opening allocation on the Murray system was 46% of water right, which increased to 100% of water right by mid September 2004. While resources improved after mid September 2004, no “sales” allocation was available as these resources were assigned to building the reserves for the following year. The final allocation was the equal lowest final allocation on record (shared with 2003/04).

Cap compliance

Diversion from the Murray/Kiewa/Ovens valley was 1476 GL, which is 163 GL (10%) below the Cap target of 1639 GL (with preliminary adjustment for trade). The diversion was also 10% below the long-term Cap of 1697 GL/year.

Due to model re-calibration, the carry-over Cap credit from 2003/04 was revised from 589 GL (reported last year) to 697 GL. The cumulative Cap credit to July 2005 for the Murray/Kiewa/Ovens valley is 860 GL.

Campaspe

Resource availability

Inflows to Lake Eppalock were 20% of the average annual, even lower than that for 2003/04. The storage peaked at only 13% of capacity during November 2004. By early June 2005, it had reduced to 4.9% of capacity, slightly above the lowest on record (4.6% of capacity in June 2004).
As in 2003/04, the Campaspe system was highly regulated during 2004/05 apart from a heavy rain event in February 2005 and two minor rain events at other times during the year.

From 1 July 2004, the minimum flow provisions of the Campaspe Bulk Entitlement were implemented. Early in the year due to the extremely poor resource position, the Minister for Water qualified rights to provide a limited supply for high importance uses. The Minister also modified the newly implemented minimum flow requirement for the Campaspe River downstream of the Campaspe Siphon at Rochester for September 2004.

In mid September 2004 an allocation of 5% of water right/licensed volume was announced. The allocation increased slowly to reach only 39% of water right/licensed volume in mid January 2005. This final allocation was by far the lowest on record, the previous lowest final allocation being 100%.

From mid March 2005, the minimum flow requirement downstream of the Campaspe Siphon, which is tied to natural flow, was effectively zero. After consultation with the Department of Sustainability and the Environment, Goulburn-Murray Water transferred up to 15 ML/day from the Goulburn Inter Valley Trade account to the River Murray via the Waranga Western Channel and the lower Campaspe River to maintain environmental values in the lower Campaspe River.

**Cap compliance**

Diversion from the Campaspe valley was 40 GL, which is 40 GL (50%) below the Cap target of 80 GL (no adjustment for trade is necessary). Diversions were 67% below the long-term Cap of 123 GL/year.

Due to minor correction in model inputs, the carry-over Cap credit for this valley was revised from 43 GL (the cumulative credit reported last year) to 36 GL. The cumulative Cap credit to July 2005 is 76 GL.

**Wimmera-Mallee**

**Resource availability**

The 2004/05 season was dominated by below average inflows and the need to restrict supplies. This represented the eighth year of below average inflows to the system. The storages remained low with six remaining empty and the others at very low levels. The maximum storage volume for the system was 15.8% of capacity in late September 2004 and the minimum was 9% in early June 2004.

This period also saw the implementation of the Wimmera-Glenelg Bulk Entitlement. The Bulk Entitlement operates over a water allocation year of November to October with the first allocation year being for November 2004 – October 2005.

The total Bulk Entitlement allocation at the start of November 2004 was 88.28 GL. An available water volume of 206.29 GL is required before all entitlements are met in full. Over the year the allocation rose but was only 91.25 GL at the start of July 2005 with no reserves for 2005/06.

The level of restrictions applied in 2004/05 were one dam per 400 hectares in the winter dam fill area (about 35% of dams) and one dam per 250 hectares in the summer dam fill area (about 30% of dams).

Customers holding "supply by agreement" licences were restricted to 50% of their licensed volume.

There was a 5% irrigation supply available in September and October only. With such a restricted volume the water was supplied at the same time as the Domestic and Stock supply so as to minimise wetting up losses in the channel system.

The environment received an allocation of 7 GL under the Bulk Entitlement. This was combined with the 3.3 GL of compensation flow for the Glenelg River downstream of Rocklands to provide a total volume of 10.26 GL. This volume was released in accordance with the annual watering plan prepared by the Wimmera and Glenelg Hopkins Catchment Management Authorities with water supplies to the Glenelg, Wimmera, and McKenzie rivers.

Water use data to the start of September 2005 indicates that all Bulk Entitlement holders will use less than their total allocation. Some discrepancies have been identified in the Bulk Entitlement and they should be amended and corrected in time for the 2005/06 allocation year.

**Cap compliance**

Diversion from the Wimmera-Mallee valley was 52 GL in 2004/05. An annual Cap target has not been calculated for this valley as, although a model has been built for the implementation of the Bulk Entitlement, refinements are required for it to be used for Cap compliance purposes. The interim estimate of the long-term Cap is 162 GL/year.
Diversions for 2004/05 were 68% below this long-term Cap. Usage has remained within Cap, as there have been significant water savings since 1993 through construction of the Northern Mallee Pipeline. The environment’s Bulk Entitlement from savings was 34.7 GL at July 2005. This entitlement will continue to be increased as savings are realised.

4.2.3 Administration of the Cap

Between 1995 and 1997 Victoria introduced and refined the following changes to water management in response to the Murray-Darling Basin Ministerial Council decision to Cap water use;

- restrictions on temporary and permanent water trading;
- reductions on allocations for a given resource; and
- limits on the issuing of new entitlements.

Monitoring of the effectiveness of the water management policies is undertaken on an ongoing basis. No new capping policies were introduced in 2004/05 and none is proposed for 2005/06 as these measures have continued to be effective. There is no evidence of growth in diversions in any of the Victorian valleys.

Victoria remains committed to the Cap through the continued establishment and implementation of Bulk Entitlements and Streamflow Management Plans and the licensing of irrigation farm dams.

Bulk Entitlements

Victoria continued to implement the Cap on regulated systems by establishing Bulk Entitlements in accordance with the Water Act 1989. Bulk entitlements have been established for: Goulburn Basin, Murray (Victorian system) Campaspe Basin, Kiewa River, Broken Basin, Ovens River and Wimmera-Mallee.

The Bulk Entitlements for the Loddon Basin have been finalised and are now in the process of gaining ministerial approval.

An environmental entitlement for the Snowy Environmental Reserve was granted in June 2004 as a result of the transfer of water savings from the Normanville Pipeline in the Goulburn System. An additional environmental entitlement relating to Woorinen pipelining and other savings on the Murray system was granted in January 2005. The volume of environmental entitlements, from adjustment of these Bulk Entitlements will be increased as other water savings projects are undertaken.

Streamflow Management Plans (SFMPs)

Interim capping arrangements were put in place in 1995 to limit diversions from unregulated streams until more rigorous management arrangements (i.e. SFMPs) could be implemented. Three key rules were introduced to manage diversions:

- no new diversion licences, and only transfer of existing ones could be issued;
- trade of existing licences must be downstream with a 20% reduction in volume, unless the resulting licence is winter-fill; and
- upstream trade is permitted provided the licence requires the entitlement to be diverted during the winter-fill period.

The SFMP process is similar to the process used for the conversion of Bulk Entitlements. SFMPs are a community based water resource planning process. The objective of a SFMP is to manage the water resources of the relevant area in an equitable manner to ensure the long-term sustainability of the resource.

SFMPs ensure section 51 licensed diversions are managed within sustainable diversion limits for the winter and summer periods. They consider what additional development should be allowed into a catchment given local conditions. However any new development must be via transfer of existing entitlement ensuring flows in the River Murray are not detrimentally affected.

Amendments to the Water Act 1989 introduced in 2002 provided increased certainty in the management of unregulated rivers and streams in Victoria. As part of the SFMP provisions, new procedural arrangements (e.g. tabling of SFMPs in Parliament) were introduced and put into place while the scope of consultation in the development of these plans has increased. The transition to meeting this new legislative and consultative approach, and the need to realign existing SFMPs to current Government policy, has meant that while commencement of the development of these plans is proceeding to schedule, finalisation may take longer than originally anticipated.

Additionally, the White Paper Securing Our Water Future Together has committed to improving the management, compliance and accountability for water use, protecting and repairing river health in unregulated rivers and streams, and establishing an ecologically sustainable Environmental Water Reserve for all unregulated rivers and streams. The Victorian Government will provide these Environmental Water Reserves in priority unregulated
rivers over the next ten years through the development of SFMPs and other licensing management rules.

With release of the White Paper, current SFMPs in northern Victoria are being reviewed to ensure they are consistent with White Paper policy on SFMPs and the revised SFMP Guideline. These SFMPs in northern Victoria are:
- Upper Ovens River;
- Kiewa River;
- Yea River;
- King Parrot Creek; and
- Upper Wimmera River.

For the remaining high priority stream in northern Victoria, Seven Creeks, a SFMP will be developed using the revised SFMP framework. SFMPs for secondary priority rivers and streams will be developed in partnership with government and non-government stakeholders by Catchment Management Authorities through the Northern Victoria Sustainable Water Strategy and relevant Catchment Management Authority Regional River Health Strategies.

Irrigation Farm Dams

Victoria not only manages water in waterways, but also licenses the use of water for irrigation and commercial use in catchment dams under the Water (Irrigation Farm Dams) Act 2002. Existing dams used for irrigation or commercial purposes were required to be either licensed or registered during the period 1 July 2002 to 30 June 2003. All new irrigation and commercial use of water must be licensed, whether the proposed dam is located on a waterway or not. The legislation has also led to the establishment of Permissible Annual Volumes for catchments across the state, establishment of exchange rates to ensure Cap is preserved when licences are traded; and has provided a legislative backing for locally developed Stream Flow Management Plans.

Approximately 5,000 catchment dams have been or are in the process of being licensed. Any new licence application for catchment dams are subject to the MDBC Cap and new developers are required to purchase an existing entitlement.

Off-Quota Policy

In mid-2003 the policy of announcing off-quota allocations when unregulated flows occur downstream of storages was discontinued and replaced on an interim basis with a new ‘advance arrangement’ which only allows access to unregulated flow in years of severe water shortage. It is proposed to amend bulk entitlement to allow the advance arrangement to be implemented on an ongoing basis.

Under this arrangement advances will be announced when allocations are less than water right but these must be paid back when the allocation reaches 100% of water right. It is also a requirement that the period when the advance is available on the River Murray must provide equal access to all Victorian Murray users.

This will result in a significant reduction in usage during periods of “declared surplus” in the future.

4.2.4 Proposals to Refine Implementation in 2005/06

Proposed refinements to the management of the Cap in 2005/06 include:
- The Model for the Goulburn/Broken/Loddon and Campaspe valleys expected to gain Commission approval by July 2006;
- Re-calibration and auditing of the Murray Cap model expected to be completed by July 2006;
- A Cap compliance methodology for the reduced Wimmera-Mallee Cap expected to gain Commission approval by July 2006; and
- Bulk Entitlements for the Loddon Basin are expected to be granted by December 2005.

In June 2004, the Victorian Government released a White Paper ‘Securing Our Water Future Together’, which outlines a comprehensive, integrated approach to managing Victoria’s water resources over the next 50 years. The initiatives in the White Paper reinforce Victoria’s commitment to working with the MDBMC and the other Basin states to implement the M-DB Cap and the Living Murray initiative.

Adjustments to the Cap will be required to account for water saved through water savings projects and the delivery of environmental water as part of White Paper initiatives, which include:
- Decommissioning Lake Mokoan; and
- The conversion of ‘sales’ water into a separate, legally recognised, independently-tradeable entitlement and the allocation of 20% of this new entitlement to the environment.

Cap adjustments will be made through changes to the Cap models or by adjusting the modelled Cap targets where appropriate.
4.2.5 IAG Assessment

Diversions in 2004/05 for the Murray/Kiewa/Ovens Valley, Goulburn/Broken/Loddon, Campaspe and Wimmera-Mallee were all below annual climate-and trade-adjusted Cap targets. All valleys have significant accumulated credits since 1997.

Progress continues on developing, improving and accrediting models used to predict climate-adjusted diversion Caps. The models for the Goulburn/Broken/Loddon and Campaspe valleys are expected to be accredited by July 2006. Re-calibration and auditing of the Murray Cap model is expected to be completed by July 2006.

The establishment of Bulk entitlements is nearing completion with the Loddon entitlement expected to be granted by December 2005.

Further refinements to the Cap are expected to arise as a result of the Living Murray initiative and the IAG will report on these separately.

Victoria continues to operate and further develop a strong legal and policy framework and supporting processes to manage the Cap and the requirements of Schedule F.

4.2.6 Conclusions/Recommendations

- Diversions for the Murray/Kiewa/Ovens Valley, Goulburn/Broken/Loddon, Campaspe and Wimmera-Mallee in 2004/05 were all below annual climate and trade-adjusted Cap triggers;
- Cumulative diversions since 1997 for all valleys are in credit;
- Accreditation of the Goulburn/Broken/Loddon and Campaspe Valleys is now expected by July 2006;
- Bulk water entitlements have been finalised for major valleys and is expected to be granted for the Loddon by December 2005; and
- Significant changes for Cap management and implementation are expected as a result of changes agreed to as part of the National Water Initiative and the Living Murray project particularly in relation to provision for water for the environment resulting from water saving projects and other initiatives.
4.3 New South Wales

4.3.1 The Cap

Assessment of Cap performance in NSW has been conducted on a valley-by-valley basis according to the requirements of Schedule F to the Murray-Darling Basin Agreement. Cumulative performance from 1997/98 relative to the Cap is assessed for all NSW valleys, which now have a common water-year from July to June.

On 1 July 2004, Water Sharing Plans commenced in most of the major regulated valleys in NSW, including the NSW Murray and Lower Darling, Murrumbidgee, Lachlan, Macquarie, Namoi, and Gwydir valleys. These Plans are considered by NSW as representing a major milestone in the NSW water reform process, and a significant change in the nature of water licences. Each of the Plans sets in place a long-term diversion limit below Cap, and provides for a range of environmentally-focused water management rules.

The Department of Natural Resources (DNR) has developed a suite of Integrated Quantity/Quality Models (IQQM’s) for each of its major regulated valleys and the Barwon-Darling. The IQQM for the Lachlan and the Namoi have been approved for use under Schedule F and the IQQM for the Macquarie is to be re-presented to the Commission for audit following re-calibration. Interim and final IQQM’s are also available for Cap auditing in the Murrumbidgee, Gwydir, Border Rivers and Barwon-Upper Darling Valleys.

For the Murray and Lower Darling, the MDBC’s Murray Simulation Model (MSM) is used for Cap auditing and is currently undergoing re-calibration.

The status of the various models used for annual cap auditing in NSW is provided in Table 3.

4.3.2 2004/05 Usage

The IQQM models in interim and final form have primarily been used to determine whether individual valley diversions have exceeded the Cap. The difference between the annual diversion target or climate-adjusted Cap and the actual recorded diversion for each valley is recorded as either a credit or a debit for the year. This is then added to the previous year’s debit or credit, which is then compared to the Schedule F exceedance trigger. This exceedance trigger is 20% of the long-term average diversion generated from the analytical model.

Table 4 provides a summary of NSW diversions by river valleys. This table identifies those valleys where diversions are in credit or in debit against annual Cap values and whether or not those in debit have exceeded the Schedule F trigger.

Table 4 also provides additional information provided by DNR on differences in storage between that which is observed and that which is modeled and discussed further (see page 23).

Table 3: NSW Cap Auditing Models Status

<table>
<thead>
<tr>
<th>Valley</th>
<th>Auditing Tool</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray/Lower Darling</td>
<td>Murray Monthly Simulation Model (Interim)</td>
<td>Undergoing re-calibration</td>
</tr>
<tr>
<td>Murrumbidgee</td>
<td>IQQM (Interim)</td>
<td>Preliminary results available</td>
</tr>
<tr>
<td>Lachlan</td>
<td>IQQM (Final)</td>
<td>Approved for use under Schedule F</td>
</tr>
<tr>
<td>Macquarie</td>
<td>IQQM (Final)</td>
<td>To be re-presented for omission approval following re-calibration</td>
</tr>
<tr>
<td>Peel</td>
<td>IQQM (Interim)</td>
<td>Preliminary results available</td>
</tr>
<tr>
<td>Namoi</td>
<td>IQQM (Final)</td>
<td>Approved for use under Schedule F</td>
</tr>
<tr>
<td>Gwydir</td>
<td>IQQM (Interim)</td>
<td>Preliminary results available</td>
</tr>
<tr>
<td>Border Rivers</td>
<td>IQQM (Interim)</td>
<td>Definition of Cap not complete</td>
</tr>
<tr>
<td>Barwon-Darling</td>
<td>IQQM (Final)</td>
<td>Preliminary results available</td>
</tr>
</tbody>
</table>
Drought conditions have continued to prevail over most of NSW during 2004/05, with the majority of the NSW parts of the Murray-Darling Basin remaining drought-declared by the NSW Department of Primary Industries.

Rainfall across NSW in 2004/05 was generally at or below average, continuing the trend of low rainfall in recent years.

The on-going drought conditions have resulted in continued low inflows to the major storages, and continued record low allocations in some valleys. At the close of the 2004/05 water-year, many major storages in the NSW portion of the Basin, particularly in southern and central valleys, were again at low levels.

Inflows to storages within the NSW portion of the Basin have been extremely low over the last 3-4 years, with some storages recording new record minimum inflow volumes over various periods up to four years. Up to 30 June 2005, these include:

- Menindee Inflows – new 12 month, 2 year and 3 year minimum inflow volume;
- Burrunjuck Dam (Murrumbidgee) – new 12 month minimum inflow volume during 2002/03; and
- New 3 and/or 4 year minimum inflow volumes for (variously) Blowering (natural), Burrunjuck, Menindee, Wyangala and Windamere dams.

For the Lachlan, effective allocation was as low as 50% and for the Macquarie, 20% while effective allocation was somewhat higher for some other valleys (Namoi/Peel 65%, Murrumbidgee 55% and Murray 86%). It was only for the Lower Darling that effective allocation reached 100% during the year.

NSW has noted the differences between the observed storage volumes and those estimated in the models used to determine annual Cap targets. It notes that these differences qualify the estimates of Cap Credits.

### Table 4: NSW Cap Performance for 2004/05 (GL)

<table>
<thead>
<tr>
<th>System</th>
<th>Long-term Diversion Cap</th>
<th>2004/05 Cap Target</th>
<th>Net Trade from Valley</th>
<th>2004/05 diversion</th>
<th>Cumulative since 1/7/1997</th>
<th>20% Schedule Trigger</th>
<th>Trigger Exceeded</th>
<th>Storage Difference</th>
<th>Cap credits (Target less diversion)</th>
<th>Cumulative since 1/7/1997</th>
<th>20% Schedule Trigger</th>
<th>Storage Difference</th>
<th>Cap credits (Target less diversion)</th>
<th>Storage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersecting Streams</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Border Rivers</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>124</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gwydir</td>
<td>344</td>
<td>271</td>
<td>0</td>
<td>169</td>
<td>103</td>
<td>221</td>
<td>-69</td>
<td>No</td>
<td>-69</td>
<td>-221</td>
<td>-69</td>
<td>No</td>
<td>-69</td>
<td>-221</td>
</tr>
<tr>
<td>Namoi/Peel</td>
<td>338</td>
<td>250</td>
<td>0</td>
<td>190</td>
<td>60</td>
<td>38</td>
<td>-68</td>
<td>No</td>
<td>-68</td>
<td>-38</td>
<td>-68</td>
<td>No</td>
<td>-68</td>
<td>-38</td>
</tr>
<tr>
<td>Lachlan</td>
<td>334</td>
<td>60</td>
<td>0</td>
<td>36</td>
<td>24</td>
<td>6</td>
<td>-67</td>
<td>No</td>
<td>-67</td>
<td>-24</td>
<td>-67</td>
<td>No</td>
<td>-67</td>
<td>-24</td>
</tr>
<tr>
<td>Murrumbidgee</td>
<td>2358</td>
<td>1495</td>
<td>-8</td>
<td>1618</td>
<td>-115</td>
<td>676</td>
<td>-472</td>
<td>No</td>
<td>-472</td>
<td>-676</td>
<td>-472</td>
<td>No</td>
<td>-472</td>
<td>-676</td>
</tr>
<tr>
<td>NSW Murray</td>
<td>1926</td>
<td>1625</td>
<td>0</td>
<td>1241</td>
<td>384</td>
<td>639</td>
<td>-384</td>
<td>No</td>
<td>-384</td>
<td>-639</td>
<td>-384</td>
<td>No</td>
<td>-384</td>
<td>-639</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>1</strong></td>
<td><strong>3670</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A valley with a Cap Credit and an observed storage greater than that in the model might be considered to be more likely to incur debits in future years. While not part of the Schedule F reporting process, NSW has drawn some observations from an analysis which adjusts the Cap credits (debits) by valley for this apparent difference between simulated and observed storage estimates. This has been used as a reality ‘check’ on the conclusions that NSW has been drawing from its own long-term modeling of Cap performances. This analysis, while only meant to be indicative, is argued by NSW as supporting their view that their water plans for all valleys with exception of possibly the Lachlan and the Murray, are producing sustainable below Cap performances (the combined Barwon/Upper Darling and Lower Darling was not included in this analysis). For the Lachlan and Murray, NSW argue that there are reasons which may explain away possible apparent differences between expected storage results and those modeled such that actual storage results are less than predicted by the long-term modelling.

**Murray Valley**

**Resource availability**

The 2004/05 water-year saw a continuation of low levels of water availability and use for this valley, similar to the previous (2003/04) water-year. Whilst diversions were significantly below the estimated annual Cap target by around 384 GL, the cumulative Cap credit for the valley is approximately 639 GL, it is noted by DNR that there is an additional 553 GL of water currently in storage compared to the Cap model simulation. This additional current storage may lead to Cap targets that are below usage in future years.

The NSW Murray and Lower Darling Water Sharing Plan commenced on 1 July 2004, and included a limit on diversions that is initially estimated to be 4% below Cap.

In response to ongoing low allocation levels in 2004/05, an agreement was struck between Snowy Hydro Ltd, the NSW Government and the Ricegrowers Co-operative Limited to advance 5 GL of above-target water from the Snowy Hydro Scheme on a commercial basis. Payback of the borrowed water was not required prior to 1 July 2005, and is then contingent on general security allocations reaching 50%.

**Cap Compliance**

The Cap for the regulated sections of the Murray Valley is currently audited on a provisional basis using the Murray Simulation Model (MSM). Re-calibration of MSM to better represent 1993/94 conditions commenced during 2002/03, and is expected to be completed by June 2006. The results presented here exclude all Snowy borrowings from the Cap modelling, which has the effect of reducing the current Cap credits.

The preliminary Schedule F accounting for the 1997/98 – 2004/05 water-years indicates that the NSW Murray Valley is cumulatively 639 GL below Cap. Long-term modelling undertaken by DNR prior to re-calibration indicated that, were development and water access rules to remain at current levels, the average annual diversions for the future will be 4% below the average annual Cap diversions.

**Murrumbidgee Valley**

**Resource availability**

The 2004/05 water-year saw continuing very low levels of water availability. The allocations prior to the summer cropping season were the equal lowest (with 2003/04) ever recorded in the Murrumbidgee valley, with the end-of-year allocations similar to the previous (2003/04) water-year. No additional releases from the Snowy scheme were made available from future inflows to irrigators this year, with irrigators instead repaying the majority of water borrowed during 2003/04. Approximately 160 GL of the total 180 GL borrowed from the Snowy from future releases in 2003/04 was repaid by irrigators, with 70 GL of the total being repaid voluntarily in addition to the 90 GL of mandatory repayment.

While no new deal to borrow water has been entered into with Snowy Hydro during 2004/05, on economic grounds, three separate arrangements were entered into, viz:

- In response to forecasts of very low Snowy releases up to the last few months of the water-year, which would significantly constrain deliverability of water allocated to users during the summer cropping period, a deal was made to extend Snowy Hydro’s release flexibility arrangements (negotiated as part of the 2003/04 deal) in return for a guarantee of a more favourable schedule of releases;
Payback of 50% of the water borrowed in 2003/04 was required at the commencement of the water-year. This was equivalent to a volume of 90 GL. Favourable summer conditions led to lower than expected crop demands, and some additional water remaining at the end of the summer cropping period. Consequently, arrangements were made to facilitate additional payback of the previous year’s borrowings, leading to an additional 70 GL of payback; and

The favourable summer climatic conditions also permitted an arrangement to relax Snowy Hydro’s schedule of releases during the year, in return for a guarantee of a favourable schedule of releases in the next year (2005/06).

Snowy Hydro did not exercise any release flexibility arrangements during the 2004/05 water-year.

The IAG have determined that the Snowy borrowing arrangements for 2002/03 are not considered as part of Cap behaviour. Consequently, the arrangements for 2004/05, like those for 2002/03 and 2003/04, are considered outside of Cap. The observed Snowy releases for these years have been adjusted to remove the effects of these commercial arrangements from the modelling of annual Cap targets.

A review of the model calibration for the regulated Murrumbidgee Valley for extended dry periods as has been experienced in recent years has continued during 2004/05, and resulted in revisions to both the modelled Cap targets and the cumulative Cap credit from last year’s assessment for this valley.

NSW has developed management rules that target long-term outcomes in addition to annual outcomes. The Water Reform process has consequently been based on long-term modelling of management rules. An estimate of “current” conditions (presently based on 1999/00 development levels), including current management and environmental flow rules was available for the Water Sharing Plan development. This scenario is now also being reviewed, and it is likely that results will change from that used in the Water Sharing Plan development.

A review of the 1999/00 scenario against observed behaviour over the period 1997 – 2005, undertaken in 2005, identified that the current conditions model over-estimates storage drawdown in the second last year of simulation (2003/04). In other years modelled annual diversions generally match well with those observed. Diversions are underestimated in the last year (2004/05) – primarily due to the over-estimate of diversions and the resulting storage drawdown by the model in 2003/04.

In 2003/04 there was a significant volume of allocated water carried-over by users to 2004/05, despite very low levels of water availability. This may have, in part, been a reaction to the severe drought conditions in 2002/03, and also to the scheduled first volume of water to be paid back to Snowy Hydro in 2004/05.

The Murrumbidgee River is a significant tributary of the River Murray, and simulation of end-of-system flows are significant to assessments of Cap and current levels of diversions by NSW Murray water users. Reproduction of observed flows at the main outflow point at Balranald is generally good, with some overestimation of flows in particular years. The overestimation of flows in very dry periods appears to be the result of difficulties in modelling variations in tributary inflows and user behaviour during extremes in climate. Flows at Darlot at the bottom of the Yanco Creek effluent system, are not reproduced as well, and a number of refinements to the modelling of this system are likely to be undertaken over the next year.

For the Lowbidgee, at present there has been no decision to reduce that district’s access below Cap. The access rules for Lowbidgee remain largely unchanged from 1993/94. However, the introduction of environmental flow rules for the Murrumbidgee valley will affect the level of access available to Lowbidgee, which may require changes to its access rules.

**Cap Compliance**

The Murrumbidgee Water Sharing Plan commenced on 1 July 2004, and included a long-term limit on diversions that is initially estimated to be 3% below Cap. Diversions were above the estimated DNR annual Cap target by 115 GL; however, this still results in a cumulative Cap credit since 1997/98 of 676 GL. These results have been produced by a revised Murrumbidgee IQQM Cap model, following a review of the model calibration made necessary by changed conditions encountered as a result of experience with the current drought.

A preliminary representation of the Lowbidgee district is included within the Murrumbidgee IQQM. The results for both the regulated diversions and Lowbidgee must still be...
considered preliminary at present until the model is independently audited under the provisions of Schedule F of the Murray-Darling Basin Agreement. The results presented here exclude Snowy borrowings from the Cap modelling, which has the effect of reducing the current Cap credits.

Cap accounting has been performed using the provisional Murrumbidgee IQQM. The preliminary Schedule F accounting for the 1997/98 – 2004/2005 seasons indicates that the total Murrumbidgee Valley is cumulatively 676 GL below Cap. Current modelling of the Murrumbidgee Water Sharing Plan indicates that long-term diversions would be around 2% below Cap.

**Lachlan Valley**

**Resource availability**

The 2004/05 water-year saw a continuation of record low levels of water availability for this valley. Again, no allocation was possible for general security users, and only 30% of high security entitlements were available.

The Lachlan Valley Water Sharing Plan commenced on 1 July 2004. The Plan features the introduction of an annual limit on diversions equal to 75% of entitlements, removal of all supplementary access (previously known as off-allocation), continuous accounting, an additional water quality allowance of 20 GL, extended periods of environmental releases, and a minimum inflow threshold before releases commence.

In September 2003, severe water shortage provisions were introduced that suspended the rules relating to the environmental “translucent” releases (a proportion of inflows to Wyangala dam), reduced end-of-system flow requirements, and allowed differential sharing arrangements between high security water users based on water requirements. Whilst the Lachlan Water Sharing Plan commenced on 1 July 2004, inflows to Wyangala over the previous three years were the lowest on record, and the severe water shortage provisions have remained in place throughout 2004/05.

During preparation of 2004/05 Cap modelling, a number of revisions to climate data in previous years were undertaken. These changes were primarily in relation to in-flow data used in last year’s audit from the rainfall – runoff models. These adjustments to the model have resulted in a cumulative reduction in the modelled Cap target for this valley.

To assess whether the 1999/00 development levels configured in the Lachlan IQQM continue to represent “current conditions”, a review of the 1999/00 scenario against observed behaviour over the period 1997/98 - 2004/05 was undertaken during the year. The observed storage volumes and diversions were compared to those simulated by the 1999/00 “current conditions” model. The model generally over-estimates drawdown in the storage volumes through the 1997/98 - 2004/05 period. The over-estimation of draw downs is particularly evident over the last two years. However, simulated annual diversions generally match well with those observed, with no apparent bias.

Investigation of the system behaviour undertaken in 2003/04 indicated that, with changed operation of the system in response to the drought period over the last two years in particular, the severe water shortage and associated response measures were having a significant impact on model projections. After another year of severe drought, this assessment appears to remain valid.

Consideration is currently being given to whether inclusion of the changed river operation practices during the current drought period within Cap modelling as well as current conditions modelling is practicable, and would represent a more appropriate estimate of both Cap and current conditions.

**Cap compliance**

Diversions were below the annual Cap target by 24 GL, and the valley is cumulatively 6 GL in credit since 1997/98. However, actual storage levels in mid 2005 were 85 GL higher than the simulated Cap levels, suggesting that cap targets may be lower than diversions in the near future.

The Lachlan IQQM Cap scenario modelling has been independently audited and approved for use under Schedule F of the Murray-Darling Basin Agreement by the Murray-Darling Basin Commission.

Long-term simulations of water usage in this valley continue to indicate that average annual current conditions diversions are 4% below Cap diversions.
Macquarie Valley

Resource availability

With very little carryover from the previous water-year, the 9% of announced allocation in 2004/05 represents a new record low water availability (from the previous year).

The Macquarie Water Sharing Plan commenced on 1 July 2004, featuring additional environmental releases from Windamere Dam in the Cudgegong Valley, and a long-term limit on diversions that is currently estimated to be 10% below Cap.

The simulation of inflows to Burrendong Dam within the Macquarie IQQM has been re-calibrated during 2004/05 following revisions to observed flow data and also to take into account the low inflows and high transmission losses observed during the current drought period.

Cap compliance

The Macquarie valley has a cumulative Cap credit from 1997/98 to 2004/05 of 195 GL, the majority of which has occurred during 2004/05. There is also estimated to be an additional 80 GL of water currently in storage in the Cap model simulation, which may lead to further Cap targets being above diversions in the near future. For Cap purposes, results are considered preliminary at present until the model is independently audited under the provisions of Schedule F of the Murray-Darling Basin Agreement. Components of the Macquarie IQQM have been re-calibrated over the last 18 months to incorporate revised flow data and transmission loss behaviour during the recent very dry conditions, conditions that have not previously been observed. This has resulted in changes to the previously reported modelled Cap targets, the long-term average Cap diversion, and the cumulative Cap credit. The independent auditor appointed by the MDBC, has been advised to delay reviewing of the Macquarie IQQM Cap scenario modelling until NSW can provide details of recent re-calibration work. This additional information is expected to be made available in the next few months.

The preliminary Schedule F accounting for the 1997/98 – 2004/05 water-years indicates that the Macquarie Valley is cumulatively 195 GL below Cap. Prior to the recent model re-calibration, long-term simulations indicate that average annual current conditions diversions are 10% below Cap levels.

Namoi/Peel Valley

Resource availability

The water-year commenced in the Namoi valley with moderate availability of water in individual accounts, equivalent to 46% of the valley general security entitlement. A further 14% of additional allocation was made available during the year, mostly in the summer period. The Manilla system received an annual allocation of 100%. The Peel valley again received low allocations for general security users early in the water-year, although allocations rose to 65% by late summer. As was the case last year, water availability was boosted by supplementary (previously known as off-allocation) access during the year.

The Namoi Water Sharing Plan commenced on 1 July 2004, featuring some changes to sharing of individual supplementary flow events between irrigators and the environment, an end-of-valley flow target, a cap on annual supplementary diversions based on history of use and a long-term limit on diversions that is currently estimated to be 2% below Cap.

Cap compliance

Diversions for the combined valleys have been below the annual Cap targets since 1997/98 by a cumulative total of 34 GL, and the observed storage levels are very close to those simulated in the Cap model. The Namoi IQQM Cap scenario modelling has been independently audited and approved for use under Schedule F of the Murray-Darling Basin Agreement by the Murray-Darling Basin Commission. During preparation of 2004/05 Cap modelling, a number of revisions to climate data in previous years were identified for the accredited Namoi IQQM. The changes have resulted in some changes to the annual Cap targets for some of the previous water-years. A Peel IQQM Cap scenario has also been prepared, and is available for preliminary results prior to independent audit.

A review of the 1999/00 modelled scenario against observed behaviour over the period 1997/98 – 2004/05 was undertaken in 2005. The review assesses whether the 1999/00 development levels configured in the Namoi IQQM continue to represent “current conditions”. From the analysis it was concluded that the model simulates storage levels reasonably over the 1997/98 – 2004/05 period without obvious bias. While modelled annual diversions match well with those observed, the model overestimated diversions during the
recent drought period. A cumulative difference between observed and simulated diversions of approximately 50 GL occurs over the 8 year period (4% of total diversions) and a largest annual error of 53 GL (35% of the observed annual diversion).

The overestimation of simulated diversions in 2003/04 and 2004/05 is thought to be related, in part at least, to an overestimation of inflows to Keepit Dam. An analysis of simulated inflows to Keepit Dam was performed over a longer period (1989/90-2004/05) and did not indicate that there was any general bias toward overestimation of inflows during dry periods.

It is also thought that higher transmission losses during drought periods may also be contributing to the overestimate of simulated flows in 2003/04 and 2004/05. There is some ongoing review of simulated flows in the lower Namoi system that may impact on the simulation of losses.

From this review, it is considered by NSW that the 1999/00 conditions scenario remains representative of current behaviour and development in the Namoi valley.

Diversions in the Namoi/Peel combined valley were 60 GL below the Cap target for 2004/05, and are cumulatively 34 GL below Cap since 1997/98. Revised long-term simulations indicate that average annual current conditions diversions are 2% below Cap diversions for the Namoi regulated system.

**Gwydir Valley**

**Resource availability**

The water-year commenced in the Gwydir valley with modest availability of water in individual accounts, equivalent 25% of allocation, with only a further 3% becoming available during the summer period. As was the case last year, water availability was also boosted by supplementary (previously known as off-allocation) access during the year.

The Gwydir Water Sharing Plan commenced on 1 July 2004 and included a long-term limit on diversions that was estimated to be 5% below Cap prior to recent model re-calibration work.

**Cap compliance**

Following the availability of improved datasets relating to on-farm storages, additional surveys and user workshops have been carried out to provide a more detailed understanding of how such storages are used. These workshops focused on improved understanding of the relative importance of rainfall-runoff harvesting, floodplain harvesting, and irrigation reserve to irrigators.

Over the past 18 months, the new data relating to on-farm storages has been used to re-calibrate the Gwydir IQQM. The re-calibrated model is now available for preliminary results and is about to be submitted for independent review under the established MDBC process. The results indicate that diversions are cumulatively 221 GL below Cap since 1997/98. There is very little difference between observed storage levels and those simulated under Cap conditions at 30 June 2005.

New current conditions simulation results have not been finalised and no review of current conditions modelling is available at present. Prior to the recent re-calibration, a comparison of longer term average diversions from the Cap model and a model configured to represent ‘current’ conditions (1999/00 development levels and Water Sharing Plan rules) indicated that diversions are expected to be 5% below Cap over the longer term. However, this is likely to change following the re-calibration of the current conditions model although expected to remain below Cap over the longer term.

Modelling for 2004/05 indicates that diversions were 103 GL below Cap, and cumulatively 221 GL below Cap for the period 1997/98 to 2004/05.

**Border Rivers**

**Resource availability**

The water-year commenced in the NSW Border Rivers with moderate availability of water in individual accounts, equivalent to 49% of the valley general security entitlement, and an additional 17% became available through the year, generally during the summer period. A moderate amount of supplementary access was also available.

Whilst work with community representatives to develop a Water Sharing Plan has occurred during 2004/05, completion of that Plan is currently awaiting the formal *Inter-Governmental Agreement* (IGA) on water sharing between NSW and Queensland.

Queensland and NSW are formalizing an agreement that would allow equal long-term average diversion limits, which are currently estimated to be 197 GL/year to each State, not including floodplain harvesting diversions. Subject to agreement on floodplain harvesting activities, this is estimated to provide an
end-of-system flow at Mungindi of around 61% of the natural flow. This is the volume of flow expected at Mungindi under the November 1999 conditions for NSW, and the 2000 moratorium levels of development for Queensland.

The draft IGA has been endorsed by the Border Catchments Standing Committee and is to be presented to the respective State Ministers for Natural Resources and Environment for approval in principle to incorporate the water sharing arrangements into state water planning instruments.

Once that approval has been received, NSW intends to have a draft Water Sharing Plan, incorporating NSW and IGA arrangements, at the community consultation stage by early 2006. The normal process is for the NSW River Management Committee to consider any community submissions to the Plan and recommend to the Minister any amendments that should be made to the draft Plan. The Minister for Natural Resources then seeks the concurrence of the Minister for the Environment to ‘make’ the Plan. It is still anticipated that the Water Sharing Plan for the Regulated Border Rivers could be gazetted by 1 July 2006. Its full implementation, however, will be subject to the conversion of all licences from the Water Act 1912 to the Water Management Act 2000.

When the Plan is gazetted, it will formally describe the Cap and Plan Limit for the regulated Border Rivers. (In this valley, the Cap and Plan Limit will be the same.) The Cap for NSW will be 50% of the long term average annual on-allocation plus off-allocation for the two states (currently estimated to be 197 GL) plus a yet-to-be-determined volume for floodplain harvesting at November 1999 levels of development.

**Cap compliance**

The definition of Cap within the NSW Border Rivers (which includes the enlarged Pindari Dam) is still to be formally agreed. Upon formal agreement, a submission to the IAG will be prepared outlining the basis for the NSW Cap, and NSW performance against this Cap from 1997/98.

**Intersecting Streams**

**Cap compliance**

The Warrego, Paroo, Culgoa, Narran and Moonie Rivers flow across the NSW-QLD border, and the reaches of these rivers that are within NSW are designated as the “Intersecting Streams” valley under Schedule F to the Murray-Darling Basin Agreement, for Cap accounting purposes. Presently, no Cap has been formally established for these rivers, and there is no monitoring of usage. However, “Macro” Water Sharing Plans for unregulated areas within NSW are currently being established, which will:

- facilitate conversions of licences to the new Water Management Act 2000;
- provide a frame-work for establishing Caps; and
- allow for more detailed water access rules for sub-catchments where there is significant competition for resources – either between consumptive users, or users and the environment.

These Macro Plans will apply to the intersecting streams, as well as the unregulated areas of other valleys.

No Schedule F accounting is currently available for the intersecting streams.

**Barwon-Upper Darling**

**Resource availability**

Following the 1999/00 review of Cap implementation, the valley was formally declared in breach of the Cap. At the August 2000 Ministerial Council meeting, agreement was obtained to report the Barwon-Upper Darling and Lower Darling valleys as one, although the two would be managed separately by NSW.

Again in 2003/04 the combined Barwon/Upper Darling and Lower Darling valleys were declared to be in breach of the Cap. In an attempt to try to resolve this continuing Cap breach problem, NSW is implementing a new Cap strategy, for the Barwon-Upper Darling Valley. This new strategy is similar to those applied in other unregulated streams in NSW. The strategy is to restructure the water entitlements to ensure that future diversions do not exceed the long-term Cap.
The proposed scheme involves annually crediting all licences (eventually including floodplain “licences”) with a total volume equivalent to the average Cap (currently estimated to be 173 GL). This would be introduced together with continuous accounting and a liberal trading regime. Under this arrangement, the long-term total average extractions (account debits) cannot exceed the long-term Cap, as account debits cannot exceed account credits. The continuous accounts will have no upper limit, and would allow users to gain credit for below-Cap use in years of scarce supply for subsequent use in other years, when resources are available.

NSW also intends to develop a Water Sharing Plan for the Barwon-Upper Darling valley, which will incorporate this proposed Cap strategy to protect volumetric growth, as well as event-based access rules that will protect important flows for the environment and downstream users.

The Barwon-Upper Darling IQQM Cap scenario has been calibrated, and is available for long-term and annual Cap simulations to assess Cap compliance. For Cap purposes, results are considered preliminary at present until the model is independently audited under the provisions of Schedule F of the Murray-Darling Basin Agreement.

**Cap compliance**

The preliminary Schedule F accounting for the 1997/98 – 2004/05 period indicates that the Barwon-Upper Darling Valley is cumulatively 314 GL above Cap, and well above the 35 GL trigger for Special Auditing based on 20% the estimated long-term average Cap diversion.

**Lower Darling**

**Resource availability**

The Lower Darling was again affected by the ongoing drought in 2004/05, although less severely than the previous (2003/04) water-year. General security allocation was initially limited to 30%, with high security licences able to receive full allocations this year. As inflows arrived into Menindee over the summer period, general security allocations were increased to 100%.

On 1 July 2004 a Water Sharing Plan for the Murray and Lower Darling valleys commenced, which included limits on supplementary water access (previously known as off-allocation access).

**Cap compliance**

The Cap for the regulated sections of the Lower Darling is currently audited on a provisional basis using the Murray Simulation Model (MSM). The MSM is currently being re-calibrated to better represent 1993/94 and current conditions. It is expected that the re-calibration process will be completed by June 2006. Preliminary assessments indicate that long-term current diversions are very close to those that which would have occurred under Cap conditions.

The preliminary Schedule F accounting for the 1997/98 –2004/05 period indicates that the Lower Darling Valley is cumulatively 160 GL below Cap.

**Combined Barwon-Upper Darling and Lower Darling Cap Accounting**

**Cap compliance**

The preliminary Schedule F accounting for the 1997/98 – 2004/05 period indicates that diversions in the combined Barwon-Upper Darling and Lower Darling Valleys are cumulatively 154 GL above Cap, and above the combined trigger for Special Auditing of 62 GL.

IAG undertook a Special Audit earlier in 2005 and confirmed that the combined Barwon-Upper Darling and Lower Darling valleys were in breach of the Cap. The current Cap breach is a further manifestation of the earlier reported breach and has been acknowledged by the NSW authorities. The NSW authorities advise that they have no further information to that already provided to the IAG that would be relevant to a Special Audit, particularly as the breach is agreed by NSW. Remedial action has been foreshadowed by NSW and the IAG has given advice on this matter. However, NSW has failed to implement this remedial action and is currently engaged in further consultations with the community and users on this matter with a view to resolving any outstanding matters which could prevent the introduction of total volume Cap on individual licences.
4.3.3 Monitoring and Reporting

NSW is gradually progressing with the finalisation of its IQQM models for each of the valleys in the system. With the completion of these models, together with some re-calibration to take into account past records of the drought that has impacted the Basin over the last four years, the Ministerial Council and the Commission can have greater confidence in the Schedule F reporting results.

The use of IQQM models and NSW’s own long-term modeling as a measure of the likely exceedance of the Cap by an individual valley under current management rules, are tasks which are highly data intensive. These models have proven to be particularly sensitive not only to past period water availability and off-take statistics but also to other key drivers of valley behaviour including on-farm storage levels, crop areas, inflows from unregulated streams, climatic conditions and rainfall patterns.

The IAG has highlighted the implications on the completion of the IQQM models of resource constraints in DNR in previous reports. The completion of these models continues to place a strain on resources made available for this purpose in NSW.

In its 2002/03 Report, the IAG identified the issue of monitoring diversions under the volumetric licences on unregulated streams. Diversions from unregulated streams within NSW are generally not metered, and the majority have only recently been converted from area-based to volumetric licences. However, there are a small number of larger unregulated users below the regulated parts of the Macquarie, Gwydir and Border Rivers systems, close to the Barwon-Darling system, that have metered diversions available. These users received annual volumetric diversion limits prior to the general volumetric conversion process that occurred in 2000, and were metered similarly to Barwon-Darling users. The metered diversions from these users have not been included in diversions reported for either the regulated systems or the Barwon-Darling, and have therefore been identified in Table 5.

Unmetered use estimates are taken from the volumetric conversion process (2000), based on crop areas surveyed and assessed irrigation requirements. Metered use totals are from time-event meters as used in the Barwon-Darling system.

<table>
<thead>
<tr>
<th>Valley</th>
<th>Un-metered Use</th>
<th>Metered Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>93/4 - 98/9</td>
<td></td>
</tr>
<tr>
<td>Murray</td>
<td>28</td>
<td>0</td>
</tr>
<tr>
<td>Lower Darling</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Barwon-Darling</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Murrumbidgee</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Lachlan</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>Macquarie</td>
<td>35</td>
<td>3</td>
</tr>
<tr>
<td>Namoi</td>
<td>78</td>
<td>0</td>
</tr>
<tr>
<td>Peel</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gwydir</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>NSW Border Rivers</td>
<td>14</td>
<td>0</td>
</tr>
<tr>
<td>Intersecting</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 5: NSW Unregulated Use Estimates (GL)
NSW has advised that it intends to cap unmetered users according to the average 1993/94 – 1998/99 diversion estimate arising from the volumetric conversion process. Presently, no Cap has been formally established for these rivers, and there is no monitoring of usage. However, “Macro” Water Sharing Plans for unregulated areas within NSW are currently being established.

4.3.4 Administration of the Cap

NSW has adopted a series of water management and allocation rules (Water Sharing Plans) for the purpose of managing the level of diversions within the Cap. These rules, which include the Environmental Flow Rules that NSW had previously introduced, are designed to ensure that diversions from the various valleys comply with the Cap in the longer-term.

In 2004/05 there have been few changes to these rules reflecting the fact that the Water Sharing Plans came into operation from 1 July 2004 and low water availability has limited the opportunity or need to make such rule changes.

The Water Sharing Plans provide the legislative basis for the implementation of management rules, and define a level of consumptive water access for the next 10 years.

4.3.5 IAG Assessment

The IAG acknowledges the timely receipt of an informative report from NSW together with data in line with the Schedule F format.

Re-calibration of a number of the IQQM models to take into account the lessons learnt from the last four years of severe drought conditions has been substantially completed although some further work is still required. The IAG has commented on previous occasions on the need to ensure confidence in the accuracy and operation of the models. The completion of the re-calibration process will contribute to greater confidence in the modeling and the Schedule F process.

The IAG confirms that the Barwon-Darling/Lower Darling is in breach of the trigger for a Special Audit. Other valleys appear to be within the Cap, although a final position on the Border Rivers (including Pindari) must await final agreement on the Cap for this system.

The IAG is pleased to see progress in the negotiations between NSW and Queensland on the Cap for the Border Rivers. The finalisation of management flow rules and the formal specification of a volumetric Cap for both sides of the border are expected in the 2005/06 year.

The IAG notes that discussions between NSW and the ACT Government on the question of a possible combined ACT/NSW Cap for the area surrounding the ACT where it is likely ACT catchment resources will be called upon to provide domestic water has not advanced significantly. Also, should the ACT decide that it wishes to extract water from the Murrumbidgee to provide greater security for its own needs, there will need to be an agreement on trading rules that will apply to water which under current arrangements passes through the ACT but is not used by the ACT.

4.3.6 Conclusions/Recommendations

- Diversions in 2004/05 were 3670 GL compared to 4120 GL in 2003/04;
- IQQM Cap models have now been prepared for all river valleys, with the exception of the Murray and Lower Darling. Some further re-calibration is required for the Macquarie IQQM model before it is submitted for final approval;
- The Lachlan and Namoi IQQM models have been approved by the Murray-Darling Basin Commission under the Schedule F procedures;
The preliminary Schedule F accounting for the 1997/98 – 2004/05 period indicates that diversions in the combined Barwon-Darling/Lower Darling Valleys are cumulatively 154 GL above Cap, and above the combined trigger for Special Auditing of 62 GL. Therefore a Special Audit is required for this valley although the IAG notes that the combined Barwon-Darling/Lower Darling Valleys has already been declared to be in breach of the Cap and the NSW authorities, in acknowledging the breach, advise that they have no additional information beyond that already provided to the IAG that would be relevant to a further Special Audit at this time.

The IAG has been unable to assess the Cap compliance of the NSW Border Rivers because the Cap has not been defined in that valley. The IAG has previously expressed concern that the Border Rivers will be found to be in breach once a Cap is defined. Finalisation of a Cap together with agreed Water Management Plans are expected in 2005/06;

Diversions have been below Cap trigger levels for other valleys in NSW;

Upon completion of the integrated 1993/94 and current conditions model for the Border Rivers, NSW should submit the proposed Cap for that system for assessment by the IAG of the appropriate allowance for the enlarged Pindari Dam; and

The IAG notes the current status of negotiations between NSW and the ACT on trading rules and other related matters.
4.4 Queensland

4.4.1 The Cap

In line with the Council’s earlier decisions, the Queensland Cap is to be established in accordance with the provisions of Schedule F following the completion of the Water Resource planning processes.

Queensland has now finalised Water Resource Plans in all its Murray-Darling Basin valleys, and consequently has provided a framework with a strong legislative basis, that caps diversions from watercourses, lakes, springs and overland flows. Water Resource Plans for the Border Rivers, Moonie, Nebine, Warrego and Paroo valleys were gazetted as subordinate legislation on 5 December 2003 and the final plan for the Condamine-Balonne was gazetted on 12 August 2004.

Under the Water Act 2000, draft Resource Operations Plans are currently being developed to implement the provisions of the Water Resource Plans. Diversion Caps for Queensland valleys will be developed and implemented as part of the monitoring, auditing and reporting provisions of the Resource Operations Plans. Resource Operations Plans for the valleys are expected to be released progressively over the next two years.

A moratorium on new works has existed in all Queensland Murray-Darling valleys since 20 September 2000. The water resource plans continue the moratorium on the development of infrastructure related to water harvesting licences until the resource operations plans are finalised. The Water Resource Plans also continued the moratorium on works that would increase the take of overland flow. Works that allow taking of overland flow water are now managed as assessable developments under the Integrated Planning Act and any growth in take by those works is prohibited under the Water Resource Plan. When implemented, the management rules under the Resource Operations Plans will ensure that there will be no increase in the average volume of water available to be taken.

4.4.2 2004/05 Diversions

The water-year in Queensland rivers runs from 1 October to 30 September. The diversion profile over the last 12 years for the total Queensland section of the Murray-Darling Basin is summarised in Table 6.

<table>
<thead>
<tr>
<th>Year</th>
<th>Diversion (GL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993/94</td>
<td>336</td>
</tr>
<tr>
<td>1994/95</td>
<td>176</td>
</tr>
<tr>
<td>1995/96</td>
<td>528</td>
</tr>
<tr>
<td>1996/97</td>
<td>467</td>
</tr>
<tr>
<td>1997/98</td>
<td>741</td>
</tr>
<tr>
<td>1998/99</td>
<td>609</td>
</tr>
<tr>
<td>1999/00</td>
<td>541</td>
</tr>
<tr>
<td>2000/01</td>
<td>688</td>
</tr>
<tr>
<td>2001/02</td>
<td>341</td>
</tr>
<tr>
<td>2002/03</td>
<td>214</td>
</tr>
<tr>
<td>2003/04</td>
<td>815</td>
</tr>
<tr>
<td>2004/05</td>
<td>455</td>
</tr>
</tbody>
</table>

The categories of 2004/05 diversions are summarised in Table 7.

<table>
<thead>
<tr>
<th>Diversion Category</th>
<th>Diversion (GL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation Area Channels</td>
<td>65</td>
</tr>
<tr>
<td>Private Diversions</td>
<td>106</td>
</tr>
<tr>
<td>Water Harvesting</td>
<td>251</td>
</tr>
<tr>
<td>Unregulated Stream Licences</td>
<td>22</td>
</tr>
<tr>
<td>Urban, Industrial &amp; Stock</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total (GL)</strong></td>
<td><strong>455</strong></td>
</tr>
</tbody>
</table>
The 2004/05 year has generally seen below average rainfall across the Queensland section of the Murray-Darling Basin with slightly higher rainfalls in the central area around St George and to the south. The only periods of above average rainfall were in November 2004, December 2004 and June 2005, with falls of up to 200 mm in the mid to eastern sections of the Basin. The June 2005 event was uncharacteristic for the winter months with significant rainfall resulting from a depression coming in from the west. This rainfall was the only significant falls in the western section of the Basin during the year with up to 50 mm of rainfall recorded for the month.

Rainfall in January 2004 resulted in most major in-stream storages commencing the 2004/05 water-year at about 50% of storage capacity. The exceptions were Glenlyon Dam on the Border Rivers which was approximately 20% of capacity and Leslie Dam in the Upper Condamine which remains at critical levels of supply for the third consecutive year. The January 2004 rain also provided limited water harvesting opportunity and off-stream storages (ring tanks) were generally around 40% capacity at the start of the water-year. The exception was the Lower Balonne where the level of storage development is high and with the limited water harvesting opportunity, storages were only around 20% of capacity at the start of 2004/05.

Streamflows during the year have been extremely variable. Flows in the Upper Condamine were very low with only 300 ML (0.3 GL) passing Cecil Weir during the year and no inflows into Chinchilla Weir until June 2005. In that month Chinchilla Weir rose from 24% to just over 70% of capacity but did not spill. There were however some more significant flows immediately downstream of the weir with Charleys Creek contributing nearly 17 GL to the Condamine River through the year. This means that although no flow was recorded as passing Chinchilla, the River has flowed both upstream and downstream of this point.

Chinchilla Weir commenced 2004/05 at just under 50% capacity and following replenishment in June 2005, finished 2004/05 at a similar level. Water harvesting diversions totalled 12 GL, 5 GL taken upstream of Beardmore, with over 20 GL passed downstream for stock, domestic and environmental needs.

Flows in the Moonie River were approximately average with 146 GL recorded at Fenton just upstream of the NSW border. Long-term average annual flow through Fenton is 165 GL;

Flows in the Warrego River catchment were low with less than 50% of the long-term average of flow (375 GL) passing Cunnamulla; and

Flows in the Moonie River were approximately average with 146 GL recorded at Fenton just upstream of the NSW border. Long-term average annual flow through Fenton is 165 GL;

Flows in the Warrego River catchment were low with less than 50% of the long-term average of flow (375 GL) passing Cunnamulla; and

Paroo River flows were extremely low with 77 GL recorded as flowing past Caiwarro where the average annual flow is 538 GL.

Flows and related water harvesting are described in detail for the various valleys below.

**Condamine-Balonne**

**Upper Condamine (Darling Downs)**

Flows in the Upper Condamine were very low with only 300 ML (0.3 GL) passing Cecil Weir during the year and no inflows into Chinchilla Weir until June 2005. In that month Chinchilla Weir rose from 24% to just over 70% of capacity but did not spill. There were however some more significant flows immediately downstream of the weir with Charleys Creek contributing nearly 17 GL to the Condamine River through the year. This means that although no flow was recorded as passing Chinchilla, the River has flowed both upstream and downstream of this point.

Chinchilla Weir commenced 2004/05 at just under 50% capacity and following replenishment in June 2005, finished 2004/05 at a similar level. Water harvesting diversions upstream of Chinchilla are estimated at 12 GL for the water-year.

There was no flow recorded passing through Chinchilla for this year. Average annual flow is estimated to be 587 GL.

**Balonne**

There were two minor flow events in the Balonne during the year. Good rainfall in the Maranoa and Bungil areas in December 2004 resulted in Beardmore Dam filling with limited water harvesting allowed downstream. Some 46 GL passed St George with the flow peaking at nearly 9000 ML/day. Water harvesting extractions totalled 24 GL, 5 GL taken upstream of Beardmore, with over 20 GL passed downstream for stock, domestic and environmental needs.
Storm rainfall in the Bungil to Chinchilla areas in June resulted in Beardmore Dam filling again and a further 27 GL of water harvesting extractions, 10 GL of which was taken upstream of Beardmore. The total volume of flow through St George was 59 GL (with a peak of 7500 ML/day) with some 31 GL protected for stock, domestic and environmental requirements.

Total diversion for water harvesting for the year was 51 GL, 15 GL between Chinchilla and Beardmore storage, and 36 GL from downstream of Beardmore Dam.

Total flow through St George was 106 GL for the year. Long-term average annual flow at St George is 1152 GL per year.

**Border Rivers**

Primary flow events in the Macintyre River were limited to the December 2004 – January 2005 period, peaking at 21800 ML/day at Goondiwindi. A total of 14.5 days of water harvesting access was provided over the duration of these events.

A further flow in the Weir River in July 2005 provided an additional 3.5 days of access for water harvesting in the lower section of the Border Rivers.

Total water harvesting within the Queensland section of the Border Rivers catchment was 157 GL. Approximately 50 GL of this was diverted from higher-than-average flows in the Weir River.

Total volume of flow through Goondiwindi for the year was 167 GL with the Weir River contributing a further 123 GL to the system. Average annual volume of flow through Goondiwindi is 852 GL and average annual volume through Talwood is 160 GL.

**Moonie**

Moonie River flows benefited from a localised rainfall event during the early summer period. Flow in December peaked at 19.2 GL/day with a total of nearly 111 GL recorded for the month at the Fenton gauge just upstream of the Queensland – New South Wales border. Other smaller flows, particularly in July 2005, gave a net total volume of 146 GL past the Fenton gauge during the year. The average annual volume of flow at this gauging station is 166 GL.

The two separate flows provided water harvesters with the opportunity to almost fill storages during the growing season and to ‘top up’ at the end of the season. Total estimated water harvesting extraction for the 2004/05 water-year was 23 GL.

**Warrego**

The familiar summer flow pattern for the Warrego carried through into this year with flows up to 14 GL/day at the Cunnamulla Weir gauging station. The higher than average rainfall in June and July 2005 saw a further two smaller events peaking at 9.5 GL/day in the usually dry winter period.

Water harvesting diversion was estimated at 8 GL for the year.

Total flow recorded through the Cunnamulla gauge for the year was 177 GL compared to the long-term average of 375 GL.

**Paroo**

Flows in the Paroo substantially mirrored the flow pattern in the Warrego River. The summer flows peaked at just under 2 GL/day with the winter flows peaking at just over 6.5 GL/day at Caiwarro, approximately 60 km upstream of the Queensland – New South Wales border.

There is very limited water harvesting, irrigation and overland flow development in the Paroo catchment.

Total volume of flow through Caiwarro for the year was 76 GL compared to an average annual flow of 538 GL. This is in contrast to the higher than average flows recorded for the 2003/04 year.

**Water Harvesting**

Volumes water harvested from the more developed catchments in the October 2004 to September 2005 period are summarised in Table 8.

Adding the volumes harvested in the less developed catchments gives a total of 251 GL water harvesting diversion for the year.

The water resource plans for the Queensland Murray-Darling catchments continue the moratorium on the development of infrastructure related to water harvesting licences until the resource operations plans are finalised. The moratorium on works that would increase the take of overland flow water ceased on 1 February 2005 in the Condamine Balonne, and 1 July 2004 in all other M-DB catchments. Works that allow taking of overland flow water are now managed as assessable developments under the Integrated Planning Act and any growth in take by those works will not be allowed under the water resource plans or the subsequent Resource Operations Plans.
Storage capacities provided in October 2002 continue to be the most accurate figures available for off-stream storage in the Queensland section of the Basin. Information on irrigation infrastructure is improving as the Water Resource Plans are implemented. Water Resource Plans require owners of works to take overland flow for irrigation in the Border, Moonie and Warrego, Bulloo and Nebine catchments to notify details of the works to the Department by 30 June 2005. The Water Resource Plan for the Condamine Balonne catchment requires notification by 1 February 2006. A lot of these works are used in conjunction with licensed diversions from watercourses so the Department is receiving additional information related to licensed diversion through the notification process. This information is currently being collated and will provide valuable assistance in future assessments of storage capacity in the Basin.

**Table 8: Water-harvesting Volumes (GL)**

<table>
<thead>
<tr>
<th>Location</th>
<th>Average Annual Flow Volume (GL)</th>
<th>2004/05 Recorded Flow Volume (GL)</th>
<th>Approximate Volume Harvested (GL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condamine River @ Chinchilla</td>
<td>587</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Condamine River U/S of Chinchilla</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balonne River @ St George</td>
<td>1152</td>
<td>106</td>
<td>51</td>
</tr>
<tr>
<td>Condamine/Balonne from Chinchilla to the Qld/NSW border</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macintyre River @ Goondiwindi</td>
<td>852</td>
<td>167</td>
<td></td>
</tr>
<tr>
<td>Weir River @ Talwood</td>
<td>160</td>
<td>123</td>
<td></td>
</tr>
<tr>
<td>Border Rivers Catchment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (Condamine Balonne &amp; Border only)</strong></td>
<td></td>
<td></td>
<td>220</td>
</tr>
</tbody>
</table>

**Table 9** provides an indication of growth in stream based ring tank storage capacity following the moratorium which was implemented from September 2000.

**Irrigation**

Most major in-stream storages started the year at around 50% capacity and with announced allocations around 30% to 40%. The exceptions were Leslie Dam and Glenlyon Dam. Leslie Dam, which supplies the Upper Condamine Water Supply Scheme, continued to be at a critical level, storing only 10% of capacity and with a zero announced allocation for irrigation. Glenlyon Dam, which supplies the Dumaresq Water Management Area, started the year at 20% capacity with around 20% of total nominal allocation available for Queensland irrigators. The Dumaresq Water Management Area (Glenlyon Dam) operates under continuous accounting arrangements so therefore there is no announced allocation.

**Table 9: Growth in Stream Based Ring Tank Capacity (GL)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Condamine/Balonne</td>
<td>822</td>
<td>1273</td>
<td>1330</td>
<td>1333</td>
</tr>
<tr>
<td>Border</td>
<td>188</td>
<td>267</td>
<td>329</td>
<td>332</td>
</tr>
<tr>
<td>Moonie</td>
<td>10</td>
<td>18</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Warrego/Paroo</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Overland Flow</td>
<td>120</td>
<td>160</td>
<td>180</td>
<td>180</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1146</td>
<td>1726</td>
<td>1872</td>
<td>1878</td>
</tr>
</tbody>
</table>
There was limited inflow into Glenlyon Dam during the year with the December 2004 rainfall increasing storage volume by only 10%. The same rainfall event saw Coolmunda Dam on the Macintyre Brook rise to around 75% capacity. The announced allocation for the Macintyre Brook was increased to 100% following this inflow.

Beardmore Dam filled and overflowed twice during the year, firstly from the December 2004 rainfalls and secondly from the June 2005 rainfall event. The good water availability for the year is reflected in the total diversions of 127 GL recorded for the St George Water Supply Scheme. Although there were significant flows in the Balonne from these events, there was limited runoff in the upper parts of the Condamine catchment. Chinchilla Weir rose to 75% capacity in the June 2005 event with the announced allocation increased to 65% for the Chinchilla Water Supply Scheme following the event. Total extractions for the scheme were less than 2 GL.

Leslie Dam received minimal inflows during the year and continues to store around 10% of capacity. The limited allocation water taken in the Upper Condamine Water Supply Scheme, 3 GL, was all taken from natural flows in the Condamine River.

Approximately 171 GL of a total nominal allocation of 212 GL was delivered through the major irrigation schemes for the year. A further 8 GL was transferred from New South Wales for use on the Queensland side of the Border Rivers.

Unregulated Irrigation

Unregulated area-based licence usage is small in comparison with water diverted by water harvesting or captured in scheme storages. Approximately 30% of the total unregulated area-based irrigation use in the Queensland section of the Basin relies on sewage effluent discharge from Toowoomba city into the Gowrie Oakey Creek system.

The remainder of the diversions largely depend on the availability of water from naturally flowing streams and naturally occurring waterholes, with most usage from the perennially flowing streams on the western slopes of the Great Dividing Range. The prolonged drought conditions continue to seriously affect flows in these streams, particularly in the upper tributaries of the Condamine River where there has been a total ban on irrigation through most of the year.

Irrigators in the Granite Belt have been more fortunate with no need to impose restrictions on diversions this year.

Estimated usage for the 2004/05 year is approximately 22 GL.

Urban, Industrial & Stock

Urban, industrial, and stock usage remains fairly static in the catchment as it is generally allocated as high security water and is normally able to be reliably supplied. Total usage for the 2004/05 year is estimated at 11 GL, most of which is accounted for as town water supply.

4.4.3 Progress with the Planning Process

Queensland has finalised Water Resource Plans in all its Murray-Darling Basin valleys in accordance with Queensland’s Water Act 2000. Water Resource Plans for the Border Rivers, Moonie, Nebine, Warrego and Paroo valleys were gazetted as subordinate legislation on 5 December 2003 and the final plan for the Condamine-Balonne was gazetted on 12 August 2004. The plans provide a consistent approach to management across the catchments, while taking the specific issues of each catchment into account.

The Water Resource Plans are a package of strategic level rules detailing:

- how water will be shared between consumptive users, the environment and downstream users;
- the conversion of existing entitlements into volumetric tradable water allocations;
- the identification of unallocated water to address critical future water requirements; and
- how to manage the take of overland flow water.

In addition, the plans provide for monitoring and reporting on achieving the plan outcomes and for a water trading system to be established.

Resource Operations Plans are currently being developed to implement the provisions of the Water Resource Plans. The Resource Operations Plans include rules for: converting existing water entitlements to volumetrically specified water allocations; trading water allocations; sharing of flow events; operating water infrastructure; releasing unallocated water where identified by Water Resource Plans; environmental management; and monitoring and assessment programs.
As part of the ongoing planning process, community, water users and stakeholder groups in each catchment have been engaged through consultative groups and individually to work through various issues. These discussions, including supporting technical work, are at various stages in different plan areas.

It is expected that the Resource Operations Plans for all Queensland Murray-Darling valleys will be released progressively over the next two years.

**Border Rivers, Moonie and Warrego, Paroo, Bulloo and Nebine**

In the Border Rivers Catchment, an Intergovernmental Agreement (IGA) is being developed jointly with New South Wales and in consultation with stakeholders. It is intended that implementation of the NSW Water Sharing Plan and the Queensland Resource Operations Plan will be consistent with the development and agreement by all parties on the IGA. The development of the IGA has been broken down to discrete elements, including: Sustainable Management of Water; Water Sharing and Access; Water Accounting; Interstate Trading; Institutional Arrangements; Water Pricing; Measurement and Monitoring; Auditing and Reporting; and Schedules.

A draft of the first three elements has been completed and it is anticipated that, subject to endorsement by the Border Catchments Standing Committee, the three elements will form an interim IGA that will be signed off by the Ministers for the Environment and Natural Resources in Queensland and NSW. The interim IGA sets out how water will be shared between the states, and its endorsement will enable development of the Resource Operations Plan to proceed. The Border Catchments Standing Committee and its Working Groups have been working through the detail associated with the interim IGA with stakeholders, mainly via the Interstate Water Management Working Group.

The Border Rivers Commission (‘BRC’) is currently providing resources to investigate options for necessary institutional reform and there has been significant progress on this front. The BRC are fully aware of the need to expedite the development of a full IGA and an overarching paper on water reforms in the Border Rivers Catchment is to be produced for the BRC and its Project Reference Group by December 2005. This paper will form the basis for preparing the full IGA.

The States will give effect to the IGA through their respective Water Resource Planning processes. Accordingly, in Queensland, the finalised Border Rivers Water Resource Plan includes provision for the Resource Operations Plan to meet interstate obligations as reflected in the IGA. For example, the final Plan provisions include environmental flow objectives including end-of-system flow targets, strategies for achieving plan outcomes, extraction caps on all water entitlements, dealing with unallocated water, tight control of overland flow extractions, and monitoring and reporting requirements.

The agreed provisions in the IGA relating to joint management of water resources (including, for example, environmental flow rules, water sharing or access rules and water trading and accounting systems) as well as provisions in the final water resource plan, will be operationalised in Queensland through the Border Rivers Resource Operations Plan.

Work has commenced on the Resource Operations Plan for the Border Rivers with initial planning and policy being developed. Consultation has taken place with the stakeholder groups such as the Stanthorpe Community Reference Panel, Border Rivers Food and Fibre and the Inter State Water Management Working Group.

It is expected that a draft Resource Operations Plan will be released for community consultation in the first half of 2006 with completion by early 2007.

Draft Resource Operations Plans for the Warrego, Paroo, Bulloo and Nebine and Moonie catchments were released in February 2005 with submissions closing in April 2005. 15 submissions were received on the Draft Warrego, Paroo, Bulloo and Nebine Resource Operations Plan and 8 on the Draft Moonie Resource Operations Plan. Following consideration of the issues raised in these submissions by an independent Resource Operations Plan Referral Panel and further development of the resource operations plan by the Department of Natural Resources and Mines, these Plans are near finalisation. It is expected that they will be gazetted by the end of 2005.

**Condamine-Balonne**

On the 12 August 2004 the Water Resource Plan for the Condamine-Balonne catchment was released. The Plan was finalised after a long period of community consultation and incorporates advice from advisory committees, reference groups, community organisations,
irrigators, graziers, members of the local community, industry groups, local councils and government agencies as well as independent scientists.

The Plan seeks to provide a framework for the sustainable management and use of water in the Condamine-Balonne catchment and allocates water to support the social, economic and environmental requirements of the catchment and downstream parts of the catchment which is part of the Murray-Darling Basin.

The Condamine Balonne Water Resource Plan makes provisions for:

- Event-based flow management rules to enhance low and medium flow events in the Lower Balonne with benefits for the Narran Lakes and Culgoa floodplain;
- The continuation of the moratorium on new works to take water from a watercourse pending finalisation of the Resource Operations Plan for the catchment;
- The regulation of the take of overland flow water throughout the catchment, ensuring more water for the environment and downstream users;
- Performance indicators to ensure that decisions made under the Resource Operations Plan do not further adversely affect the amount of water available to the environment or existing water users including stock and domestic users; and
- The Plan specifically provides for a special five-year report (over and above the normal annual reporting required for plans) that will enable any significant developments in scientific knowledge relating to the region to be identified and taken into account in reviewing the effectiveness of the plan. For example, the Narran Lakes Research project and the Lower Balonne floodplain study outcomes will provide input to the five-year report.

The Lower Balonne Ministerial Water Resources Advisory Council (‘the LB Council’) has been established by the Queensland Minister for Natural Resources and Mines under the provisions of the Condamine Balonne Water Resource Plan and the Water Act 2000.

Its purpose is to advise the Queensland Minister and the Department of Natural Resources and Mines on water resource planning issues in the Lower Balonne. One of the immediate roles of the Council is to provide advice to the Department about development and implementation of the Resource Operations Plan.

It will also provide advice to the Minister on the outcomes of the five-year report of the Water Resource Plan.

The Queensland Minister of Natural Resources and Mines appointed members including the Chair of the LB Council on 1 September 2005 for a term of four years.

The LB Council has been established with 21 members and a Chair and a Deputy Chair. It comprises Queensland and New South Wales stakeholders with experience across the environment, irrigation, pastoral, farming, local government, indigenous and business sectors. It is anticipated that the Council provides the appropriate means for advancing improved water management approaches across the Lower Balonne.

The draft Resource Operations Plan will be developed with community input particularly from the Lower Balonne Ministerial Water Resources Advisory Council and the Upper and Middle Condamine Resource Operations Plan Advisory groups. Community engagement on the resource operations plan has commenced. A final Resource Operations Plan is proposed to be completed by June 2007. It is anticipated that a draft Resource Operations Plan will be released for public submissions by late 2006.

**Metering**

Queensland released a policy on Metering Water Extractions in May 2005 providing a framework for metering across the State. The policy includes metering standards, arrangements for ownership, maintenance and reading of meters, and proposed charging regimes. In brief, Natural Resources & Mines (NR&M) will organise the supply, installation and maintenance of water meters in accordance with standards provided in the policy. Ownership of water meters will remain with NR&M with costs associated with metering recovered from water users through an annual Metering Service Charge.

The metering project will install approximately 16,000 meters across the state over the next 5-7 years. The development of a Resource Operation Plan (ROP) in each Water Resource Plan area will generally trigger implementation of metering.

Metering Projects in the Queensland section of the Murray-Darling Basin were triggered in the Moonie and Warrego, Paroo, Bulloo and Nebine Resource Operation Plan Areas in April 2005. Installations are expected to be completed in early 2006.
4.4.4 IAG Assessment

Diversion of 455 GL in 2004/05 was significantly less than in 2003/04 reflecting variable rainfall in the catchments.

Since no Caps figures have yet been set for Queensland valleys in the Murray-Darling Basin it is not possible to compare diversions with climate and trade adjusted Cap targets or the long term Cap.

The Caps cannot be finalised until the planning process is completed. The Water Resource Plans for the Border Rivers, Moonie River and Warrego/Paroo/Bulloo Nebine became law in December 2003 and for the Condamine-Balonne in August 2004. Since then work has progressed on developing the Resource Operations Plans. The current October 2005 status is:

- Border Rivers – draft Plan is expected to be released in the first half of 2006 with completion by early 2007;
- Warrego, Paroo, Bulloo and Nebine and Moonie Catchments - draft Plans were released in February 2005 for public consultation. Following consideration of issue the plans are expected to be gazetted by the end of 2005; and
- Condamine-Balonne – a draft Plan is expected to be released for public comment by late 2006 with the plan expected to be finalised by June 2007.

The Murray-Darling Basin Ministerial Council has previously determined that the Caps for Queensland Murray-Darling Basin valleys be audited by the IAG prior to incorporation into Schedule F. It would be appropriate in the view of the IAG, that the models that underpin the Resource Operation Plans be submitted to the Murray-Darling Basin Commission for audit and subsequent accreditation. Following accreditation the IAG would review the Cap setting process and provide advice to the Ministerial Council via the Commission.

Subject to appropriate endorsements Schedule F compliant Caps would then be in place for the Queensland Murray-Darling Basin valleys. This includes the progressive introduction of metering as the Resource Operation Plans are finalised. Some 1,700 sites will be assessed for metering of surface water diversions in Queensland Murray-Darling Basin valleys. A high proportion of these are already metered but will need to be assessed to determine whether they meet the departmental standards.

A strategy and resourcing for monitoring diversions is in place. This will enable relatively accurate measurement other than for overland flow diversions and end-of-valley flows and provide a sound basis for compliance audits.

4.4.5 Conclusions/Recommendations

- Diversions in 2004/05 are estimated at 455 GL;
- Caps figures for Queensland Murray-Darling Basin valleys have not yet been set and as a consequence no comparison between actual use and Cap targets is possible;
- Queensland is developing Resource Operation Plans and the associated models should be submitted for audit and subsequent accreditation by the Murray-Darling Basin Commission;
- Draft Resource Operations Plans for the Warrego, Paroo, Bulloo and Nebine and Moonie catchments were released for public comment in February 2005 and following consideration of issues are expected to be gazetted by the end of 2005;
- Work has commenced on the Resource Operations Plan for the Border Rivers and Queensland advise that a draft plan will be released for consultation in the first half of 2006 with completion by early 2007;
- Following the establishment of the Lower Balonne Ministerial Water Resources Advisory Council, Queensland advised the IAG that a draft Resource Operations Plan for the Condamine-Balonne is expected to be released for public comment by late 2006 with a view to finalising by June 2007;
- If these timelines are adhered to, Queensland should have in place Caps as per Schedule F for all valleys in its portion of the Murray-Darling Basin by June 2007;
- There is also an expectation by the Murray-Darling Basin Ministerial Council that Queensland will place a proposal for Cap figures for each valley before Council before finalising the statutory process; and
- A metering program will ensure reliable information on water use is available as the Resource Operation Plans are implemented.
4.5 Australian Capital Territory

4.5.1 The Cap

The ACT became a participant in the Murray-Darling Basin Commission in March 1998. At that time the ACT Government undertook to participate in the Cap initiative. This commitment to the Cap has been reaffirmed at subsequent Council meetings. A decision as to what is to be the ACT’s Cap has yet to be made. Net ACT consumption is approximately 0.3% of overall Basin water use.

The major consumptive use of water in the ACT is the urban water supply to Canberra and Queanbeyan. Net diversions since the mid-1980’s for urban water supply have been around 31 GL per year with an additional 5 GL per year estimated for all other consumptive diversions (see Table 10).

In 2004/05 as in 2003/04, net diversion was impacted by water restrictions introduced in response to the drought and the damage caused by the January 2003 bushfires on the catchment areas. During the 2004/05 year, ACT remained at now lower than Level 2 water restrictions and went to Level 3 restrictions during the summer months. These higher level restrictions achieved the desired 40% reduction in water consumption during the summer months.

The Government has also released its water strategy statement, Think Water, Act Water in which it is proposing 25% reduction in the per capita consumption of water in the ACT over the next 20 years and a greater use of ‘re-use’ water to replace existing potable water use.

Around 50% of the urban water diversions in the ACT are returned to the Basin by way of the Lower Molonglo Water Quality Control Centre (WQCC) and Queanbeyan Sewage Treatment Works (STW). As a consequence net diversions are currently used as the accepted means of assessing the use of water for consumptive purposes in the Territory.

In August 2005 the ACT Government introduced a two-year moratorium on the issuing of new surface and ground water abstraction licences. This is to allow the ACT Government time to examine the impact of the current use of groundwater and the basis on which any future licences should be allocated.

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Diversion</th>
<th>Lower Molonglo WQCC</th>
<th>Queanbeyan STW</th>
<th>Other Diversions</th>
<th>Net Diversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989/90</td>
<td>65.4</td>
<td>32.6</td>
<td>3.4</td>
<td>5.0</td>
<td>34.5</td>
</tr>
<tr>
<td>1990/91</td>
<td>77.3</td>
<td>33.1</td>
<td>3.4</td>
<td>5.0</td>
<td>45.8</td>
</tr>
<tr>
<td>1991/92</td>
<td>60.0</td>
<td>33.3</td>
<td>3.4</td>
<td>5.0</td>
<td>28.4</td>
</tr>
<tr>
<td>1992/93</td>
<td>50.2</td>
<td>34.8</td>
<td>3.4</td>
<td>5.0</td>
<td>17.0</td>
</tr>
<tr>
<td>1993/94</td>
<td>59.4</td>
<td>32.7</td>
<td>3.4</td>
<td>5.0</td>
<td>28.3</td>
</tr>
<tr>
<td>1994/95</td>
<td>60.6</td>
<td>30.1</td>
<td>3.4</td>
<td>5.0</td>
<td>32.1</td>
</tr>
<tr>
<td>1995/96</td>
<td>53.3</td>
<td>32.2</td>
<td>3.5</td>
<td>5.0</td>
<td>22.5</td>
</tr>
<tr>
<td>1996/97</td>
<td>61.8</td>
<td>33.7</td>
<td>3.4</td>
<td>5.0</td>
<td>29.7</td>
</tr>
<tr>
<td>1997/98</td>
<td>73.1</td>
<td>30.7</td>
<td>3.2</td>
<td>5.0</td>
<td>44.2</td>
</tr>
<tr>
<td>1998/99</td>
<td>54.4</td>
<td>32.7</td>
<td>3.4</td>
<td>5.0</td>
<td>23.2</td>
</tr>
<tr>
<td>1999/00</td>
<td>58.0</td>
<td>32.6</td>
<td>3.9</td>
<td>5.0</td>
<td>26.5</td>
</tr>
<tr>
<td>2000/01</td>
<td>63.0</td>
<td>30.3</td>
<td>3.9</td>
<td>5.0</td>
<td>33.8</td>
</tr>
<tr>
<td>2001/02</td>
<td>65.9</td>
<td>30.6</td>
<td>3.8</td>
<td>5.0</td>
<td>36.4</td>
</tr>
<tr>
<td>2002/03</td>
<td>65.8</td>
<td>28.4</td>
<td>2.3</td>
<td>5.0</td>
<td>40.1</td>
</tr>
<tr>
<td>2003/04</td>
<td>52.8</td>
<td>27.8</td>
<td>2.2</td>
<td>5.0</td>
<td>27.8</td>
</tr>
<tr>
<td>2004/05</td>
<td>51.8</td>
<td>27.3</td>
<td>2.4</td>
<td>5.0</td>
<td>27.1</td>
</tr>
</tbody>
</table>
4.5.2 Administration of the Cap

The ACT Water Resources Act 1998 (the Act) contains provision for the licensing and measurement of extractive water use from both groundwater and surface water. The ACT Government has implemented this licensing procedure and undertaken a metering program such that both groundwater and surface water will be metered. The metering program has yet to be finalised particularly for ground water use. Once this is completed it will allow confirmation of the ‘other diversion’ usage reported in Table 10 above. Currently an estimate has been used. The Act also requires that environmental flows must be provided for before any other use. Environmental flow guidelines provide for the protection of flows up to the 80th percentile and, except in water catchments, only 10% of flows over the 80th percentile are available for consumptive use. Of the total ACT water resources of 494 GL per year these guidelines allocate an average of 272 GL to the environment leaving around 222 GL (gross) notionally available for consumptive use (this is excluding 386 GL of water that flows into the ACT via the Murrumbidgee River and is allowed to pass through the ACT).

Gross consumptive use has only been around 55 to 60 GL per year over recent years, and net use around 30 GL.

4.5.3 Issues with Adoption of the Cap

In December 2002, the ACT Government announced that it would develop a comprehensive Water Resources Strategy to be formalised as a new Water Resources Management Plan under the Water Resources Act. In July 2004, the ACT Government finalised its water strategy, ‘Think Water, Act Water’. In this statement, the ACT Government reaffirmed its commitment to the Cap and set out its major aims and objectives in terms of future water use for consumptive and environmental purposes. If not resolved before, this commitment to the Cap will continue beyond any possible renegotiation of the ACT Government’s membership of the Murray-Darling Basin Commission to give it full membership recognition. The ACT is considering the IAG framework for determining a Cap and expects to bring a proposal to the Murray Darling Basin Ministerial Council in 2006.

As part of its development of a proposed Cap for the ACT, the ACT Government has been engaged in discussions with NSW on an MOU for the provision of water outside of the ACT borders. This will have implications for the Cap. Negotiations with the NSW Government over the provision of water from the ACT to surrounding areas under a Cap have yet to be finalised.

In terms of the possible quantification of a Cap for the ACT, the ACT Government advised the Murray-Darling Basin Commission as part of the 2002/03 IAG Report that it rejects the use of historical information as the basis for the Cap, and has proposed the adoption of four additional principles to be read in conjunction with the seven principles adopted by the IAG for the purpose of assessing Cap targets. These additional principles are:

- at least broad parity between jurisdictions and towns with equivalent conditions;
- efficiency (that is, the need to reinforce rather than undermine the incentive for responsible action);
- sustainable river environment throughout the Basin over the medium to long-term; and
- recognition of the legal position of the ACT and its legislative arrangements with the Commonwealth and NSW, including existing water rights.

4.5.4 Discussion of Issues

The ACT Government has undertaken a number of studies into issues relating to water, re-use of water, security of supply and ground water over the last 12 months. It is anticipated that some amendments to the ACT Water Resources Act may be introduced drawing from the findings of these studies. The ACT Government had also undertaken some preliminary assessment of its Think Water, Act Water Strategy. The results from this preliminary assessment have been encouraging with early indications showing consumption reductions in line with target projections.

The IAG has discussed the issue of the setting of a Cap for the ACT in previous reports and has also commented on the additional principles proposed by the ACT Government (see IAG 2002/03 Report).

The IAG anticipates that there will be future discussions on the establishment of a Cap for the ACT during the next 12 months. In this period, the ACT Government is expected to announce its decision on the evaluation of the possible construction of an additional dam in the ACT to provide greater water security and to confirm arrangements for the use of the Googong Dam as a storage for surplus flows from the Cotter system as a means of meeting the community’s security of supply expectations.
4.5.5 Monitoring and Reporting

The ACT has established a system of licences for all users of water in the ACT and these will be climate-adjusted volumetric licences. The ACT will be able to report its consumptive usage against information provided by licence holders. As ACTEW Corporation will be the main licensed user of water from the system, the level of accuracy from this monitoring process should be high. The issuing of licences to groundwater users and finalisation of the current metering program together with the licensing of water catchment infrastructure on small catchments (such as farm dams) will fill any possible gap in the collection of data on water use in the ACT.

4.5.6 2004/05 Diversions

Net diversions by the ACT in 2004/05 were 27.1 GL. As an example of the assessment that might be made in the future, this diversion has been compared with the level of diversion expected under a 38 GL long-term Cap which was referenced by the IAG in its 1999/00 Report. The 2004/05 diversion is 8 GL below the 35 GL annual climate-adjusted Cap target. Table 11 summarises the ACT’s performance against the 38 GL Cap since July 1997. It reveals that had a Cap of 38 GL been supported, it would have already built up a credit of 58 GL.

The IAG notes that it is not saying that the ACT Government should accept a Cap of 38 GL, but rather has used this estimate to highlight the potential accumulation of credits under a Cap of this size.

Table 11: An example of a Cap applied to the ACT – GL’s Diversions since July 1997 compared with a notional 38 GL Cap

<table>
<thead>
<tr>
<th>Notional Long-term Diversion</th>
<th>2004/05 Climate-adjusted Target</th>
<th>2004/05 Diversion</th>
<th>Cumulative Since 1 July 97</th>
<th>20% Long-term Cap Diversion Trigger</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>35</td>
<td>27</td>
<td>8</td>
<td>-8</td>
</tr>
</tbody>
</table>

4.5.7 Other Issues

In considering the issue of the quantum of the Cap for the ACT, it is worth noting also that any efficiencies achieved by the ACT on water use over the period since 1993/94 should be retained by the ACT in terms of the Cap. As noted by the ACT, the Government policy statement, *Think Water, Act Water* appears to have had a positive impact in terms of reducing per capita consumption in the ACT. These benefits would be retained by the ACT under the model for setting and applying the Cap adopted by the Ministerial Council (and recommended by IAG) in other parts of the Basin. The ACT Government has publicly stated its commitment to reducing the use of water for consumptive purposes (particularly potable water) and has introduced ambitious targets for such reductions, and for the replacement of potable water use by re-use water. The ACT Government has backed this statement of policy objectives with direct incentives to help consumers change their water use behaviour over time. The greater efficiency in water use in the ACT that is derived from the policies and associated direct incentives, will increase the availability of water under the Cap for use in the ACT, potentially for future population growth and for new industries or activities requiring access to water. These outcomes are consistent with the intentions of the Cap and its application in the Basin.
4.5.8 IAG Assessment

The IAG notes the ACT’s commitment to the Cap and to the principles behind the Cap. The IAG also notes the desire by the ACT to reach a resolution of the Cap for the ACT. Once the Cap is agreed, the ACT has the monitoring and reporting arrangements in place which will provide appropriate data for reporting under Schedule F.

The IAG acknowledges the need to give recognition for water efficiencies achieved when determining the Cap for the ACT. The IAG notes that as part of the Think Water, Act Water strategy, the ACT Government has set targets for future water savings, viz:

- 25% reduction in per capita consumption of mains (potable) water by 2023; and
- increased use of treated wastewater (reclaimed water) from 5% to 20% by 2013.

As the nation’s capital, the adoption of a Cap for the ACT has important symbolic ramifications, not only to other parts of the Basin, but to the nation as a whole. Conclusion of negotiation on a Cap should therefore proceed and hopefully be finalised over the next 12 months.

The ACT Government has also given its commitment to the Living Murray program and has committed to a program to provide a further 2 GL of water for environmental flow purposes in the Murrumbidgee valley.

4.5.9 Conclusions/Recommendations

- The ACT has reaffirmed its commitment to establishing a Cap although no Cap presently exists for the ACT;
- Net diversions of 27.1 GL in 2004/05 are below the average usage between 1989 and 2001 of 31 GL and are also less than a possible climate-adjusted annual Cap target of 35 GL. The ACT would have a cumulative credit of 58 GL if the Cap of 38 GL notionally used proposed by the IAG had applied since July 1997;
- The IAG encourages the ACT to complete its consideration of the form of a Cap to apply to the ACT and its discussions with NSW in supply arrangements for urban areas surrounding the ACT; and
- The IAG supports the concept of the ACT Cap being seen in the context of a wider valley Cap and notes the implications of this on the current review of the need for and the form of additional water capture arrangements for the ACT.
5. Diversions from the Murray-Darling Basin in 2004/05

Murray-Darling Basin diversions in 2004/05 totalled 7900 GL. This was the lowest annual diversion in the period since 1983/84 and was only 61% of the record diversion of 12964 GL in 1996/97. The next lowest annual diversion was 8080 GL in 2002/03 which was also a year of severe drought. Of the total water diverted, New South Wales diverted 46%, Victoria 39%, South Australia 8%, Queensland 6% and the Australian Capital Territory 0.3%. Diversions for the individual valleys are presented in Table 12. Annual diversions since 1983 are plotted in Figures 1 and 2.

Table 12: Murray-Darling Basin Diversions in 2004/05

<table>
<thead>
<tr>
<th>System</th>
<th>Total Diversion (GL)</th>
<th>Percentage of Basin Diversion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New South Wales</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersecting Streams</td>
<td>3</td>
<td>0.0%</td>
</tr>
<tr>
<td>Border Rivers</td>
<td>124</td>
<td>1.6%</td>
</tr>
<tr>
<td>Gwydir</td>
<td>169</td>
<td>2.1%</td>
</tr>
<tr>
<td>Namoi/Peel</td>
<td>190</td>
<td>2.4%</td>
</tr>
<tr>
<td>Macquarie</td>
<td>102</td>
<td>1.3%</td>
</tr>
<tr>
<td>Barwon-Darling</td>
<td>157</td>
<td>2.0%</td>
</tr>
<tr>
<td>Lower Darling</td>
<td>30</td>
<td>0.4%</td>
</tr>
<tr>
<td>Lachlan</td>
<td>36</td>
<td>0.5%</td>
</tr>
<tr>
<td>Murrumbidgee</td>
<td>1618</td>
<td>20.5%</td>
</tr>
<tr>
<td>Murray</td>
<td>1241</td>
<td>15.7%</td>
</tr>
<tr>
<td><strong>Total NSW</strong></td>
<td>3670</td>
<td>46.5%</td>
</tr>
<tr>
<td><strong>Victoria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goulburn/Loddon/Broken</td>
<td>1540</td>
<td>19.5%</td>
</tr>
<tr>
<td>Campaspe</td>
<td>40</td>
<td>0.5%</td>
</tr>
<tr>
<td>Wimmera-Mallee</td>
<td>52</td>
<td>0.7%</td>
</tr>
<tr>
<td>Murray/Kiewa/Ovens</td>
<td>1476</td>
<td>18.7%</td>
</tr>
<tr>
<td><strong>Total Victoria</strong></td>
<td>3108</td>
<td>39.4%</td>
</tr>
<tr>
<td><strong>South Australia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metro-Adelaide &amp; Associated Country Areas</td>
<td>63</td>
<td>0.8%</td>
</tr>
<tr>
<td>Country Towns</td>
<td>38</td>
<td>0.5%</td>
</tr>
<tr>
<td>Lower Murray Swamps</td>
<td>61</td>
<td>0.8%</td>
</tr>
<tr>
<td>All Other Purposes</td>
<td>462</td>
<td>5.9%</td>
</tr>
<tr>
<td><strong>Total South Australia</strong></td>
<td>624</td>
<td>7.9%</td>
</tr>
<tr>
<td><strong>Queensland</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condamine/Balonne</td>
<td>220</td>
<td>2.8%</td>
</tr>
<tr>
<td>Border Rivers/Macintyre Brook</td>
<td>201</td>
<td>2.5%</td>
</tr>
<tr>
<td>Moonie</td>
<td>23</td>
<td>0.3%</td>
</tr>
<tr>
<td>Warrego/Paroo</td>
<td>11</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total Queensland</strong></td>
<td>455</td>
<td>5.8%</td>
</tr>
<tr>
<td><strong>Australian Capital Territory</strong></td>
<td>27</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total Basin</strong></td>
<td>7884</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
In the 22 years since 1983/84, total Basin diversions in 2004/05 were the lowest with a ranking of 22; diversions in NSW also ranked 22; Victorian diversions ranked 19, SA 7, Queensland 8 and the ACT 17.

Figure 1: Murray-Darling Basin Diversions – 1983/84 to 2004/05

Figure 2: Murray-Darling Basin Diversions – 1983/84 to 2004/05 (usage under 1000 GL/year)
General

The Independent Audit Group confirmed that South Australian Diversions for the 2004/05 water-year were not in breach of the Cap for all designated Cap components. Diversions in South Australia were constrained as a result of restrictions on River Murray water users due to the ongoing drought across the Murray-Darling Basin affecting water resources availability to South Australia.

South Australia received a total flow of 1 880 GL, of which 623.8 GL was diverted for consumptive uses including irrigation and supplying water to Metropolitan Adelaide and country townships to meet urban requirements. All diversions were within the annual Cap targets for the designated valleys. The wetter than average summer caused a significant reduction in the climate adjusted annual Cap target for the All Other Purposes Cap.

Initiatives are currently being pursued in South Australia to improve our audit and reporting capabilities including continued improvement of metering to allow the ongoing monitoring of trends in diversions, and enhanced water trade and diversion reporting capabilities of the Water Information and Licensing Management Application (WILMA). These initiatives will assist South Australia in continuing to meet its obligations towards sustainable management of River Murray.

In 2004/05 South Australia again applied the draft South Australian River Murray Drought Water Allocation Policy. All River Murray water users were subject to the same management regimes which included setting the initial restriction at 70% of licensed allocation in July 2004. This was subsequently relaxed to 95% licensed allocation in late January 2005 due to the improvement in water resource availability across the Murray-Darling Basin and to South Australia.

South Australia recognises the need to address the issue of growth in demand for Metropolitan Adelaide. It has been agreed that any trade to Metropolitan Adelaide to account for growth should be dealt with on a separate licence to maintain the integrity of the 5 year rolling Cap for Metro Adelaide. DWLBC in conjunction with SA Water are continuing to investigate this issue and a detailed proposal should be finalised during 2005/06.

Water Allocation Plan

The Water Allocation Plan for the River Murray Prescribed Watercourse (River Murray WAP) provides the legal framework for the allocation, use and transfer of River Murray water. The River Murray WAP was developed in accordance with the provisions of the Water Resources Act (now the Natural Resources Management Act 2004) and with consideration of the Murray-Darling Basin Agreement and its Schedules, for example Schedule F – Cap on Diversions.

The aim of the River Murray WAP is to ensure that the water resource is allocated and managed in a sustainable manner. To achieve this, the River Murray WAP:

- Identifies the maximum volume of water that can be allocated per year for various uses (and provides for this volume to be adjusted as a consequence of intra and interstate water trade);
- Puts into operation the key salinity management policies in the South Australian River Murray Salinity Strategy 2002-2015;
- Encourages the efficient use of water for irrigation purposes; and
- Provides a specific water allocation for wetland management purposes.

The River Murray WAP provides the legal basis for the allocation and use of water from the prescribed water resource for example the river, wetlands and floodplain within the 1956 flood boundary. Policies in the River Murray WAP apply to the use of that water wherever it is used in the state including when transferred to other valleys such as the Clare and Barossa valleys.
A significant management requirement under the River Murray WAP is irrigator annual reporting. All licence holders are required to submit an annual irrigation report as part of their licence conditions. Irrigation annual reporting is a critical process in Cap and particularly natural resource management. Irrigators become more aware of the direct and non-direct impacts of their water use on the environment.

**Climate Adjustment**

Unlike diversion Caps in other valleys, which are defined as diversion volumes permissible at the 1993/94 level of development adjusted for climate, the Cap in SA designated valleys, except Metropolitan Adelaide is defined as a specific long-term annual volume (e.g. 440.6 GL for All Other Purposes).

In 2003/04 a climate adjusted Cap for the All Other Purposes Cap component was used for the first time. The Climate Adjusted Annual Cap Target was derived using an accredited regression model taking climatic factors into account. The model was used again in 2004/05 to assess the climate adjusted diversions against the Cap. The model incorporates historical monthly demands (1983/84 to 1999/00) which are de-trended to the 1993/94 levels of development. Monthly demand equations are then derived through regression of the de-trended data with climatic factors, rainfall at Berri and temperature at Loxton.

Although Schedule F defines the period 1891-1997 as the long-term simulation period, a longer long-term simulation period has been chosen based on the recommendations of the independent review of the Cap model.

Climate-adjusted models for the Country Towns and Lower Murray Swamps Caps have been considered by the South Australian Government but will not be pursued.

**Other Jurisdictions**

South Australia notes with concern that the combined Barwon-Upper Darling and Lower Darling Cap valley was cumulatively 154 GL above Cap and supports any initiatives that will help to address the issue of over-use within the valley. However, South Australia does not support the current management arrangements and believes that the valley will continue to be in breach of the Cap if these arrangements are implemented.

There appear to be some misunderstandings with regard to Schedule F. It is important to note that there is no such provision in Schedule F as a jurisdictional Cap; rather each designated river valley has its own cap. The Barwon-Upper Darling is one such designated river valley. If a jurisdiction is declared to have exceeded the cap in a designated river valley then the provisions of Clause 17 of Schedule F apply. South Australia is concerned that in the case of the Barwon-Upper Darling the provisions of Clause 17 (and in particular Clause 17 (1)(b)) have not been complied with in any respect.

South Australia agrees with the IAG recommendation that the ACT, NSW and Queensland Governments finalise their Cap arrangements as a priority to provide confidence that there is accountability and transparency in performance against the Ministerial Council objectives for the Murray-Darling Basin river systems.
Victoria continued implementation of the Cap in 2004/05 through the establishment of Bulk Entitlements on regulated systems and Streamflow Management Plans on unregulated streams. The Bulk Entitlements for the Broken Basin and the Ovens River were granted in December 2004.

Stream Flow Management Plans for five high priority streams in northern Victoria are being reviewed to ensure they are consistent with White Paper policy on SFMPs and the revised Plan Guideline. Plans will be developed for remaining high and secondary priority rivers and streams in northern Victoria using the revised SFMP framework.

Diversions since July 1997 from each of Victoria’s four designated valleys continue to comply with the Cap. Diversions from the Murray/Kiewa/Ovens, Goulburn/Broken/Loddon and Campaspe valleys were each below their Cap targets in 2004/05. Cumulative diversions in these valleys remain in credit.

The level of diversions from the Wimmera-Mallee system has remained below Cap due to the significant water savings from the Northern Mallee Pipeline. A portion of these savings has been allocated to the environment, resulting in environmental entitlements from savings of 34.7 GL/year at the end of the 2004/05 financial year.

The climate-adjusted model covering the Goulburn/Broken/Loddon and Campaspe valleys has been submitted to the model auditor for accreditation. It is expected to gain accreditation by July 2006. A decision has not yet been made on an appropriate Cap allowance for Lake Mokoan. Victoria proposes a Cap for Wimmera-Mallee valley based on the Bulk Entitlement, which will ensure that diversions will always be less than 1993/94 levels of development. A report on this proposal will be prepared for review by the IAG.

Victoria relies on the MDBC model of the Murray system to provide Cap targets for the Murray system. This model includes a regression component to calculate Cap volumes for the Ovens and Kiewa portions of the valley. Work has continued on model re-calibration and it is expected to gain accreditation in 2006.

Victoria will continue to provide accurate and timely water audit information as required. Victoria agrees with the IAG conclusions relating to Victoria, and the other jurisdictions. Thus, Victoria supports the IAG’s recommendations regarding the finalisation of the ACT, Border Rivers in New South Wales and Queensland Caps, and the timelines for accreditation of Cap models.
NSW remains committed to the Cap process and, in particular, to ensuring that long-term diversions are maintained within the Murray-Darling Basin Ministerial Council's Cap. The report indicates that diversions in all NSW valleys are currently within Cap, with the exception of the NSW Border Rivers, where a Cap is currently being formalised, and the Barwon-Darling valley. NSW has outlined its intention to implement new licensing arrangements in the Barwon-Darling valley that will restructure entitlements to water in the form of an average annual use that accords with the long-term Cap. This will ensure that future diversions cannot exceed Cap over the long term. Implementation of the new licensing arrangements is being progressed in a manner that minimises adverse impacts on the associated remote rural communities as they recover from recent drought conditions.

The IAG has made two major recommendations, both of which impact upon NSW.

**The IAG recommends that the ACT, New South Wales and Queensland Governments finalise their Cap arrangements as a priority to provide confidence that there is accountability and transparency in performance against Ministerial Council objectives for the Murray-Darling Basin river systems.**

NSW continues to be involved in discussions with the ACT and remains committed to a framework for trade. The ACT’s ability to undertake permanent trade with all parts of the Murrumbidgee system, including the major Irrigation Corporations, has been an issue. NSW has recently enacted legislation to ensure that barriers to permanent trade are overcome, which will greatly assist both ACT-NSW trade, and meeting commitments under the *National Water Initiative.*

NSW and Queensland have undertaken an extensive modelling process, combined with negotiations to develop an Inter-Governmental Agreement (IGA) to underpin future water sharing and allow a Cap to be set by each state. The draft IGA has been endorsed by the Border Catchments Standing Committee (21 October 2005) and is currently being considered by the respective state Ministers for Natural Resources and Environment for approval. A Cap for the NSW Border Rivers will be formally put in place through water sharing arrangements in a Water Sharing Plan, which is currently under development.

**The IAG continues to recommend audit and accreditation of all models with modified targets of July 2006 for Victoria and New South Wales (except for Border Rivers by June 2007) and December 2007 for Queensland.**

NSW continues to make significant progress towards accreditation of valley models under Schedule F for Cap auditing, with both the Lachlan and Namoi valley models now accredited by the independent auditor. NSW has also presented the Gwydir valley Cap model to the independent auditor for accreditation. Whilst the Macquarie IQQM accreditation has been delayed due to issues that have become apparent during the current severe drought conditions, a revised model will shortly be submitted for accreditation. A Cap model for the Peel valley, a sub-catchment within the Namoi valley, will also be submitted for accreditation in the near future. The remaining NSW Cap models for the Murrumbidgee, Barwon-Darling and NSW Border Rivers are expected to be submitted for accreditation within the timeframes outlined by the IAG.
In line with the Council’s earlier decisions, the Queensland Cap is to be established in accordance with the provisions of Schedule F following the completion of the water resource planning processes. Compliance will be on the basis of diversions on the same principles as other States.

Queensland has now finalised water resource plans in all its Murray-Darling Basin valleys, and consequently has provided a framework with a strong legislative basis, that caps diversions from watercourses, lakes, springs and overland flows. Water resource plans for the Border Rivers, Moonie, Nebine, Warrego and Paroo valleys were gazetted as subordinate legislation on 5 December 2003 and the final plan for the Condamine-Balonne was gazetted on 12 August 2004.

Draft resource operations plans are currently being developed to implement the provisions of the water resource plans. Diversion caps for Queensland valleys will be developed and implemented as part of the monitoring, auditing and reporting provisions of the resource operations plans. Resource operations plans for the valleys are expected to be released progressively over the next two years.

In the Border Rivers Catchment, an Intergovernmental Agreement (IGA) is being developed jointly with New South Wales and in consultation with stakeholders. It is intended that implementation of the Resource Operations Plan will be consistent with the development and agreement by all parties on the IGA. The development of the IGA has been broken down to discrete elements, including: Sustainable Management of Water; Water Sharing and Access; Water Accounting; Interstate Trading; Institutional Arrangements; Water Pricing; Measurement and Monitoring; Auditing and Reporting; and Schedules.

A draft of the first three elements that forms an interim IGA has been completed and has been endorsed by the Border Catchments Standing Committee. This interim IGA is expected to be signed off soon by the Ministers for the Environment and Natural Resources in Queensland and NSW. The interim IGA sets out how water will be shared between the states, and its endorsement will enable development of the Resource Operations Plan to proceed.

The diversions from the Queensland valleys in the Murray-Darling Basin vary considerably from year to year. This is a result of high seasonal variability and the relatively small amount of supplemented schemes compared to private development based on unsupplemented flows. In 2004/05, diversions from unsupplemented flows were around 60% of total diversions. This year’s total diversions were close to half that of last year.
Water Use
Water use in the ACT was below average for 2004/05 as a result of the implementation of demand management mechanisms and maintenance of ongoing restrictions on urban water use, which accounts for most of the ACT’s water consumption. The measures implemented offset what would otherwise have been much higher consumption due to a dry summer and autumn. The volume of water returned through sewage treatment plants at nearly 30 GL was lower than recent years. The lower return volume is an indication of the success of domestic water conservation programs that have been implemented by the ACT Government and Queanbeyan City Council. It is likely the proportion of water returned through sewage treatment plants will continue to fall as the ACT’s Water Resources Strategy, Think Water, Act Water, is fully implemented.

Non-urban consumption is again estimated at 5 GL. The reliability and the extent of non-urban consumption data are improving. It is expected data on non-urban consumption of both surface and groundwater will be of a reportable standard in the near future.

Cap
The ACT is in the process of developing a position on a Cap. It is anticipated that an ACT position will be developed during 2006. The delay has been the result of a number of priorities, especially arising from the impact of the prolonged drought, the 2003 bushfires and implementation of the ACT water strategy. The ACT position will be based on the significantly different water management and use circumstances of the ACT, including its future population growth and continued provider of a broad range of services.

The ACT Government continues to apply sound environmental and resource management practices including guaranteed environmental flows while it develops a position on Cap. The ACT’s position is being informed following its recently completed review of the environmental flow regime to ensure the regime meets best practice standards and most current science is incorporated. The ACT Government is committed to the implementation of an economically and environmentally sustainable Cap in the ACT.
## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTEW</td>
<td>ACT Electricity and Water Corporation.</td>
</tr>
<tr>
<td>announced allocation</td>
<td>The percentage of water entitlement declared available for diversion from a regulated stream in a season.</td>
</tr>
<tr>
<td>annual allocation</td>
<td>The annual volume of water available for diversion from a regulated stream by an entitlement holder.</td>
</tr>
<tr>
<td>authorised use</td>
<td>Total of the water allocated in the valley plus off-allocation and water-harvesting use, plus unregulated stream use not in allocation and system losses not in allocation.</td>
</tr>
<tr>
<td>Border Rivers</td>
<td>The rivers and tributaries forming, or intersecting the border between NSW and Queensland.</td>
</tr>
<tr>
<td>Bulk Entitlement</td>
<td>A perpetual entitlement to water granted to water authorities by the Crown of Victoria under the Water Act 1989.</td>
</tr>
<tr>
<td>carryover</td>
<td>An unused entitlement from one season that can be used in the next year.</td>
</tr>
<tr>
<td>channel capacity</td>
<td>The maximum rate at which water can be delivered through a river reach or an artificial channel.</td>
</tr>
<tr>
<td>COAG</td>
<td>Council of Australian Governments.</td>
</tr>
<tr>
<td>diversion</td>
<td>The movement of water from a river system by means of pumping or gravity channels.</td>
</tr>
<tr>
<td>diversion licence</td>
<td>Specified licences issued for a specified annual volume and diversion rate.</td>
</tr>
<tr>
<td>DNR</td>
<td>The Department of Natural Resources (of NSW).</td>
</tr>
<tr>
<td>DNRMW</td>
<td>The Department of Natural Resources Mines and Water (of Queensland).</td>
</tr>
<tr>
<td>DSE</td>
<td>The Department of Sustainability and Environment (of Victoria).</td>
</tr>
<tr>
<td>dozer allocation</td>
<td>An allocation that is not fully utilised.</td>
</tr>
<tr>
<td>DWLBC</td>
<td>The Department for Water, Land and Biodiversity Conservation (of South Australia).</td>
</tr>
<tr>
<td>EC (unit)</td>
<td>Electrical conductivity unit 1 EC = 1 micro-Siemens per centimetre measurement at 25°C Celsius. Commonly used to indicate the salinity of water.</td>
</tr>
<tr>
<td>end-of-valley flows</td>
<td>The flow regime at the end of a valley.</td>
</tr>
<tr>
<td>floodplain harvesting</td>
<td>The diversion of water from a floodplain into storage(s).</td>
</tr>
<tr>
<td>FMIT</td>
<td>First Mildura Irrigation Trust.</td>
</tr>
<tr>
<td>gigalitre (GL)</td>
<td>One thousand million or 10⁹ litres.</td>
</tr>
<tr>
<td>GL</td>
<td>Gigalitre: one thousand million or 10⁹ litres.</td>
</tr>
<tr>
<td>G-MW</td>
<td>Goulburn-Murray Water (of Victoria).</td>
</tr>
<tr>
<td>gravity districts</td>
<td>Districts which use gravity to divert the flow of water from the river.</td>
</tr>
</tbody>
</table>
**high security entitlement**  
An entitlement which does not vary from year to year and is expected to be available in all but the worst droughts.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IAG</strong></td>
<td>Independent Audit Group.</td>
</tr>
<tr>
<td><strong>LV</strong></td>
<td>Licence Volume.</td>
</tr>
<tr>
<td><strong>impoundment</strong></td>
<td>The storage of water diverted from a watercourse.</td>
</tr>
<tr>
<td><strong>irrigation</strong></td>
<td>Supplying land or crops with water by means of streams, channels or pipes.</td>
</tr>
<tr>
<td><strong>MDBC</strong></td>
<td>Murray-Darling Basin Commission.</td>
</tr>
<tr>
<td><strong>MDBMC</strong></td>
<td>Murray-Darling Basin Ministerial Council.</td>
</tr>
<tr>
<td><strong>megalitre (ML)</strong></td>
<td>One million litres. One megalitre is approximately the volume of an Olympic swimming pool.</td>
</tr>
<tr>
<td><strong>Ministerial Council, the</strong></td>
<td>Murray-Darling Basin Ministerial Council.</td>
</tr>
<tr>
<td><strong>ML</strong></td>
<td>Megalitre: one million litres. One megalitre is approximately the volume of an Olympic swimming pool.</td>
</tr>
<tr>
<td><strong>Murray-Darling Basin Agreement</strong></td>
<td>The Agreement between the Governments of the four Basin States and the Commonwealth. The current Agreement is the 1992 Agreement.</td>
</tr>
<tr>
<td><strong>off-allocation</strong></td>
<td>When unregulated tributary inflows or spills are sufficient to supply irrigation needs and downstream obligations.</td>
</tr>
<tr>
<td><strong>on-farm storage</strong></td>
<td>Privately owned storages used to harvest surplus flows or to store unused allocations for use in the following season.</td>
</tr>
<tr>
<td><strong>overdraw</strong></td>
<td>Water diverted in one season against a prospective allocation in the subsequent year.</td>
</tr>
<tr>
<td><strong>overland flow</strong></td>
<td>Water that runs off the land following rainfall, before it enters a watercourse, and floodwater that erupts from a watercourse or lake onto a floodplain.</td>
</tr>
<tr>
<td><strong>permanent transfer</strong></td>
<td>The transfer of water entitlements on a permanent basis. The right to permanent transfers allows irrigators to make long-term adjustments to their enterprise and enables new operators to enter the industry.</td>
</tr>
<tr>
<td><strong>private diverters</strong></td>
<td>Licenced to operate privately owned pumps or diversion channels; includes river pumpers and diverters as well as town water supplies.</td>
</tr>
<tr>
<td><strong>property right</strong></td>
<td>In this context, the right to ownership of allocated volumes of water.</td>
</tr>
<tr>
<td><strong>RAMSAR wetland</strong></td>
<td>A wetland listed on the Register of internationally significant wetlands established by the Convention at Ramsar.</td>
</tr>
<tr>
<td><strong>regulated streams/ waterways</strong></td>
<td>Streams where users are supplied by releases from a storage. A water licence for a regulated stream specifies a base water entitlement defining the licence holder’s share of the resources from a stream.</td>
</tr>
<tr>
<td><strong>riparian</strong></td>
<td>Of, inhabiting or situated on the bank and floodplain of a river.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RIT</td>
<td>Renmark Irrigation Trust.</td>
</tr>
<tr>
<td>sales water</td>
<td>In Victoria, water that may be purchased by an irrigator in addition to the basic water right. Access to sales water is announced each season as a percentage of Water Right depending on the available resource.</td>
</tr>
<tr>
<td>salinity</td>
<td>The concentration of dissolved salts in groundwater or river water usually expressed in EC units.</td>
</tr>
<tr>
<td>sleeper allocation</td>
<td>An allocation that does not have a history of water usage.</td>
</tr>
<tr>
<td>temporary transfer</td>
<td>Water entitlements transferred on an annual basis.</td>
</tr>
<tr>
<td>unregulated streams</td>
<td>Streams that are not controlled or regulated by releases from major storages.</td>
</tr>
<tr>
<td>utilisation</td>
<td>The amount of water available for diversion that is actually diverted.</td>
</tr>
<tr>
<td>water entitlement</td>
<td>The legal right of a user to access a specified amount of water in a given period.</td>
</tr>
<tr>
<td>water-harvesting</td>
<td>The diversion of water from an unregulated stream in Queensland in which the access to water is defined only by a diversion rate and a starting flow in the stream.</td>
</tr>
<tr>
<td>WAMP</td>
<td>Water Allocation and Management Planning. It is a process formerly under way in Queensland to enable the acceptable level of allocatable water to be determined for a river system. These plans have been superseded by Water Resource Plans.</td>
</tr>
<tr>
<td>WMRWG</td>
<td>Water Market Reform Working Group.</td>
</tr>
<tr>
<td>WR</td>
<td>Water Right.</td>
</tr>
<tr>
<td>WSP</td>
<td>Water Sharing Plan. Plans developed under the New South Wales Water Management Act, 2000 for equitable sharing and management of NSW water resources.</td>
</tr>
<tr>
<td>WUE</td>
<td>Water Use Efficiency.</td>
</tr>
</tbody>
</table>
Annexure A

Special Audit
NSW Barwon-Darling/Lower Darling Cap Valley

Report of the
Independent Audit Group

Independent Audit Group Members

Dr Wally Cox (Chair)
Paul Baxter
Denis Flett

FEBRUARY 2006
Introduction

Based upon the determination of a Special Audit of the NSW’s combined Barwon-Darling/Lower Darling Cap valley in May 2005, the Murray-Darling Basin Commission (MDBC) declared the valley in breach of the Cap. The 2004/05 Review of Cap Implementation by the Independent Audit Group (IAG) identified that diversions for the combined Barwon-Darling/Lower Darling Cap valley are cumulatively 154 GL above the Cap, and above the combined trigger for Special Auditing of 62 GL. This prompted the MDBC under Clause 14 of Schedule F to ask the IAG to undertake a Special Cap Audit of the combined Barwon-Darling/Lower Darling Cap valley.

This report is the report of the IAG on the Special Cap Audit of the NSW’s combined Barwon-Darling/Lower Darling Cap valley conducted as per the provisions of Clause 15 of Schedule F.

Audit Process

The IAG considered the detailed report on usage, infrastructure developments, climate, and land use submitted by the NSW Department of Natural Resources (DNR) provided as part of the 2004/05 Audit (October Report) the 2003/04 Audit, and the May 2005 Special Audit of the NSW Barwon Darling and Lower Darling Valleys. Subsequently, and in response to the requirement for a Special Audit, the IAG received a letter from DNR (Attachment A) advising that there is little additional factual information available beyond that already provided to the IAG as part of these earlier reviews and recommending that the Special Audit be conducted on the basis of the last submission by NSW. Based upon this advice, the IAG considered the existing information in conducting the Special Audit and made its determination contained in this report. A draft report was made available to the DNR for comment prior to finalisation of the report.

Audit Outcome

DNR has advised that survey estimates of irrigated areas and irrigation infrastructure all indicate significant increases over the 1993/94 levels in the Barwon-Darling Valley. For the Lower Darling Valley, there does not appear to have any significant increase in infrastructure, with most of the on-farm storage capacity located on the Tandou property in the form of a natural lake.

The Barwon-Darling Valley receives only unregulated flow from other valleys, and all supply is essentially opportunistic. The Lower Darling is a regulated system supplied from the Menindee Lakes. The growth in storage capacity on the Barwon-Darling has increased the ability of irrigators to capture flows when these occur, although over the more recent seasons the areas irrigated have been significantly reduced by the lack of water flows from which storage can be filled.

NSW has recognised and acknowledged that it is in breach of the Cap. In its submission to the IAG as part of the 2004/05 Audit, DNR has advised that in response to earlier declarations of breach of the Cap, NSW is implementing a new Cap strategy for the Barwon-Darling along similar lines to those applied in other unregulated streams in NSW. This strategy is to restructure the water entitlements to ensure that future diversions do not exceed the long-term Cap. Under the proposed strategy, the irrigators’ licences will be credited annually with a total volume equivalent to the long-term average Cap and they will operate under continuous accounting. Under this arrangement, DNR argues that the long-term total average extractions (account debits) cannot exceed the long-term Cap, as account debits cannot exceed account credits.

NSW also intends to develop a Water Sharing Plan for the Barwon-Darling valley, which will incorporate this proposed Cap strategy to protect volumetric growth, as well as event-based access rules that will protect important flows for the environment and downstream users.

For the Lower Darling, NSW advised that on 1 July 2004, a Water Sharing plan for the Murray and Lower Darling valleys commenced, which included limits on supplementary water access (previously known as off allocation access). The Lower Darling is acknowledged to be cumulative below the Cap.
Further work on the IQQM modelling for the Barwon-Darling is currently underway to address more recent information that has emerged as a result of the prolonged drought period. NSW acknowledges that this reassessment of some of the data is unlikely to alter the Cap performance of the Barwon-Darling since 1997/98. However, it may alter the assessment of the Cap performance in the Lower Darling through better simulation of 1993/94 inflows to Menindee Lakes and the Lower Darling valley.

**Comments**

The IAG has reviewed the material provide by DNR and confirms that there has been a continuation of breach of the Cap in the combined Barwon-Darling/Lower Darling Cap valley. The IAG has previously identified the growth in development works and irrigated areas in the Barwon-Darling Valley as the prime reason for this breach of the Cap. Nothing has come to the attention of the IAG to cause it to reconsider this assessment. Under NSW’s own assessment, it is accepted that there is a breach of the Cap.

The IAG notes that it had originally identified a breach in 1998/99. The action necessary to address this problem is within the powers of NSW. Long term modelling of likely occurrences of breaches of the Cap under the new licence arrangements proposed by NSW (and yet to be introduced), indicates a significant reduction in the likelihood of breaching the Cap by comparison to the current arrangements whereby continuing breaches of the Cap are almost guaranteed.

Acknowledgement of the Cap breaches and the need for corrective action highlights the urgency for such action to be taken. A continuation of the current arrangements will only prolong the problem and increase the difficulties NSW will face in implementing its proposed new licensing arrangements.

**Conclusion**

On the basis of available information the IAG determines that the combined Barwon-Darling/Lower Darling Cap valley continues to be in breach of the long-term diversion Cap. The IAG notes that NSW has proposed new licensing arrangements for the Barwon-Darling that it is claimed will ensure that the average long term Cap is not exceeded over time.
Dr Wendy Craik
Chief Executive
Murray-Darling Basin Commission
GPO Box 409
CANBERRA ACT 2601

13 FEB 2005

Dear Dr Craik

I refer to your letter of 19 December 2005 regarding the Murray-Darling Basin Commission’s directive to the IAG to conduct a Special Audit of the combined Barwon-Darling and Lower Darling valley.

The IAG has only recently performed a Special Audit on the combined Barwon-Darling and Lower Darling, and there is little factual information that can be provided in addition to that already supplied for the last Special Audit. Consequently, I am recommending that the current Special Audit be performed on the basis of the last submission that NSW provided to the IAG.

As part of the recent Special Audit, NSW outlined a restructure of licensed water entitlements in the Barwon-Darling Valley that will ensure diversions will remain within Cap. The IAG’s Special Audit report in June 2005 supported the proposed actions, and NSW remains committed to this approach.

Since July 2005, the Minister for Natural Resources, the Hon Ian Macdonald MLC, has reaffirmed this State’s commitment to implementing an effective Cap for the Barwon-Darling Valley, and the necessary work is currently being undertaken to implement the new licensing arrangements. However, given the severity of the drought over recent years, the Minister has also initiated additional consultation with affected water users to ensure socio-economic impacts are minimised.

Should you have any further enquiries about this matter, please contact the Department of Natural Resources’ General Manager, Rural Water Reform and Innovation, Mr Kim Alvarez, on 02 9885 5093.

Yours sincerely

RICHARD SLEDRAKE
DIRECTOR GENERAL