

# 8 Ovens Basin

## 8.1 Location of Water Resources

The Ovens basin is located within the Murray-Darling Drainage Division. It includes the Ovens River, the King River and various smaller tributaries such as Fifteen Mile Creek and Reedy Creek. The Ovens River discharges to the River Murray upstream of Lake Mulwala. A map of the river basin is shown in Figure 8-1. Groundwater management areas (GMAs) within the Ovens basin include the Murrumungee GMA and the Barnawartha GMA.

## 8.2 Responsibilities for Management of Water Resources

Goulburn-Murray Water is the licensing authority responsible for managing groundwater and surface water licensed diversions from the Ovens basin. Goulburn-Murray Water also operates the major reservoirs Lake Buffalo and Lake William Hovell. North-East Water is responsible for urban water supply in the Ovens basin, including the towns of Bright, Myrtleford, Beechworth and Chiltern. The North-East Catchment Management Authority is responsible for waterway management.

## 8.3 Seasonal Overview

Rainfall in the Ovens basin was close to average in 2004/05 at around 80-100% of long-term average rainfall. Streamflows in 2004/05 were 89% of the long-term average, and were slightly less than those estimated in the previous season. For example the streamflow recorded in Ovens River at Myrtleford (gauge number 403210) was 78% of the long-term average.

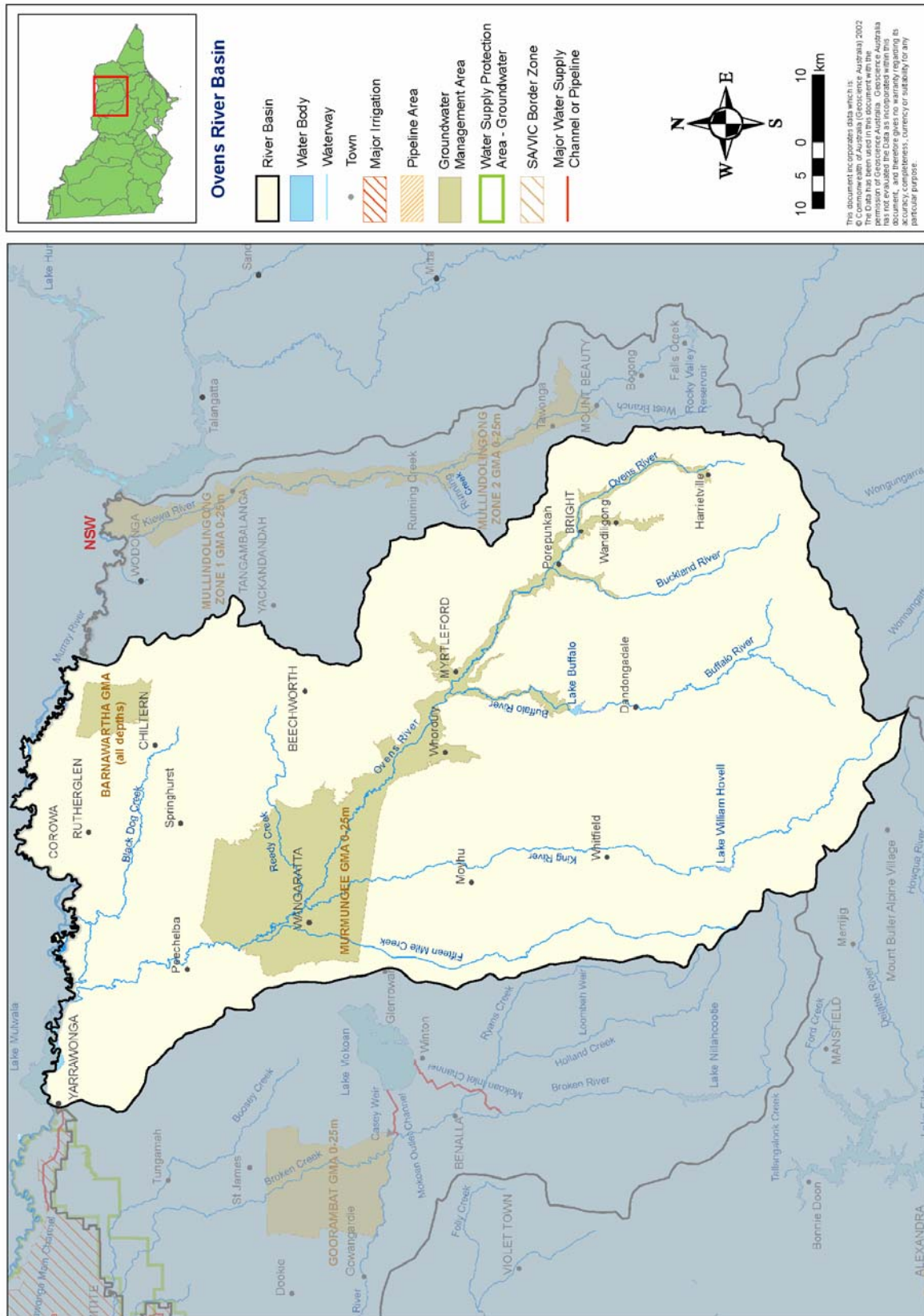
There were no urban or rural restrictions on water use over the season.

The areas affected by the 2003 bushfires continue to have an influence on water quality by contributing high sediment loads to the North East's major rivers and streams. These effects were particularly noticeable during February and April 2005. The effect on water quality is exacerbated by the high sediment loads already in the rivers and streams from previous erosion events.

There were no major negative water quantity events reported in 2004/2005.

An assessment of the environmental health of rivers and streams in the Ovens basin is available in the Index of Stream Condition (Department of Sustainability and Environment, 2005). (Go to: [www.vicwaterdata.net](http://www.vicwaterdata.net)) Details of works undertaken to improve the basin's long-term water quality and river health during 2004/05 are available from the North-East Catchment Management Authority.

Figure 8-1 Map of the Ovens basin



## 8.4 Summary of the Total Water Resources in the Basin

The total volumes of water available and supplied from water resources in the Ovens basin are shown in Table 8-1.

**Table 8-1 Summary of total water resource and use in the Ovens Basin, 2004/05**

| Water Source               | Total Water Resource (ML) | Total Use (ML) |
|----------------------------|---------------------------|----------------|
| Surface Water              | 1,512,500                 | 39,300         |
| Groundwater <sup>(1)</sup> | 18,800                    | 6,000          |
| Recycled Water             | 3,290                     | 1,220          |

Note:

(1) Approximately 80% of the Ovens basin is an unincorporated area that contains a significant groundwater resource not represented in these totals.

## 8.5 Water for the Environment

In 2004/05 there was no formal environmental water reserve established in the Ovens basin, however the Murray-Darling Basin Cap was in place to limit growth in total consumptive water use, leaving the remaining water for the environmental water reserve. Water for the environment was also provided under passing flow obligations in consumptive bulk entitlements for water authorities in the basin.

The environment's share of total flow within the Ovens basin was 1,452,900 ML in 2004/05, which is approximately 96% of the total inflows (Table 8-2).

Although water quantity was largely unaffected in 2004/05, diversions from unregulated sections of the basin impact on the environmental water reserve at a catchment scale. On the upper Ovens River, private diversions during the irrigation season can have a significant impact on the flow regime, resulting in negative effects on aquatic habitats and populations. A streamflow management plan is being developed to devise water sharing rules that minimise the impacts of such diversions and ensure the water resources of the area are managed equitably and sustainably.

When the water remaining to benefit the environment in the Ovens River passes out of the basin into the River Murray, it becomes a resource available to the Murray basin along with other River Murray inflows. Once reaching the River Murray, water from the Ovens River is accounted as a Victorian State tributary input to the River Murray (rather than a shared resource between New South Wales and Victoria).

## 8.6 Surface Water Resources

### 8.6.1 Water Balance

A surface water balance for the Ovens basin is shown in Table 8-2. Note that only those storages greater than 1,000 ML capacity have been included in the water balance. In the Ovens basin this includes Lake Buffalo and Lake William Hovell.

Inflows to the basin were 89% of the long-term average of 1,692,000 ML a year (National Land and Water Audit, 2001). The largest diversion of water from the basin was via small catchment dams.

Table 8-2 Balance of surface water in the Ovens basin

| Water Account Component   | 2004/05<br>(ML)  | 2003/04<br>(ML)  |
|---|------------------|------------------|
| <b>Storage Volume</b>   |                  |                  |
| Volume in storage at start of year  | 25,100           | 28,500           |
| Volume in storage at end of year  | 28,000           | 25,100           |
| Change in storage   | 2,900            | -3,400           |
| <b>Inflows</b>  |                  |                  |
| Catchment inflow <sup>(1)</sup>   | 1,510,400        | 1,609,800        |
| Transfers from other basins   | 0                | 0                |
| Return flow from irrigation   | 0                | 0                |
| Treated effluent discharged back to river   | 2,070            | 1,950            |
| <b>Sub-total</b>  | <b>1,512,500</b> | <b>1,611,800</b> |
| <b>Usage</b>  |                  |                  |
| Urban diversions <sup>(2)</sup>   | 6,740            | 2,980            |
| Licensed private diversions from regulated streams  | 9,800            | 11,800           |
| Licensed private diversions from unregulated streams <sup>(3)</sup>                       | 6,900            | 7,200            |
| Small catchment dams  | 15,900           | 15,900           |
| <b>Sub-total</b>  | <b>39,300</b>    | <b>37,800</b>    |
| <b>Losses</b>   |                  |                  |
| Net evaporation losses from major storages  | 3,500            | 3,200            |
| Losses from small catchment dams  | 4,500            | 4,500            |
| In-stream infiltration to groundwater, flows to floodplain and evaporation <sup>(4)</sup> | 9,400            | 9,400            |
| <b>Sub-total</b>  | <b>17,400</b>    | <b>17,100</b>    |
| <b>Water Passed at Outlet of Basin</b>  |                  |                  |
| Ovens Basin outflow to River Murray   | 1,452,900        | 1,560,200        |
|   |                  |                  |
| <b>Environment's Share of Total Flow in the Ovens Basin</b>                               | <b>1,452,900</b> | <b>1,560,200</b> |

Notes:

- (1) Inflows have been back-calculated from outflows plus diversions.
- (2) The Ovens River System Bulk Entitlement, managed by North East Water, was incorrectly omitted in the 2003/04 water balance.
- (3) Estimated diversions significantly declined in 2004/05 compared to 2003/04 due to the use of an improved estimation method by Goulburn-Murray Water.
- (4) This figure is the average annual loss from the Ovens River REALM model because insufficient data is available to readily calculate losses specific to 2004/05.

### 8.6.2 Small Catchment Dams

The capacity of small catchment dams in the Ovens basin is estimated to be around 24,800 ML (Table 8-3). Usage from the dams is estimated to be approximately equal to the average annual usage of 15,900 ML and, after allowing for losses, the total catchment run-off that is harvested by the dams is estimated to be 20,400 ML.

**Table 8-3 Small catchment dam information in the Ovens basin 2004/05**

| Type of Small Catchment Dam | Capacity (ML) | Volume Used (ML) | Total Water Harvested (ML) |
|-----------------------------|---------------|------------------|----------------------------|
| Stock and domestic          | 14,700        | 7,400            | n/a                        |
| Irrigation                  | 10,100        | 8,500            | n/a                        |
| <b>Total</b>                | <b>24,800</b> | <b>15,900</b>    | <b>20,400</b>              |

Note:

(1) n/a: information not available

### 8.6.3 Water Entitlement Transfers

Transfers of water entitlements within the Ovens basin are listed in Table 8-4. North East Water made a number of temporary water entitlement transfers to manage within its bulk entitlements.

**Table 8-4 Water entitlement transfers in the Ovens basin 2004/05**

| Entitlement                  | Permanent Entitlement Transfer (ML) |            |                             | Temporary Entitlement Transfer (ML) |            |                             |
|------------------------------|-------------------------------------|------------|-----------------------------|-------------------------------------|------------|-----------------------------|
|                              | Bought                              | Sold       | Net Transfer To Entitlement | Bought                              | Sold       | Net Transfer To Entitlement |
| <i>North East Water</i>      |                                     |            |                             |                                     |            |                             |
| Chiltern                     | 0                                   | 0          | 0                           | 30                                  | 0          | 30                          |
| Glenrowan                    | 0                                   | 0          | 0                           | 1                                   | 0          | 1                           |
| Myrtleford                   | 0                                   | 0          | 0                           | 0                                   | 4          | -4                          |
| Porepunkah                   | 0                                   | 0          | 0                           | 4                                   | 0          | 4                           |
| Whitfield                    | 0                                   | 0          | 0                           | 2                                   | 0          | 2                           |
| Ovens River System           | 0                                   | 0          | 0                           | 0                                   | 2          | -2                          |
| <i>Goulburn-Murray Water</i> |                                     |            |                             |                                     |            |                             |
| Ovens River System           | 383                                 | 433        | -50                         | 530                                 | 530        | 0                           |
| <b>Total</b>                 | <b>383</b>                          | <b>433</b> | <b>-50</b>                  | <b>567</b>                          | <b>536</b> | <b>31</b>                   |

### 8.6.4 Volume Diverted

The volume of water diverted under each water authority's bulk water entitlement is shown in Table 8-5.

Compliance with individual bulk entitlement volumes is deemed to occur if water use is not more than the maximum volume allowed to be diverted in 2004/05.

Diversions on unregulated streams are not wholly metered and water usage is an estimate provided by Goulburn-Murray Water.

**Table 8-5 Volume of water diverted under surface water entitlements in the Ovens basin**

| Entitlement   | Period of Bulk Entitlement (years) | Total Bulk Entitlement – 30 June 2005 (ML) | Net Temporary Transfer in 2004/05 (ML) | Maximum Allowable Diversion over Period (ML) | Total Volume Diverted over Period (ML) | Complied? | Volume Diverted in 2004/05 (ML) |
|---|------------------------------------|--|--|--|--|-----------|---------------------------------|
| <i>North East Water</i>                             |                                    |  |  |  |  |           |                                 |
| Beechworth  | 1                                  | 1,100                                      | 0                                      | 1,100  | 604                                    | Yes       | 604                             |
| Bright  | 1                                  | 704  | 0                                      | 704  | 680                                    | Yes       | 680                             |
| Chiltern  | 1                                  | 180  | 30                                     | 210  | 210                                    | Yes       | 210                             |
| Glenrowan   | 1                                  | 90   | 1                                      | 91   | 91                                     | Yes       | 91                              |
| Harrietville  | 1                                  | 91   | 0                                      | 91   | 72                                     | Yes       | 72                              |
| Porepunkah  | 1                                  | 166  | 4                                      | 170  | 170                                    | Yes       | 170                             |
| Springhurst   | 1                                  | 36   | 0                                      | 36   | 30                                     | Yes       | 30                              |
| Whitfield   | 1                                  | 34   | 2                                      | 36   | 35                                     | Yes       | 35                              |
| Ovens River System                                  | 1                                  | n/a  | -2                                     | n/a  | 4,217                                  | n/a       | 4,217                           |
| Myrtleford  | 2                                  | 2,424                                      | -4                                     | 2,420  | 1,493                                  | Yes       | 628                             |
| <i>Goulburn-Murray Water</i>                        |                                    |  |  |  |  |           |                                 |
| Ovens River System                                  | 1                                  | n/a  | 0                                      | n/a  | 14,631                                 | n/a       | 9,817                           |
| <b>Total Annual Volume of Bulk Entitlements</b>     |                                    | <b>3,613</b>                               | <b>31</b>                              | <b>3,646</b>                                 | <b>21,488</b>                          |           | <b>16,555</b>                   |
| <i>Licensed Diversions from Unregulated Streams</i> |                                    | 17,180                                     | 0                                      | 17,180                                       | 6,900                                  |           | 6,900                           |

Notes:

- (1) For multi-year entitlements, the maximum allowable diversion is estimated based on bulk entitlement volume as at 1 July 2004, plus allowances for permanent transfers of entitlement (annual volume multiplied by period of bulk entitlement) and temporary transfers that occurred in the 2004-05 period. The *actual* maximum allowable diversion will depend on when permanent transfers occurred over the applicable period, and the inclusion of temporary transfers that may have occurred in previous years.
- (2) n/a: bulk entitlement conversion order was not finalised at the beginning of 2004/05.

### 8.6.5 Compliance with Passing Flow Obligations in Bulk Entitlements

The bulk entitlements for North-East Water have various passing flow requirements. Detailed information on compliance with these reporting requirements is not provided in this report, however there were no significant non-compliances reported for 2004/05.

One bulk entitlement conversion order in the Ovens basin, to be managed by Goulburn-Murray Water, was not yet finalised in 2004/05. This forthcoming bulk entitlement will specify minimum environmental passing flows at designated points in the Ovens basin. Compliance with these obligations will be included in future reports once the bulk entitlement is finalised and information becomes available.

### 8.6.6 Compliance with Streamflow Management Plans

A streamflow management plan (SFMP) is currently being developed for the Upper Ovens basin. This SFMP was not in operation in 2004/05.

A draft plan was made available for comment in 2003/04 and a consultation process was undertaken. Responses will be considered by the Consultative Committee for review of the draft plan prior to being submitted for approval to the Minister for Water. During 2004/05 further investigative work was carried out that considered the feasibility of implementation options.

## 8.7 Groundwater Resources

Licensed groundwater entitlements and use for the Barnawartha and Murmungee GMA in the Ovens basin, excluding stock and domestic use, are shown in Table 8-6. An estimate of stock and domestic groundwater use is provided in Table 8-7.

Groundwater is used within the Ovens basin as a back-up urban water supply for the townships of Myrtleford and Springhurst and the rural city of Wangaratta. The licensed entitlements and metered use for these groundwater supplies is provided in Table 8-8. Groundwater entitlements and use for unincorporated areas have not been included in the 2004/05 water accounts. The Ovens basin contains all of the Barnawartha GMA and the Murmungee GMA.

**Table 8-6 Compliance with licensed groundwater volumes, Ovens basin 2004/05**

| Water Supply Protection Area/ Groundwater Management Area (1) | GMA/WSPA Depth Limits (m) (2) | Allocation Limit (ML/year) (3) | Licensed Entitlement Allocated (ML/year) (4) | Metered Use (ML) | Estimated Use in Unmetered Bores (ML) (5) | Total Licensed Groundwater Use (ML) | Total Groundwater Resource (ML) |
|---|-------------------------------|--------------------------------|--|------------------|---|-------------------------------------|---------------------------------|
| Barnawartha GMA (100%)  | ALL                           | 2,100                          | 485  | 0                | 170                                       | 170                                 | 2,100                           |
| Murmungee GMA (100%)  | 0-25                          | 16,710                         | 11,792                                       | 0                | 4,127                                     | 4,127                               | 16,710                          |

Notes:

- (1) The percentage of the GMA/WSPA by surface area within the river basin is given in the parentheses.
- (2) This column indicates the aquifer depth limits for which the GMA/WSPA applies.
- (3) The allocation limit represents either the sum of licensed entitlements for WSPAs or the permissible annual volume (PAV) for GMAs, and does not include groundwater resources from unincorporated areas within the basin.
- (4) Includes domestic and stock usage in those cases where this forms part of a licensed allocation.
- (5) For unmetered bores, usage is estimated using the average percentage of licensed entitlements that was used in metered areas across the State. In 2004/05 this was 36%.

**Table 8-7 Number of stock and domestic bores and estimated use, Ovens basin 2004/05**

| Water Supply Protection Area/ Groundwater Management Area | No. of Stock and Domestic Bores (1) | Estimated Stock and Domestic Use (Assuming 2ML/bore) (ML) |
|---|-------------------------------------|---|
| Barnawartha GMA   | 28                                  | 56  |
| Murmungee GMA   | 1,285                               | 2,570   |

Note:

- (1) There are a number of licensed groundwater allocations that also incorporate stock and domestic use. The estimated use for these bores is included in the licensed allocation in the previous table.

**Table 8-8 Urban groundwater usage, Ovens basin 2004/05**

| Town Supplied | Licensed Allocation ML | Metered Use |
|---------------|------------------------|-------------|
| Myrtleford    | 75                     | 0           |
| Springhurst   | 20                     | 0           |
| Wangaratta    | 150                    | 0           |

## 8.8 Recycled Water

All sewage treatment plants in the Ovens basin are operated by North-East Water. Approximately 37% of the volume of effluent that passed through treatment plants in the basin was recycled (Table 8-9).

**Table 8-9 Volume of recycled water, Ovens basin 2004/05**

| Treatment Plant        | Volume Produced (ML) | Volume Reused (ML) | End Use Type for Effluent Reuse (ML) |              |                                      |                               | Volume Discharged to the Environment (ML) | Other (ML) <sup>(3)</sup> |
|------------------------|----------------------|--------------------|--------------------------------------|--------------|--------------------------------------|-------------------------------|---|---------------------------|
|                        |                      |                    | Urban & Industrial                   | Agriculture  | Beneficial Allocation <sup>(1)</sup> | Within Process <sup>(2)</sup> |   |                           |
| Barnawartha            | 43                   | 43                 | 0                                    | 43           | 0                                    | 0                             | 0   | 0                         |
| Beechworth             | 374                  | 82                 | 0                                    | 82           | 0                                    | 0                             | 291                                       | 1                         |
| Bright / Porepunkah    | 259                  | 17                 | 17                                   | 0            | 0                                    | 0                             | 241                                       | 0                         |
| Chiltern               | 90                   | 90                 | 0                                    | 90           | 0                                    | 0                             | 0   | 0                         |
| Myrtleford             | 338                  | 0                  | 0                                    | 0            | 0                                    | 0                             | 338                                       | 0                         |
| Rutherglen / Wahgunyah | 294                  | 294                | 89                                   | 205          | 0                                    | 0                             | 0   | 0                         |
| Wangaratta             | 1,893                | 694                | 9                                    | 685          | 0                                    | 0                             | 1,200                                     | 0                         |
| <b>Total</b>           | <b>3,291</b>         | <b>1,221</b>       | <b>115</b>                           | <b>1,105</b> | <b>0</b>                             | <b>0</b>                      | <b>2,070</b>                              | <b>1</b>                  |

Notes:

- (1) Volume used to deliver specific environmental flow benefits.
- (2) Water that is reused in sewage treatment processes, e.g. backflushing of filters.
- (3) Other refers to a change in on-site effluent storage, or other item affecting the annual water balance for recycled water that is not otherwise accounted for.