Goulburn Murray community profile

Irrigation region

Key issues for the region

1. Region’s population — The Goulburn Murray region has a population of around 134,455, including 12,600 farm businesses.

2. Gross value of irrigated agricultural production
   • In 2006 the gross value of irrigation production was approximately $1,530 million.

3. Water entitlements (approximate)
   • Surface Water Long-term Cap — 2,000 GL.
   • High reliability water share — 1,493 GL for 2008–09.
   • The Low reliability water share — 701 GL for 2008–09.

4. Major enterprises — Major enterprises included dairy, horticulture and mixed farming operations.

5. Government buyback – The Commonwealth Government buyback in the Goulburn Murray had a 400 GL target of high reliability water shares (HRWS) as part of the irrigation modernisation program.

6. Water dependence — The regional economy is highly dependent upon irrigated agriculture (directly and with regard to local processing). There is potential for tourism along the Murray River, but tourism is a small part of the economy compared with agriculture and manufacturing.

7. Current status
   • There are 12,600 irrigated farms, 5,000 of which are small farms that only use 3% of the irrigation water.
   • In 2004–05, horticulture and dairy used 61% of the water and produced 83% of the value of agricultural production. Horticulture and dairy have increased their percentage of water used relative to other users in recent years of low water allocations.
   • The allocation policy employed by Victoria has provided irrigators with a highly reliable water supply that has resulted in the development of high value industries that are dependent on that high reliability (horticulture and dairy). Since 2006–07 the region has suffered a series of low allocations (e.g. the average for the last five years has been 64% in Goulburn and 83% in Murray). Low water allocations have led to increased debt due to high cost of annual water purchases and/or bought in feed costs.
   • In dairy, water use efficiency has improved significantly in the last 10 years, due to low water availability.
   • In response to low water allocations, dairy farmers have diversified their feed base away from home grown perennial pasture towards more flexible feeding systems (with an increased focus on annual crops, lucerne and annual pastures) and increased use of bought in feed. This system is more adaptable, but more complex to manage. It has achieved significant improvements in feed grown per ML of irrigation water used and is now, in the main, a highly efficient industry.
• The majority of irrigation infrastructure in the dairy sector is border-check (flood) irrigation with laser-levelled bays. Despite perceptions to the contrary, in many circumstances these systems demonstrate high efficiency levels, although there also are areas where improvements can be made.

• Horticulture has rapidly adopted new irrigation technology and introduced new production methods in response to low water allocations. As the water cost is a small component of total cost of production (the majority is labour) it is assumed horticulture will purchase the water it needs from either mixed farming or dairy, however some horticulturalists will find the stress and uncertainty of reduced water availability too difficult to cope with and leave the industry.

• Low water allocations combined with low prices (especially dairy in the last year) have resulted in sale of dairy cows and dairy farms. Almost all water in drought years has been used by horticulture and dairy, rather than mixed farming, which has declined significantly.

• Transformation to dryland would result in significantly reduced volume of production and see a major structural adjustment in the region.

• Significant change to irrigation systems and management has been implemented in the past 20 years. Irrigation supply systems and farm water efficiency are currently being modernised through the Northern Victoria Irrigation Renewal Project (NVIRP). There are opportunities to improve on farm water use especially in dairy but current financial stress will limit investment in the short to medium term.

• The area has suffered a slump in confidence and high stress caused by poor terms of trade that has been strongly influenced by low water availability.

• The current operating environment is highly uncertain due to the substantial reform that has already taken place, and uncertainty around the likely impact of SDLs. This uncertainty is constraining investment and other key decisions.

• There is a small amount of irrigation water use in the Goulburn Murray Irrigation District (GMID) that is sourced from the Loddon and Campaspe catchments:

• Associated with NVIRP, approximately 70% of landholders representing 90% of the water entitlements in the Campaspe district have decided to exit irrigation (please refer to Appendix). This will result in up to 14 GL of entitlement being offered to the Commonwealth Government as well as 6 GL of savings as a result of decommissioning the irrigation district. This is still work in progress but the most likely outcome is the closure of the Campaspe Irrigation District with a small number of irrigators reconnecting as either direct diverters from the Campaspe River or through to the Rochester Irrigation District serviced from the Goulburn irrigation system.

• For Loddon, irrigation water is used as part of a large dryland farm. The exception is a small number of intensive irrigated horticulture enterprises, particularly wine grapes. Uses include irrigated lucerne (for hay) and pastures (for finishing livestock). The water is highly valued by farmers, as it adds value to dryland production. Surface water has been highly unreliable during the drought, with farmers tending to use ground water where available.
8. Responses to water availability scenarios

- A reduction in water availability presents a real risk of further loss of confidence (already at low levels) in irrigated dairying and a collapse in value of farm assets.

- 20% – As this water can be obtained from buyback, the remaining irrigators will be able to expand if there is a return to historical inflows. The irrigation industries may expand despite having less water in total, due to improved irrigation efficiency.

- 40% – No water would be available for mixed farming, and horticulture and dairy industries would remain static. Dairying may shrink further due to a loss in confidence. Towns dependent on dairy will be under threat.

- 60% – The dairy industry would experience a serious decline and loss of confidence with loss of GVAP of around $490 million, or over $1 billion in economic activity. This would result in loss of processing capacity and it is likely only one of seven dairy factories would remain in operation.

- The irrigation system would need to shrink to around half the scale in the NVIRP business case.

- Towns reliant on dairying (e.g. Cohuna, Kyabram, Numurkah, Stanhope) would shrink significantly or become increasingly welfare-dependent.

Region overview

The Goulburn–Murray region is regarded as Australia’s foodbowl, being the country’s largest irrigation district. It produces more of Australia’s fruit and dairy produce than any other region, as well as significant general horticulture and mixed farming. Irrigated agriculture generated an estimated $1.5 billion in farm gate production in 2005–06.\(^1\)

The food processing industry in the Goulburn–Murray region was, before the drought, a major Victorian employer, one of the fastest growing industries in the state and its main exporter. As in other areas, the combined forces of the drought and rationalisation of agricultural industries has lead to a declining number of farms. The local economy has also been bolstered in recent times by increasing tourism and recreational activities, both of which have elements that are highly dependent on water.

The region has many important environmental assets including Barmah forest, Gunbower forest Ramsar site and Kerang Wetlands Ramsar site. Encompassing five municipalities (Swan Hill, Gannawarra, Campaspe, Greater Shepparton, and Moira) and twelve major towns/cities, the Goulburn–Murray region has an estimated regional population of 134,455.\(^2\)

According to Barr’s classification of Victoria’s social landscapes, the region consists of a complex array of production, non-agricultural, transitional, amenity and intensive peri-urban landscapes.\(^3\) These classifications indicate that while commercial agriculture is still central to the economic and social structure of some areas of the region, others are being increasingly valued and utilised for their amenity value.

The current GMID irrigation system was designed for agriculture in the early 1900s. An extensive project of modernisation, the Northern Victorian Irrigation Renewal Project (NVIRP), is currently underway, as described later in this document (page 10). Water in the region is sourced from the Murray, Goulburn, Campaspe and Loddon Rivers, and the network is managed and operated by Goulburn–Murray Water (G–MW), a Victorian Government statutory water corporation.
Figure 1 Location of irrigation district
Irrigation overview

The irrigation system was first developed in the late 1800s early 1900s. However, the biggest increase to the system came with a major upgrade to Lake Eildon in 1956. With the upgrade, more water was available and so more water entitlements were able to be distributed in the designated irrigation areas. The water entitlement was calculated on a formula based on land ownership. For example, for the first 100 acres owned 100 acre feet in water entitlement was provided, followed by one acre foot per 12 acres owned from 100 acres to 300 acres, and subsequently one acre foot for every three acres owned beyond 300 acres. There were also different allocations if the land was considered suitable for horticulture (i.e. two acre feet per acre of land).

The system was designed so that when all entitlements were fully utilised the system would be able to deliver on average 130% of water rights. From that time there was a steady increase in irrigation development. However, as the resource was significantly greater than water used, individual irrigators had an effectively unlimited supply.

The dry conditions in the late 1960s and early 1970s started to show that the resource did have some limitations and there was also a time when the allocation only reached 160%. 1979 saw the completion of Lake Dartmouth and a slight increase in water entitlements distributed. Continued irrigation development saw a change of maximum allocation to 200% with an average allocation of around 190% with new minimum allocation of 130% experienced during the 1982 drought. Up until 1987, the only way an irrigator could increase their water entitlement was through the purchase of extra land with an existing water entitlement. However, many irrigators continued to develop their properties and relied on water allocations of 150% or greater which was what had been delivered in the majority of years previously. In 1987 a major change took place, which allowed for temporary trade of water followed by the allowance of permanent trade in 1991. This enabled individual irrigators to meet their water needs during years of lower allocation by buying from individuals who had not developed their properties to the same degree. It also allowed for individuals to increase their water right as a risk management strategy.

Maximum allocation remained at 200% but the average allocation started to fall to around 180% with a minimum of 130%. Water trade increased water use as previously unused (‘sleeper’) entitlements were traded and used. The continued rise in water use started to have some broader impacts and more and more pressure was starting to be applied to maintain and improve river health.

A water audit in 1995 indicated “significant and unsustainable growth in diversions”. Water use grew by 8% between 1988 and 1994 across the Basin which was equivalent to 750 GL. In response, the Murray–Darling Basin Commission introduced the Murray–Darling Basin Cap based on the volume of water that would have been diverted under 1993–94 levels of development. This was seen as an “essential first step in establishing management systems to achieve healthy rivers and sustainable consumptive use including agriculture”.

The cap combined with a sequence of dry years meant that while maximum water allocation remained 200%, the average allocation dropped to 160% with a new minimum of 57% on the Goulburn during the 2002–03 drought. Water use continued to rise and further restrictions were introduced in 1997–98 with the ban on temporary trade of sales water greater than 30% and no access to sales above 30% if an individual traded water. These measures were introduced in an attempt to restrict increased use.
Recent years have seen a sequence of inflows that has severely restricted water allocations throughout the Murray–Darling Basin. This has put significant stress on both the irrigation industries and river health. In 2004, the Victorian Government structured the ‘80:20 deal’ with the Victorian Farmers Federation and water services committee as part of its Living Murray commitments. This involved irrigators giving up 20% of their average sales water to the environment which then provided legal certainty on their ownership of the remaining 80%. This represented 120 GL of sales water entitlement and resulting in a new maximum allocation of 148%. As a component of Restoring the Balance in the MDB there is a target of 400 GL of high reliability water shares (HRWS) of government buy-back in the Goulburn–Murray Irrigation District (GMID).

Rural water supply

Regional system description

The GMID channel network was built over the period 1900 to 1950. It comprises 6,300 km of open earthen channels, 800 km of natural waterways, and approximately 23,000 km of water supply outlets (irrigation and domestic and stock) serving an area of approximately 9,900 km² over six irrigation areas. The network is managed and operated by Goulburn–Murray Water (G–MW), a Victorian Government statutory water corporation.

A major issue with the existing system is that the open channel system loses about 28% of the water diverted into the district or approximately 730 GL (long-term cap equivalent) per annum. Another issue with the system is that much of the GMID channel network is manually operated, with a time-consuming and heavy labour process essentially unchanged in 100 years of operations.

In 2008 Victorian Government launched the NVIRP project to comprehensively modernise the GMID irrigation system to support a modern, vibrant and value-adding irrigation sector in Northern Victoria while delivering more water to the environment. This complements the Northern Region Sustainable Water Strategy (NRSWS) which identified a need for improved service levels creating flexibility for farm businesses, giving more choice for irrigators about what to grow, when to grow it and how to apply water to crops.

147 GL has been traded out of the region between 2004–05 and 2008–09. NVIRP will save 425 GL of water which will be shared between irrigators, the environment and Melbourne.

Table 1 System details and performance, G–MW.

<table>
<thead>
<tr>
<th>Irrigation Area</th>
<th>Total Entitlement (HRWS) ML 30–Jun–05</th>
<th>Total Trade Out ML 30–Jun–09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murray Valley</td>
<td>282,427</td>
<td>252,086</td>
</tr>
<tr>
<td>Shepparton</td>
<td>183,205</td>
<td>162,235</td>
</tr>
<tr>
<td>Central Goulburn</td>
<td>391,881</td>
<td>349,919</td>
</tr>
<tr>
<td>Campaspe</td>
<td>20,411</td>
<td>18,112</td>
</tr>
<tr>
<td>Rochester</td>
<td>190,709</td>
<td>170,802</td>
</tr>
<tr>
<td>Pyramid-Boort</td>
<td>229,107</td>
<td>225,417</td>
</tr>
<tr>
<td>Torrumbarry</td>
<td>343,800</td>
<td>315,263</td>
</tr>
<tr>
<td>Total (ML)</td>
<td>1,641,541</td>
<td>1,493,634</td>
</tr>
</tbody>
</table>
Table 2 Customers, water use and GVAP, GMID, 2004–05.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Customers</th>
<th>Water Use</th>
<th>Gross Value Agricultural Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>% of total GL % of total $ million % of total</td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>2,700</td>
<td>21</td>
<td>970 56</td>
</tr>
<tr>
<td>Horticulture</td>
<td>500</td>
<td>4</td>
<td>90 5</td>
</tr>
<tr>
<td>Mixed</td>
<td>4,400</td>
<td>35</td>
<td>615 36</td>
</tr>
<tr>
<td>Rural Residential</td>
<td>5,000</td>
<td>40</td>
<td>45 3</td>
</tr>
<tr>
<td>Total</td>
<td>12,600</td>
<td></td>
<td>1,720 1,350</td>
</tr>
</tbody>
</table>

Note: this is a different period than that presented in Figure 18.

The farm

Natural capital

Grants and assistance have been available in the GMID for initiatives such as whole of farm planning, recycling systems, tree planting and productivity grants. During the drought there were $20,000 Irrigation Management Grants available to help farmers across the Basin to improve water management on-farm. In the immediate future, DEWHA have flagged an on-farm irrigation efficiency program that will provide incentives for farmers to upgrade their irrigation infrastructure and share half of the water savings generated with the government. Stage Two of NVIRP will also see a $1 billion investment in the connections program bringing customers to the backbone.

Figure 2 Survey respondents by farm type

Number of respondents = 356. Some respondents reported multiple types.
Financial capital

The last five years of dry conditions and low water allocations have severely eroded the buffers agricultural enterprises had to cope with poor seasons, pushing many to the limit of their financial, physical and mental reserves. In the dairy industry, for example, although ABARE data shows a competitive rate of return, the figures do not illustrate the significant cashflow pressure that farms have experienced as a result of low water allocations. Total farm debt has increased by 41% from $367,000 to $518,000 in the period 1999–00 to 2007–08. The working capital component of farm debt has increased by 200% from $84,000 to $255,000 over the same period. This is reflected in the ratios provided by farm type on the following pages.

Human capital

The GMID community has been under extreme stress and hardship for at least five years. Many farmers are reaching retirement age and have lost their enthusiasm to change. The dairy industry, for example, historically has been characterised by a high capacity to change and entry to the industry has been seen as easier than other agricultural industries. However the industry faces a number of challenges. In particular, the image of the industry has suffered and there are challenges to find appropriate skilled labour to support farms moving forward.

The transition from irrigated to dryland production that will be required in some parts of the GMID is (and will be) difficult for some landholders, requiring new skills and knowledge and, over time, access to equipment and machinery of more suitable scale. Area farmed will also need to increase significantly from irrigated to dryland to achieve viable businesses. The farming communities are currently under extreme stress levels due to high uncertainty and a feeling of a lack of control over their environment. Many highly successful farmers have left farming or are considering their future. A major restructure has already happened.

A significant percentage of farmers are considering scaling down, retiring or selling.

At the same time, the region’s farmers have rapidly adopted technology and the region is undergoing massive change through modernisation.

The following pages provide more detail about farms within different sectors in the region.

The farm: Dairy farms

The figures and table on this page present results from the telephone survey of irrigation farmers undertaken in the region. They include:

- farmers’ ranking of a range of issues that they considered problematic;
- farm financial measures (note that 60% of dairy farmers in the GMID have off-farm income (84 survey respondents)); and
- measures of optimism, and how satisfied farmers are with a range of life issues.

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets¹</td>
<td>-0.02%</td>
</tr>
<tr>
<td>Debt ratio²</td>
<td>19.71%</td>
</tr>
<tr>
<td>Value of Water/total assets</td>
<td>31.91%</td>
</tr>
</tbody>
</table>

¹ Profit/Assets
² Total debt / Total assets

Table 3 Farm financial measures
Figure 3  Farm issues — dairy farms

*Note: 1 = No problem to 5 = Significant problem. Number of respondents = 146*

Figure 4  Farm financial measures—dairy

*xi*
Figure 5 Optimism — dairy

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 146

Figure 6 Farm issues — horticultural farms

Note: 1 = No problem to 5 = Significant problem. Number of respondents = 36
The farm: Horticulture farms

The figures and table on this page present results from the telephone survey of irrigation farmers undertaken in the region. They include:

• farmers’ ranking of a range of issues that they considered problematic;
• farm financial measures (note that 57% of horticulture farmers in the GMID have off-farm income (35 survey respondents)); and
• measures of optimism, and how satisfied farmers are with a range of life issues.

Table 4 Farm financial measures

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets(^1)</td>
<td>4.86%</td>
</tr>
<tr>
<td>Debt ratio(^2)</td>
<td>9.40%</td>
</tr>
<tr>
<td>Value of Water/total assets</td>
<td>24.59%</td>
</tr>
</tbody>
</table>

\(^1\) Profit/Assets  
\(^2\) Total debt / Total assets

The farm: Mixed farms (Broadacre and Livestock)

The figures and table on this page present results from the telephone survey of irrigation farmers undertaken in the region. They include:

• farmers’ ranking of a range of issues that they considered problematic;
• farm financial measures (note that 50% of livestock and broadacre farmers in the GMID have off-farm income (30 survey respondents)); and
• measures of optimism, and how satisfied farmers are with a range of life issues.

Table 5 Farm financial measures

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets(^1)</td>
<td>-2.37%</td>
</tr>
<tr>
<td>Debt ratio(^2)</td>
<td>13.83%</td>
</tr>
<tr>
<td>Value of Water/total assets</td>
<td>26.22%</td>
</tr>
</tbody>
</table>

\(^1\) Profit/Assets  
\(^2\) Total debt / Total assets

The farm: Livestock farms

The figures and table on this page present results from the telephone survey of irrigation farmers undertaken in the region. They include:

• farmers’ ranking of a range of issues that they considered problematic;
• farm financial measures (note that 39% of livestock farmers in the GMID have off-farm income (146 survey respondents)); and
• measures of optimism, and how satisfied farmers are with a range of life issues.

Table 6 Farm financial measures

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets(^1)</td>
<td>-0.66%</td>
</tr>
<tr>
<td>Debt ratio(^2)</td>
<td>9.86%</td>
</tr>
<tr>
<td>Value of Water/total assets</td>
<td>33.75%</td>
</tr>
</tbody>
</table>

\(^1\) Profit/Assets  
\(^2\) Total debt / Total assets
Figure 7  Farm financial measures — horticulture

Figure 8  Optimism — horticulture

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 36
Figure 9  Farm issues — broadacre & livestock farms

Note: 1 = No problem to 5 = Significant problem. Number of respondents = 30

Figure 10  Farm financial measures — broadacre & livestock
Figure 11 Optimism — broadacre & livestock

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 30

Figure 12 Farm issues — livestock farms

Note: 1 = No problem to 5 = Significant problem. Number of respondents = 146
Figure 13  Farm financial measures – livestock

Figure 14  Optimism — livestock

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 146
The farm: Broadacre farms

The figures and table on this page present results from the telephone survey of irrigation farmers undertaken in the region. They include:

- farmers’ ranking of a range of issues that they considered problematic;
- farm financial measures (38% of broadacre farmers in the GMID have off-farm income (37 survey respondents)); and
- measures of optimism, and how satisfied farmers are with a range of life issues.

Table 7 Farm financial measures

<table>
<thead>
<tr>
<th>Ratios</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on assets1</td>
<td>–1.38%</td>
</tr>
<tr>
<td>Debt ratio2</td>
<td>12.77%</td>
</tr>
<tr>
<td>Value of Water/total assets</td>
<td>20.75%</td>
</tr>
</tbody>
</table>

1 Profit/Assets
2 Total debt / Total assets

Figure 15 Farm issues — broadacre farms

Note: 1 = No problem to 5 = Significant problem. Number of respondents = 37
Figure 16  Farm financial measures – broadacre

Figure 17  Optimism — broadacre

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 37
On-farm irrigation water use

Irrigation application methods

Border-check irrigation is used for the majority of dairy in this region and drip or spray application for horticulture (see Table 8). Well managed border-check irrigation has been demonstrated to have high levels of efficiency on many of the soil types in the region and will be part of the future irrigation system but there is also scope to improve water use efficiency through the adoption of improved technology. However, the financial pressure on many farms over the past five years has limited farmers’ ability to make the required investments. There is extensive interest in efficiency measures, but farmers cannot take these up until they have achieved some financial recovery.

On-farm irrigation infrastructure

The majority of irrigation infrastructure in the dairy sector is border-check (flood) irrigation with laser-levelled bays. In many circumstances these systems demonstrate high efficiency levels but there are also areas where improvements can be made. A high proportion of water is recycled on-farm.

Dairy sector on-farm infrastructure has not changed much over the last five years, due to financial limitations. Instead farmers have focussed on getting water onto the best land and changed focus to annual crops.

The connections program as part of modernisation has led to irrigation infrastructure improvements on-farm and improvements in water use.

Additional irrigation upgrades have been made through farms accessing the $20,000 irrigation grant.

Table 8  On-farm irrigation management (2010)

<table>
<thead>
<tr>
<th>Irrigation parameter</th>
<th>Dairy (%)</th>
<th>Horticulture (%)</th>
<th>Livestock (%)</th>
<th>Broadacre (%)</th>
<th>Broadacre &amp; livestock (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood flow</td>
<td>94%</td>
<td>37%</td>
<td>89%</td>
<td>81%</td>
<td>97%</td>
</tr>
<tr>
<td>Travelling</td>
<td>1%</td>
<td>0%</td>
<td>1%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Microjet fixed sprinklers</td>
<td>0%</td>
<td>43%</td>
<td>1%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Drip/trickle</td>
<td>0%</td>
<td>40%</td>
<td>1%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>2%</td>
<td>17%</td>
<td>6%</td>
<td>8%</td>
<td>3%</td>
</tr>
<tr>
<td>Timing irrigation on the basis of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil moisture measuring tools</td>
<td>13%</td>
<td>43%</td>
<td>9%</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td>Calendar based</td>
<td>14%</td>
<td>6%</td>
<td>13%</td>
<td>11%</td>
<td>20%</td>
</tr>
<tr>
<td>Weather forecast</td>
<td>30%</td>
<td>20%</td>
<td>25%</td>
<td>19%</td>
<td>37%</td>
</tr>
<tr>
<td>Own observations/knowledge</td>
<td>85%</td>
<td>77%</td>
<td>85%</td>
<td>89%</td>
<td>87%</td>
</tr>
<tr>
<td>Percentage of farms trading (sample size)</td>
<td>(80 traders)</td>
<td>(35 traders)</td>
<td>(136 traders)</td>
<td>(36 traders)</td>
<td>(29 traders)</td>
</tr>
<tr>
<td>Purchasing</td>
<td>51%</td>
<td>63%</td>
<td>27%</td>
<td>39%</td>
<td>28%</td>
</tr>
<tr>
<td>Selling</td>
<td>29%</td>
<td>26%</td>
<td>43%</td>
<td>50%</td>
<td>52%</td>
</tr>
</tbody>
</table>
**Water entitlements**

Historically the level of entitlement held on a farm was related to the commodity type. Typically, horticultural enterprises held enough permanent water entitlement to fully meet or exceed their farm requirements at 100% allocation. Dairy farms typically required 100% allocation plus 100% sales allocations to meet their full water needs. Mixed farming operations with more flexibility in their farming systems undertook farming activities based on the seasonal allocation that was available.

Over the past five years both dairy and mixed farming enterprises have been net sellers of transferable water entitlements. In many circumstances, dairy farmers have replaced the water with bought in feeds at a lower cost than purchasing water and mixed farmers would reduce their cropping programs and sell water rather than use it at the prices experienced. Horticulturalists with limited alternatives to water have been buyers at the low allocations.

In the current operating environment with many farms under financial pressure, the presence of the government in the water market has seen some farms sell permanent water entitlements. Many are doing so as part of their exit strategy while others are selling to retire some debt but plan to continue to trade. Farms that sell permanent water entitlement will increase their exposure to the water market and will need to develop skills and strategies to manage this risk in their business.

Water trading is another tool that farmers can use in their businesses and generally considered favourably as it has provided more choices for farms as they develop their businesses. Table 9 shows water has traded from mixed to dairy or horticulture or from dairy to horticulture.

**Table 9 Water trading (2007–08)**

<table>
<thead>
<tr>
<th>Irrigation practice</th>
<th>Broadacre %</th>
<th>Dairy %</th>
<th>Horticulture %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Percentage of farms trading</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchasing permanent water</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Selling permanent water</td>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Purchasing temporary water</td>
<td>6</td>
<td>18</td>
<td>62</td>
</tr>
<tr>
<td>Selling temporary water</td>
<td>68</td>
<td>41</td>
<td>12</td>
</tr>
<tr>
<td><strong>Reasons for not buying water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade of water restricted</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Price too high</td>
<td>68</td>
<td>65</td>
<td>8</td>
</tr>
<tr>
<td>Extra water not required</td>
<td>14</td>
<td>21</td>
<td>28</td>
</tr>
<tr>
<td><strong>Reasons for not selling water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Used all water available</td>
<td>5</td>
<td>39</td>
<td>43</td>
</tr>
<tr>
<td>Prefer to carryover water</td>
<td>17</td>
<td>15</td>
<td>29</td>
</tr>
<tr>
<td>Uncertainty of allocations</td>
<td>8</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>May have needed it</td>
<td>11</td>
<td>17</td>
<td>15</td>
</tr>
</tbody>
</table>
Soil moisture measurement

There is no widespread system for monitoring soil moisture in the region for dairy, whereas 43% of horticulturalists use a form of soil moisture monitoring. With a change to annual crops with three to four irrigations per year in dairying, soil moisture monitoring is considered less important.

Irrigation timing

There is scope for improvement in irrigation timing and additional benefits will be driven in the GMID with improved service levels achieved by NVIRP. Timing alone will not drive the efficiencies that will be required in the future and needs to be combined with improved application technology on-farm.

Some 42% of horticulturalists use a soil moisture measuring tool for timing of irrigation.

Regional agricultural production

Regional agricultural value chain

Most of the milk and fruit produced in the GMID is processed in the region, with SPC fruit processing in Shepparton and multiple dairy processing operations across the GMID. Low water allocations have a major impact on these industries. According to Dairy Australia, the Australian Bureau of Agriculture and Resource Economics (ABARE) estimates that dairy has an economic multiplier of 2.5, which puts the economic value of the industry to the entire Lower Murray–Darling Basin (LMDB) in the order of $2 billion.

Low water availability has impacted on these industries with lower levels of agricultural output. Dairy production has fallen significantly in the Goulburn, Murray and Loddon statistical divisions with average annual falls from 2005–06 to 2008–09 of 9.7%, 12.4% and 17.8% respectively.

The dairy industry has moved from predominately perennial pasture base to an increased use of annual pastures and crops due to limitations on water availability. This has corresponded with the development of more flexible feeding systems and a higher reliance on bought in feeds. The system change has increased the cost of production and has impacted on profitability. If water availability improves then perennial pasture may return but not to the same pre-drought levels. Farmers will continue to focus on getting more from less water and there will be an increasing focus on crops such as lucerne and summer fodder crops that provide opportunities to increase farm productivity.

Dairy will need to remain world competitive to retain the critical mass within the industry. If cost of production rises to a level that will not be viable for export milk prices then the industry will contract to a relatively small domestic market focused industry.

The fruit industry has potential to improve productivity, however working capital is currently limited. Pome fruits can increase planting density and improve varieties, however the cost per ha is around $45,000. The fruit industry also faces the challenge of imports from New Zealand, China and USA.

Agricultural production and therefore manufacturing is dominated by irrigated produce, mainly dairy and fruit.
Figure 18  Gross value of agricultural production (GVAP) (2006)

Figure 19  Gross value of agricultural production (GVAP) $/ML of water used (2006)
The region’s community

Figure 20 Level of highest school education (2006)

Figure 21 Higher education (2006)
Figure 22 Employment (2006)xxxii

Figure 23 Nominal income (2006)xxxiii
The region’s community — education, employment and income

Community overview

In 2006 the Goulburn–Murray region was home to approximately 134,455 residents. The GMID population grew by approximately 10% between 1996 and 2006, with 11,000 extra persons added to the region. Current projections predict that the GMID population is likely to gradually grow in the short-term. The population is forecast to be 15.7% greater in 2026 than in 2006, which is only half the growth rate anticipated for Victoria as a whole. The population growth of the GMID is anticipated to slow after 2011, possibly peaking and then declining.

Large towns in the GMID include Shepparton, Swan Hill and Echuca. In the west of the region there are a number of important, though relatively smaller, towns including Kerang, Cohuna, Pyramid Hill and Boort. Population decline and disadvantage is a major issue, particularly for communities west of the Campaspe River.

Drilling down deeper into town population figures, it is clear that larger towns in the GMID are experiencing growth, where many small towns are in decline. Towns in Gannawarra and Loddon Shires are already experiencing population decline, while towns like Shepparton, Echuca and Swan Hill expected to grow during the period 2006–26.

Like other areas, the region is experiencing structural ageing as more young people leave the region than are born into it or come to live in it. This is reducing the amount of labour available.

Countering the loss of young people from the region is its significant number of education institutions. Across the region, there are 40 preschools, 40 primary schools and 20 secondary schools. There are also three universities represented (the University of Melbourne, La Trobe University and the Australian Catholic University) as well as a number of large TAFE institutions.

The GMID region is attracting an influx of ‘lifestyle’ farmers, as well as diverse ethnic groups. Skilled migrants from overseas have been actively recruited to the region to meet skill shortages, though this has slowed during the global financial crisis. Many new residents are bringing with them ‘urbanised’ social values, such as a heightened concern for the environmental values of the region, expectations about service quality and an awareness of and participation in political processes.

The combination of dry conditions, low water allocations, youth migration and population decline is frustrating many communities. In some areas, these changes have severely impacted upon the wellbeing, mental, physical and financial, of communities in the GMID, particularly in those areas whose primary economic base is agriculture.
Appendix C  Irrigation district community profiles

Figure 24  Regional issues

Note: 1 = No problem to 5 = Significant problem. Number of respondents = 36

Figure 25  Optimism (regional people)

Note: 1 = Completely dissatisfied to 10 = Completely satisfied. Number of respondents = 36
The region’s community — demographics and key statistics

Table 10 Demographics and key statistics (LGAs within study area. 2006)\textsuperscript{a}

<table>
<thead>
<tr>
<th></th>
<th>Campaspe</th>
<th>Gannawarra</th>
<th>Greater Shepparton</th>
<th>Loddon</th>
<th>Moira</th>
<th>Swan Hill</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>33,469</td>
<td>10,872</td>
<td>56,544</td>
<td>1,865</td>
<td>19,980</td>
<td>11,925</td>
<td>134,455</td>
</tr>
<tr>
<td>Total Indigenous persons</td>
<td>632</td>
<td>155</td>
<td>1,614</td>
<td>9</td>
<td>258</td>
<td>364</td>
<td>3,232</td>
</tr>
<tr>
<td>Farm and farm managers</td>
<td>1,635</td>
<td>999</td>
<td>1,725</td>
<td>404</td>
<td>1,675</td>
<td>400</td>
<td>6,838</td>
</tr>
<tr>
<td>Farm and farm managers as percentage of total employed</td>
<td>11%</td>
<td>21%</td>
<td>7%</td>
<td>46%</td>
<td>19%</td>
<td>7%</td>
<td>6,838</td>
</tr>
<tr>
<td>Households</td>
<td>12,889</td>
<td>4,230</td>
<td>20,932</td>
<td>715</td>
<td>7,711</td>
<td>4,732</td>
<td>51,209</td>
</tr>
<tr>
<td>Dwelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fully owned</td>
<td>38%</td>
<td>46%</td>
<td>33%</td>
<td>49%</td>
<td>40%</td>
<td>36%</td>
<td>36%</td>
</tr>
<tr>
<td>Being purchased – directly or rent/buy scheme</td>
<td>32%</td>
<td>25%</td>
<td>34%</td>
<td>22%</td>
<td>32%</td>
<td>28%</td>
<td>32%</td>
</tr>
<tr>
<td>Rented</td>
<td>22%</td>
<td>18%</td>
<td>25%</td>
<td>17%</td>
<td>19%</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Community services and wellbeing by remoteness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population per education employee</td>
<td>35</td>
<td>44</td>
<td>31</td>
<td>31</td>
<td>46</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Population per health employee</td>
<td>22</td>
<td>26</td>
<td>18</td>
<td>41</td>
<td>24</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Population per culture and recreation employee</td>
<td>135</td>
<td>237</td>
<td>183</td>
<td>622</td>
<td>290</td>
<td>149</td>
<td>149</td>
</tr>
</tbody>
</table>

The regional economy

\textit{Regional economic structure}

The three most important industries in the GMID are agriculture, manufacturing and retail. Across the region, towns have varied exposure to the impacts of low water allocations. Towns with other industries such as tourism are much more resilient to low water allocations, however tourism cannot replace agriculture as it is a minor part of the economy. Towns like Cohuna, with an economy that is primarily agriculture-based, are much more exposed to negative impacts.

The long stretch of dry and drought conditions has severely eroded financial reserves and has pushed many farmers to the limit of their financial, physical and mental reserves.

Reduced water availability in GMID will impact on local and regional output, with associated declines in employment and population. However, upgrade and modernisation of the irrigation infrastructure has the potential to increase productivity per ML of water used and provides an opportunity to moderate economic impacts.
Regional response over the past five years

**Demonstrated adaptation capacity**

The GMID is located across areas where average rainfall ranges from 400 mm to 500 mm. This volume of rainfall is insufficient to support many farm enterprises, so there are many farms are highly reliant on access to irrigation water. The high value agriculture that has developed in the region as a result of the reliability of the water supply has been under pressure during the dry conditions and relatively low water allocations over the past 10 years.

The pressure has recently increased for many farms due to low commodity prices for dairy and wine grapes. High grain feed prices, when combined with low water allocations, have hurt many dairy farms, particularly when milk prices dropped dramatically in December 2008 as a consequence of the global financial crisis. The high feed costs could be managed when milk prices were high but have put dairy farms under pressure at the lower milk price currently experienced.

Another major impact of water shortages has been significant land use change. Temporary and permanent sale of water has lead to water moving out of some parts of the district, from Pyramid-Boort in particular. The most significant effect has been in the Pyramid–Boort region. A “new dryland” has developed and the region is searching for an alternative land use. The reality is the agricultural output declines sharply with the loss of irrigation water from the region and any “new dryland” land uses will not match the productive capacity of irrigated land.

Water has followed the most profitable uses, and moved out of mixed farming into dairy and horticulture. Dairy farms which represented the largest user of
water (56%) in the past in the GMID have modified their farming systems with a larger focus on annual pasture compared to perennial pasture. The limited access to water and the high cost of water entitlements during the low allocation years has seen a reduction in the amount of home grown feed and a higher reliance on bought in feed. Improvements in water use efficiency have been achieved but despite this shift there has been pressure on margins; many farms have sold out of dairying and farms have amalgamated, leading to a significant amount of dairy infrastructure becoming redundant both on-farm and in post-farm processing.

**Regional vulnerability**

The GMID region is highly vulnerable to reductions in available water. The economy is highly dependent on irrigated agriculture. Major processing plants for milk and fruit are situated in the region. The Murray Goulburn Co-Operative has recently announced the closure if its dairy factory at Leitchville. This will have a major impact on the towns of Leitchville, Kerang and Cohuna.

There are areas of significant disadvantage in the region with all Shires having SEIFA scores lower than the Australian average of 1,000 (see Figure 27).

**Regional water dependence**

The regional economy of the GMID and all urban centres is highly dependent, and founded on, irrigated agriculture. Reduced water availability has a direct effect on employment.

**Community resilience to change in water allocation**

Community resilience to changes in water allocation is highly variable throughout the region. Where farms were historically mixed, and more extensive, the move to higher value enterprises is very challenging with questions about land suitability, skills involved and financial capital required to change enterprise. Where horticulture and dairying is predominant, farms will improve their water use efficiency, and product quality to adapt to less water. However each commodity type and different farms within each commodity type will have a limit in terms of water availability that will put their long-term viability in doubt.

Tourism is considered an opportunity based around the Murray River and the Kerang Lakes, however the industry requires significant development and will not be able to match the regional economic contribution made through irrigated agriculture if there are significant changes to water availability in the future.

**Scope for regional transformation**

**Scope for farm transformation**

Significant transformation has taken place on farms in the GMID over the past 20 years, with a move of water into dairy from mixed farming enterprises. The next stage of transformation will consist of the modernisation of the irrigation supply system and improved production efficiency, which will be achieved via improved water service levels. An improved delivery system can provide a platform that will enable farms to adopt improved irrigation technology that can achieve productivity gains that can assist in the mitigation of lower water availability.

A great deal has been learnt in the last five years about transformation. Farmers have adapted and transformed their businesses, often significantly. However, to an important (but unmeasurable) extent those changes have been short-term coping mechanisms that will not be financially sustainable long-term.
Appendix C  Irrigation district community profiles

Figure 27  Index of Relative Socio-economic Advantage and Disadvantage (2006)\textsuperscript{liii}

Figure 28  Unemployment and labour force participation (2006)\textsuperscript{liii}
**Scope to strengthen irrigation management**

The modernisation program delivered by Northern Victorian Irrigation Renewal Project (NVIRP) in the GMID is aimed at delivering improved irrigation management through:

- investment in the supply system to deliver enhanced levels of service;
- parallel investment in the Connections Program to provide an optimal delivery to the farm gate and beyond that matches future irrigation demand requirements;
- the combination of enhanced levels of service and the Connections Program to stimulate investment on-farm in best practice irrigation systems;
- investment on-farm in irrigation best practice to lead to a step change in production systems;
- changed production systems to generate greater productivity for the individual enterprise; and
- greater productivity to result in more resilient farms and wider regional economic benefits.

NVIRP will help mitigate some of the impacts of reduced water availability within the district. However, it will also mean that some areas not connected to the backbone will be at greater risk and subject to more change than areas along the backbone or at a connectable distance to the backbone. This change is causing a high degree of anxiety in some sectors of the irrigation community.

**Water availability scenarios – introduction**

**Description of scenarios**

Face-to-face interviews of key stakeholders, and a telephone survey of dryland and irrigation farmers, businesses and community members, were undertaken in the region.

In addition to providing information for the development of the community profile, respondents were asked about the likely impacts of a range of water availability scenarios. These scenarios are not linked to possible sustainable diversion limits; rather, they are intended to test a range of responses from irrigators, and flow-on effects in communities.

The following pages present the results of those discussions.

Water availability scenarios were expressed relative to the long-term cap equivalent water entitlements for the irrigation region. Baseline data are provided below.

Over the long-term, allocations have been 130% of entitlements (1,500 GL entitlements in total, i.e. 2,000 GL allocation approximately).

Buybacks that have already been undertaken, and are currently being rolled out, in the region are estimated to deliver 20% reduction in water availability in the region compared with long-term allocations. Water efficiency project savings (from NVIRP stage 1) have achieved a further 4% savings against long-term allocations.

If water availability is reduced further, it is expected mostly to move initially out of mixed farming and then from dairy.
Table 11  Baseline water data by region (LTCE, approximate, rounded)

<table>
<thead>
<tr>
<th>Region</th>
<th>LTCE allocation volume (GL, approx, rounded)</th>
<th>Drought average use (GL, July 2002 to June 2009)</th>
<th>Buybacks (GL) (already delivered, or committed to)</th>
<th>Efficiency project savings (GL, committed)</th>
<th>Number of irrigators (number, approx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMID</td>
<td>2,000</td>
<td>1,000</td>
<td>400</td>
<td>75</td>
<td>12,600 (includes ~5,000 small irrigators)</td>
</tr>
</tbody>
</table>

In the longer term, the 2,000GL average allocation was shared between horticulture, dairy and mixed farming. Historically dairy used around 1,200 GL/year. In the scenarios table (Table 12), it is assumed that because of the higher value of horticulture, water will move from dairy and mixed farming in preference of horticulture and urban demands.

Table 12  Water availability scenarios — reductions from estimated LTCE entitlement volume

<table>
<thead>
<tr>
<th>Region</th>
<th>Sector</th>
<th>20% GL</th>
<th>40% GL</th>
<th>60% GL</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMID</td>
<td>TOTAL</td>
<td>1,600</td>
<td>1,200</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>Horticulture and urban</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Dairy</td>
<td>1,200</td>
<td>900</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Mixed farming</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Water availability scenarios — direct impacts (face-to-face interviews)

**Impact on NVIRP**

In the 60% scenario, the irrigation system would need to shrink to around half the scale in the NVIRP business case. This may undermine the viability of the irrigation system.

**Dairy**

A 20% reduction would represent an increase in water availability relative to the drought, so may allow dairy to expand. At 40%, conditions would remain similar to drought with dairy accordingly staying static or declining due to loss of confidence. At 60%, milk production would fall by about 1.4 billion litres/year. The dairy industry would experience a serious decline and loss of confidence with loss of GVAP of $490 million at a milk price of 35 c/L. This would be exacerbated if the cost of the irrigation system rises due to significantly reduced volumes.

**Horticulture**

Water prices are not as important for horticulture as for dairy; world commodity prices and the Australian dollar are more important. It is therefore likely that water would move from other sectors into horticulture as long as water price does not become a limiting factor relative to commodity prices and other regions. At 60% water availability, water charges may make water uncompetitive in GMID for horticulture.
Table 13 Summary of direct (irrigation) responses to water availability scenarios

<table>
<thead>
<tr>
<th>Region</th>
<th>Key sectors</th>
<th>-20% LTCE</th>
<th>-40% LTCE</th>
<th>-60% LTCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMID</td>
<td>Dairy</td>
<td>As this scenario will be met from buyback and improved irrigation efficiency, the remaining irrigators will be able to expand if there is a return to historical inflows.</td>
<td>No water would be available for mixed farming and horticulture and dairy industries would remain static. Dairying may shrink further due to a loss in confidence.</td>
<td>Milk production would fall by about half (about 1.4 billion litres/year). The dairy industry would experience a serious decline and loss of confidence with loss of GVAP of $490 million at a milk price of 35 c/L.</td>
</tr>
<tr>
<td>GMID</td>
<td>Horticulture</td>
<td>Negligible impact</td>
<td>Orchards (i.e. perennial) will access water, probably want to own it and not trade.</td>
<td>Orchards (i.e. perennial) will access water, probably want to own it and not trade. NB Note: the cost of water may become prohibitive.</td>
</tr>
</tbody>
</table>

Water availability scenarios — telephone survey responses

For the GMID as a whole, in the telephone survey conducted for this assignment, 20% of irrigation farmers indicated they would seek to exit if water availability reduced by 20%, with 31% indicating they would seek to exit if it reduced by 40%.

This is broadly consistent with the result found across the dairy sector in response to these scenarios (discussed in the Synthesis Report for this assignment).

Figure 29 Goulburn–Murray Irrigation District : telephone survey responses to water availability scenarios

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Please note that the table and figures are presented in a way that respects the structure and content of the original text.
Water availability scenarios — Value chain and flow-on impacts (face-to-face interviews)

Dairy value chain
Dairy currently is a major exporter from the Port of Melbourne. All dairy product is processed in the region, therefore loss of dairy production will directly impact broader economic activity. As water availability falls beyond that provided for by irrigation modernisation (NVIRP) and efficiency programs and buy-backs, to the 60% water availability reduction scenario, around $1 billion/year in economic activity would be estimated to be lost with only one of the current seven dairy factories likely to be viable, and negative flow-on consequences to towns that are substantially dependent on dairy (including Cohuna, Kyabram, Numurkah, Stanhope).

Urban water use
The cost of restricted water availability in urban areas includes loss of social cohesion and activities that promote health and well-being such as gardening and recreation. These uses increasingly are seen as critical human water needs.

Horticulture value chain
Although horticulture is expected to purchase water in low-availability scenarios, the risk of water lost to horticulture is that local processing is highly important to the regional economy with about 4x value-adding.

The local government authority is keen to have horticulture relocate to GMID from other locations, particularly citing Werribee near Melbourne. However, they note this would need Government support.

Social impacts
As water availability falls beyond that provided for by irrigation modernisation (NVIRP) and efficiency programs and buy-backs, social impacts will become severe with displacement of some people, declining populations in rural towns, and decreasing ability by local government and non-government organisations to provide services to at-need rural communities. These services would include health, welfare and education services. For example, as employment opportunities diminish and people leave rural towns, the viability of the schools diminishes, teachers start to leave etc. This has already commenced in some towns in the region during the drought.

This effect is likely to be more severe in the north-west of the region in the Torumbarry and Pyramid–Boort Irrigation Districts, where socioeconomic disadvantage currently is ranked as among the most pronounced in Victoria.

Table 14 Summary of indirect (flow-on) responses to water availability scenarios

<table>
<thead>
<tr>
<th>Region</th>
<th>Key sectors</th>
<th>–20% LTCE</th>
<th>–40% LTCE</th>
<th>–60% LTCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMID</td>
<td>Dairy, horticulture, mixed</td>
<td>Already delivered by buy-backs and NVIRP.</td>
<td>Already delivered by buy-backs and NVIRP, although may affect confidence leading to towns dependent on dairy coming under threat</td>
<td>This would result in loss of $1 billion in economic activity, loss of processing capacity and it is likely only one of seven dairy factories would remain in operation. Towns reliant on dairying (Cohuna, Kyabram, Numurkah, Stanhope), would shrink significantly and become welfare dependent.</td>
</tr>
</tbody>
</table>
Figure 30 Map of irrigation district
Campaspe Irrigation District

This provides a brief overview of the Campaspe Irrigation District (CID) which is part of the Goulburn Murray Irrigation District (GMID).

Introduction

The CID is located in northern Victoria between the townships of Elmore and Rochester and covers an area of approximately 8600 ha. Lake Eppalock is the major storage and is located on the Campaspe River between Bendigo and Heathcote. It has a capacity at full supply level of 312,000 ML that supplies water for irrigation and urban water supplies.

Coliban Water has an 18% capacity share of Lake Eppalock and Goulburn Murray Water (G–MW) manages the remaining water.

The water managed by G–MW is delivered to:

- regulated diverters upstream of the Waranga channel siphon;
- gravity irrigators of the Campaspe Irrigation District (CID);
- unregulated diverters downstream of the Waranga channel siphon; and
- environmental flows.

The Campaspe Weir is the second most significant structure and is located south of Rochester. This structure allows for the off-take for the gravity irrigators of the CID who are supplied by both a channel and pipe system.

The gravity irrigators are located both east and west of the Campaspe River and have a combined water entitlement of approximately 20,000 ML.

Diverters on the regulated proportion of the river hold a similar volume of entitlement as the CID but have traditionally underused their entitlement.

There is another group of diverters much smaller in number (approximately nine active) on the unregulated section of the river downstream of the Waranga siphon. The total of their holdings is approximately 1,700 ML.

Dairy had been the major industry in the past followed by mixed farming and there are a small number of tomato growers.

The majority of the soil types in the CID are classified as either Class 1 or 2 and are highly productive. However, the lighter soil types are not necessarily well suited to border-check irrigation and will tend to use more water per ha than what the plant requires.
Recent History

The Campaspe system until recently was considered one of the most reliable water supply districts. However over the past six years there has been a dramatic decline in inflows which has corresponded to successive years of very low water allocations.

Table 15 Allocations — CID (as of 15 March 2010)

<table>
<thead>
<tr>
<th>Year</th>
<th>Allocation (% of HRWS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>39</td>
</tr>
<tr>
<td>2005–06</td>
<td>31</td>
</tr>
<tr>
<td>2006–07</td>
<td>0</td>
</tr>
<tr>
<td>2007–08</td>
<td>18</td>
</tr>
<tr>
<td>2008–09</td>
<td>0</td>
</tr>
<tr>
<td>2009–10</td>
<td>0</td>
</tr>
</tbody>
</table>

The low water allocations have put irrigation businesses under considerable financial pressure and there has been a decline in the number of dairy businesses. Some farms have access to the Campaspe deep lead that has softened the impact of low surface water allocations however the district has a whole has been under considerable pressure.

Modernisation

As part of Northern Victorian Irrigation Renewal Program (NVIRP) a survey was recently conducted in the CID to gauge the intentions of irrigators before any major modernisation works were to be instigated. As a result of the survey, the overwhelming majority of Campaspe irrigators intend to permanently exit irrigation and take up the exit package offered through NVIRP. There are some irrigators who wish to continue and NVIRP will be working with those individuals to find alternative supply options.

Approximately 70% of landholders representing 90% of the water entitlements in the district have decided to exit irrigation. This will result in up to 14 GL of entitlement being offered to the Commonwealth as well as 6 GL of savings as a result of decommissioning the irrigation district.

This is still work in progress but the most likely outcome is the closure of the CID with a small number of irrigators reconnecting as either direct diverters from the Campaspe river or through to the Rochester irrigation district serviced from the Goulburn irrigation system.

It is not surprising that the majority of irrigators have decided to exit due to the successive years of zero or very low water allocations. The financial pressure and continued uncertainty about the future of the system has had significant impact on individuals and the exit package put forward by NVIRP provides individuals options to move forward.

The closure of the irrigation system will reduce the productive capacity of the region as irrigation farms convert back to dryland operations.
Endnotes

i Department of Sustainability and Environment (DSE), Victoria, 2007, Our Water Our Future: Modernising Victoria’s Food Bowl, June. Victorian State Government, Melbourne

ii Australian Bureau of Statistics (ABS), 2006, 2006 Census, Canberra


iv Victorian Government, Department of Sustainability and Environment (DSE), 2009, Northern Region Sustainable Water Strategy, Melbourne, p. 113

v DSE 2009

vi Goulburn Murray Water (G–MW), 2005, Annual Report 2004–05, and Goulburn Murray Water (G–MW) Annual Report 2008–09. Add 5% to June 05 figures for stock and domestic water, as it was not included in water right pre unbundling.

vii All figures are for the baseline year 2004–05. Data developed by RMCG from various sources including G–MW Customer Database (information supplied February 2009), NVIRP Water Savings Estimation (Hydro Environmental, 11 Jan 2010) and Australian Bureau of Statistics (ABS 7125.0 — Agricultural Commodities: Small Area Data, Australia, 2006–07).

viii MJA Socio-economic Survey for MDBA 2010

ix Australian Bureau of Agricultural and Resource Economics (ABARE). 2008, Australian Farm Survey Results 2005–06 to 2007–08, Canberra

x MJA Socio-economic Survey for MDBA 2010

xi MJA Socio-economic Survey for MDBA 2010

xii MJA Socio-economic Survey for MDBA 2010

xiii MJA Socio-economic Survey for MDBA 2010

xiv MJA Socio-economic Survey for MDBA 2010

xv MJA Socio-economic Survey for MDBA 2010

xvi MJA Socio-economic Survey for MDBA 2010

xvii MJA Socio-economic Survey for MDBA 2010

xviii MJA Socio-economic Survey for MDBA 2010

xix MJA Socio-economic Survey for MDBA 2010

xx MJA Socio-economic Survey for MDBA 2010

xxi MJA Socio-economic Survey for MDBA 2010

xxii MJA Socio-economic Survey for MDBA 2010

xxiii MJA Socio-economic Survey for MDBA 2010

xxiv MJA Socio-economic Survey for MDBA 2010

xxv ABARE 2008

xxvi Dairy Australia, 2008, Australian Dairy Industry In Focus 2008. The economic multiplier attributed to ABARE by Dairy Australia was not able to be verified by MJA.

xxvii ABS 2006 note xxviii


xxix ABS 2006 note xxx

xxx ABS 2006 note xxx

xxxi ABS 2006 note xxviii


xxvii Goulburn-Murray Region Lifestyle, 2007

xxx Goulburn Murray Region Lifestyle, 2007c.

xxxi MJA Socio-economic Survey for MDBA 2010

xxii MJA Socio-economic Survey for MDBA 2010

xxiii ABS 2006 note xxviii. Note: Data presented has been modified to reflect the area within the GMID. This will vary with information presented by Foodbowl Unlimited as the boundaries are different. Note that the Swan Hill LGA was divided between the Nyah to border profile, and the Goulburn Murray profile.

xxiv ABS 2006 note xxx

xxv ABS 2006 note xxx

xxvi ABS 2006 note xxx

xxvii ABS 2006 note xxviii


xxix ABS 2006 note xxviii. Note: Data presented has been modified to reflect the area within the GMID. This will vary with information presented by Foodbowl Unlimited as the boundaries are different. Note that the Swan Hill LGA was divided between the Nyah to border profile, and the Goulburn Murray profile.

xxi ABS 2006 note xxx

xxii ABS 2006 note xxx

xxiii ABS 2006 note xxx

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