



Submission to the Senate
Rural Affairs and Transport Standing Committee Inquiry
into

The Management of the Murray-Darling Basin

December 2010

Foreword

The Victorian Farmers Federation is Australia's largest state farmer organisation, and the only recognised, consistent voice on issues affecting rural Victoria.

The VFF consists of an elected Board of Directors, a member representative General Council to set policy and eight commodity groups representing dairy, grains, livestock, horticulture, chicken meat, pigs, flowers and egg industries.

Farmers are elected by their peers to direct each of the commodity groups and are supported by Melbourne-based staff.

Each VFF member is represented locally by one of the 230 VFF branches across the state and through their commodity representatives at local, district, state and national levels. The VFF also represents farmers' views on hundreds of industry and government forums.

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1. Introduction

The Victorian Farmers Federation (VFF) welcomes the opportunity to provide comment to the Inquiry into the management of the Murray Darling Basin. The VFF is hopeful that this inquiry will help to inform debate on regional impacts of lower water availability; allowing for an outcome that will ensure agriculture and irrigation communities remain strong while achieving positive outcomes for key environmental assets in the Murray Darling Basin (MDB).

Australian ecosystems are well adapted to long periods of dryness. The same cannot be said for irrigation businesses that have been founded on the basis of a secure share of regulated water supply. If we are not careful, the decisions made now will have devastating and permanent impacts on the social and economic fabric of rural and regional communities throughout the Basin. Sustaining the capacity of the Basin to produce the food needed by Australians and for our increasingly valuable food export markets must be a national priority.

The VFF is extremely concerned in relation to the water needs for agriculture to produce food and fibre for Basin's communities, Australians and for the rest of the world. The importance of food security and the socio-economic impacts on the farming community should be paramount in the development of the Murray Darling Basin Authority (MDBA) Basin plan. The world will need to produce as much food in the next 50 years as it has consumed through history to meet the demands of increasing population. Demand for food is not negotiable.

Australian farmers produce almost 93% of Australia's domestic food supply and export a massive 60% (in volume) of total agricultural production. In terms of value, this represents around 67% of the total gross value of Australian agricultural production. According to the latest UN projections, world population will rise from 6.8 billion today to 9.1 billion in 2050 - a third more mouths to feed than present. The demand for food is expected to continue to grow as a result both of population growth and rising incomes. Demand for cereals (for food and animal feed) is projected to reach some 3 billion tonnes by 2050. As such, annual cereal production will have to grow by almost a billion tonnes (2.1 billion tonnes today), and meat production by over 200 million tonnes to reach a total of 470 million tonnes in 2050 - 72 per cent of which will be consumed in developing countries, up from the 58 per cent today.

The MDB is Australia's most important agricultural region; it accounts for nearly 40% the nation's gross value of agricultural production (GVAP)¹, or approximately \$15 billion. The Basin contains more than two thirds of Australia's total area of irrigated crops and pastures; producing over one-third of Australia's food supply, and is home to more than 2 million residents. It produces 53% of Australian cereals grown for grain (including 100% of rice), 95% of oranges, and 54% of apples. The MDB supports 28% of the nation's cattle herd, 45% of sheep, and 62% of pigs². In 2005–06, the gross value of irrigated agricultural production (GVIAP) from the Basin was worth approximately \$5.5

¹ ABS/ABARE/BRS 2009, Socio-economic context for the Murray– Darling Basin – Descriptive report, ABS/ABARE/BRS Report to the Murray–Darling Basin Authority, Canberra, September.

² Murray-Darling Basin Authority, www.mdba.gov.au

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billion (or 37%) of total GVAP in the Basin³, with an estimated fourfold multiplier in value through processing. Beyond the farm gate the Basin's economic value is in excess of \$20 billion.

Because of this it is important for the Basin's water reform to balance the needs of urban and rural customers, as well as environmental water needs, and to reflect the large contribution agriculture makes to Basin's and the nation's economic prosperity. As an example, an important impact to be considered is the ability of water used in agricultural production to provide high quality food at affordable prices to the whole community. Failure to consider such an impact will effectively cut agricultural production and place upward pressures on food prices.

³ ABS/ABARE/BRS 2009, Socio-economic context for the Murray– Darling Basin – Descriptive report, ABS/ABARE/BRS Report to the Murray–Darling Basin Authority, Canberra, September.
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2. Irrigation in Victoria

Irrigated produce accounts for between 31.3 and 38.7 per cent of the gross value of all agricultural production in Victoria⁴. This contribution is significant as this high value product is produced on approximately 3% of Victoria's land mass. It stands to reason that in the local government areas (LGA) within Victorian irrigation districts, irrigation's contribution to the gross value of agricultural output is much greater.

Irrigated agriculture is unmistakably of importance to Victorian agriculture and must be preserved.

Many have attempted to argue that the gross value of output from the irrigation districts of Victoria has actually increased during the last five years of drought. This however, can be clearly refuted on the basis of recently released data from the Australian Bureau of Statistics, modelling gross values of agricultural produce. For the 2008-2009 season, the gross value of irrigated agriculture across Victoria and particularly within the natural resource management (NRM) regions of Victoria plummeted. Until this point, farmers has been able to somewhat mitigate the impacts of drought on farm production by drawing on equity to continue to maintain pre drought levels of production.

Gross value of agricultural produce from the Goulburn Broken NRM region alone dropped \$233.5⁵ million in the space of a single year. A region wide decrease in production value of this scale cannot be called insignificant. The Basin Plan's proposal to permanently reduce water availability to irrigation districts will continue the devastating trend of loss of production as has been seen in the irrigated dairy industry of northern Victoria. Figure 1 shows the decreasing proportion of milk produced in these primarily irrigated dairy districts, despite adaptation and mitigation strategies.

⁴ Australian Bureau of Statistics (2010) Victoria - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09 cat no. 4610.0.55.008

⁵ Australian Bureau of Statistics 2010, *Victoria NRM Regions - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09*, 'Table 4:NRM Region- Goulburn Broken', data cube: Excel spreadsheet, cat no. 4610.0.55.008
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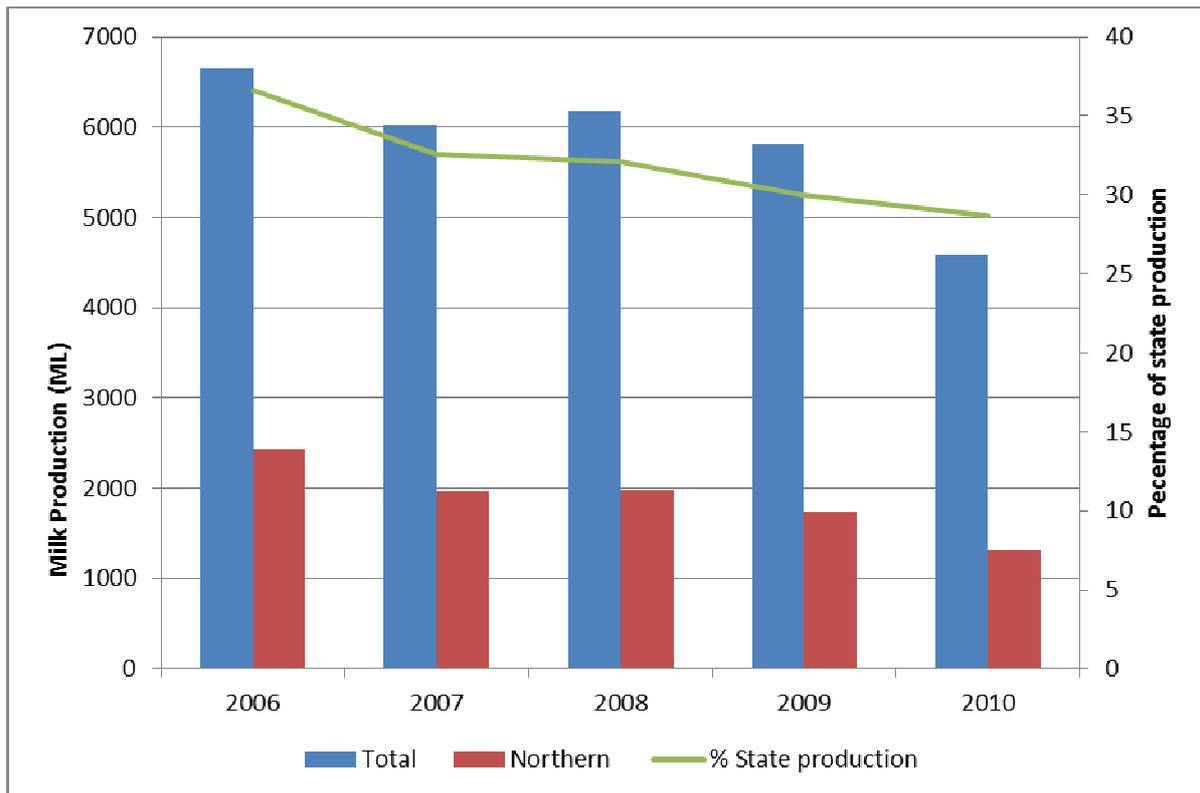


Figure 1. Dairy Production in Northern Victoria as a percentage of total Victorian production⁶

It is arguable that the impact of the seasonal water allocation was just as prevalent in the preceding season, 2007-2008, but was masked by the high market value of milk during this period.

Unlike the southern New South Wales district where irrigation has focussed on the short-season opportunistic crops of rice and cotton, much of Victoria's irrigated produce grows under long season cycles. Set irrigation seasons mandate that farmers must rely on water for irrigation during a specific period of the growing season. Reliability of water supply is just as significant as water availability. The VFF are concerned that recommendations from the Basin Plan to place restrictions on the release of allocated water to irrigators will additionally burden farms.

⁶ Dairy Australia
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3. Industry Fragmentation

3.1 Sustainable production

Under the last 10 years of drought and the associated reductions in irrigation water availability, agricultural producers have been forced to adapt to changes in conditions. Many farms have made successful changes to their production systems to maintain, if not increase their levels of production throughout the drought. However, the continued viability of some of these properties is uncertain as temporary responses cannot be maintained in the long term.

The VFF refute the contention that SDL's will only have small impacts on regional agricultural output⁷, given the important contribution irrigated agriculture makes to the MDB. On an industry wide level, the early period of the most recent drought (2000 onwards) was felt most acutely by dry-land producers.

The maintenance of reasonable water allocations during these early years provided somewhat of a buffer to the reported output of both the dairy and horticultural industries. The last collection of census data by the Australian Bureau of Statistics is only just beginning to pick up on some of the changes to farm numbers and employment which are being seen in irrigation districts. Employment is a lagging indicator of the impact reduced irrigation water availability has on farms. It is inevitable that there will be job losses when water availability in the region is reduced, however the exact timing of the loss of employment opportunities cannot be predicted.

The trend in increased production in all industries across the Murray Darling Basin is resultant of increased efficiencies in management and operation of farm production systems. Unfortunately, these efficiencies do not necessarily transfer to increased farm profit.

With increased fragmentation, what has now been colloquially tagged as the 'Swiss cheese' approach, the VFF hold great concern that costs to individual farmers for services will increase and the availability of such services will become increasingly difficult to access.

3.1.1 Dairy farm adaptation

Victorian Farmers Federation members have adapted to the changing climatic conditions on farm with a number of practical changes to the management of their farm operations:

- Shift from perennial grass pastures to annual pastures
- Increased use of cereal crops, grown for fodder conservation
- Increased areas of water efficient lucerne grown.
- Increased reliance on supplementary feed- hay, silage, grain and concentrates
- Participation in the NVIRP irrigation modernisation project
- Reduced summer crop production.
- Purchased additional water on the temporary market
- Selling temporary water on the market to make ends meet.

⁷ Wittwer, G. (2010) *The regional economic impacts of Sustainable Diversion Limits*, Murray Darling Basin Authority, Canberra.

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Farmers are battling against continued pressure to balance up farming activities against the water available for irrigation. These changes may not necessarily be easy for the farmer and their business. Undertaking many of these changes has required farmers to develop different skills in order to adapt.

Fodder produced on farm and directly grazed by cattle is generally considered to be the cheapest form of feed to produce milk. The reliance on irrigation to achieve the necessary levels of feed in irrigated dairy region of northern Victoria is great. Reduced water availability makes production of grass based grazing pastures difficult and dairy farms are forced to provide feed to milking cows through hay, silage, grain and concentrates.

Average annual irrigated dairy farm financial performance was \$494/ha before interest and tax in 2008-2009. Figure two shows that performance in the northern dairy district is well below the dairy income in other areas of the state. The higher variable costs associated with increased purchase of off-farm feed decrease overall farm income.

A decrease in water security reduces a dairy farm's ability to grow sufficient fodder to feed dairy cows and make a profit. The Murray and Goulburn irrigation district allocations were 35% and 33% respectively during 2008-2009, necessitating a need for feed to be purchased on farm to maintain production levels.

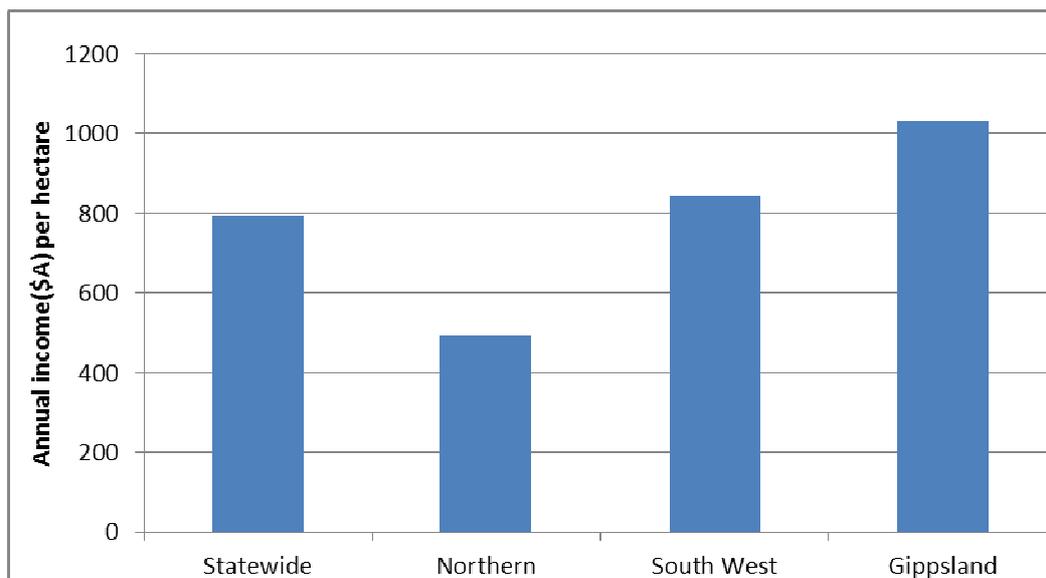


Figure 2. Annual dairy farm income per hectare (2008-2009)

(Adapted from Department of Primary Industries (2009) *Dairy Industry Farm Monitor Project 2008/2009*)

In the dairy industry, production levels through the period of lower water restrictions were maintained by supplementing the reduced level of feed produced on farm with purchased feed. Compared with the largely rain fed dairy production of Gippsland, throughout the 2010 season, Northern Victorian dairy farmers have had an increased reliance on concentrate in addition to their increased requirement for hay and silage. A cow in Northern Victoria is fed an average 2.1 tonnes of

concentrate per year⁸. This is 0.6 tonnes greater than the Gippsland average of 1.5 tonnes per cow per year (Victorian average 1.8 tonnes)⁹.

The escalating reliance on purchased feed and temporary water is increasing farmer's exposure to risk. Where one business has a requirement for these products, it is highly likely that others will be seeking them as well. Market forces and cyclical pricing will dictate the cost of temporary water and feed. In dry years, the increased reliance on these productions will decrease supply and increase costs- consequently placing additional pressure on farm finances. With an average herd size of 282 cows, northern Victorian dairy farms are faced with a concentrate feed bill of \$162,262 annually - \$46,360 greater than an equivalent sized operation in Gippsland. Variation between dairy production areas on the reliance on purchased fodder for continuation of the business is shown in figure 3. While there is merit across all dairying regions for purchased feed to be used in milk production, at 54% of the total feed provided to milking cows, reduced water availability is having a direct impact on costs of production.

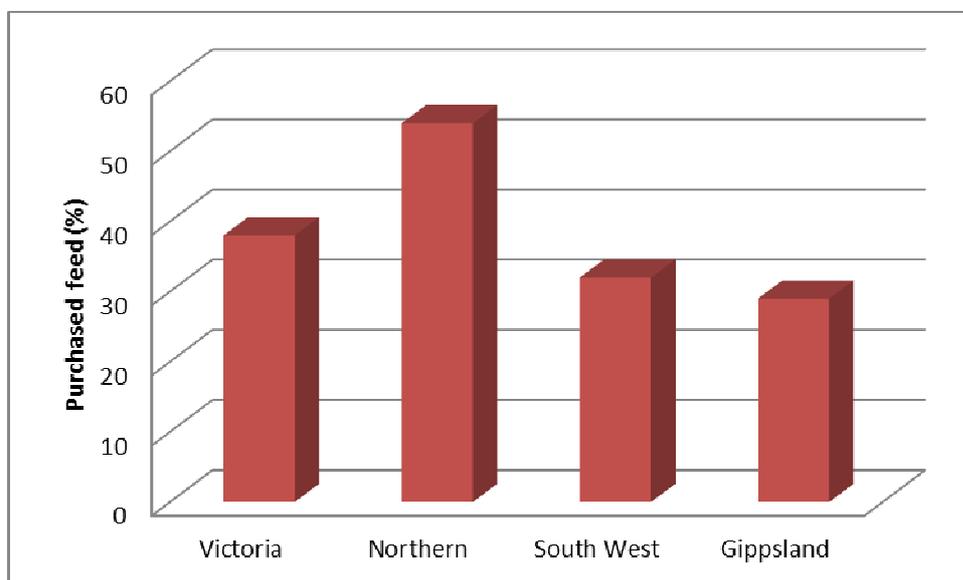


Figure 3. Purchased fodder as a percentage of total farm feed (2008-2009)

(Adapted from Department of Primary Industries (2009) *Dairy Industry Farm Monitor Project 2008/2009*)

3.1.2 Adaptation on horticultural farms

- Conversion to drip irrigation
- Removed all unproductive trees
- Purchased additional water on both the permanent and temporary markets

Over 70% of VFF members surveyed have needed to purchase costly temporary water to ensure production can continue, but most importantly for horticulture to simply keep perennial fruit trees and vines alive.

⁸ Dairy Australia (2010) *Dairy 2010 Situation and Outlook - September Update*, Dairy Australia, Melbourne.

⁹ Ibid

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Large areas of irrigated fruit trees have been established around the Goulburn Valley to supply fruit to the SPC Ardmona for canning. Loss of income and assets resultant of less reliability and availability of water for irrigation has been compounded by the significant cutbacks the processing factory has placed on their suppliers. Growers of fruit for canning have little alternative options for sale of their produce. Manufacturing job cuts have also ensued.

Any individual benefit from reduced competition between producers in the region is eliminated by the reduced quantities of product being accepted into the manufacturing business.

Purchase of costly temporary water is essential for permanent horticultural plantings to survive. Permanent plantings are part of the infrastructure of a horticultural business, without which production could not be achieved. Horticultural production systems offer little scope for adaptation or increased system efficiencies past the most up to date irrigation configurations. Purchase of a temporary allocation on the water market is a high cost exercise necessary as insurance for the longevity of long term plantings. The volatility of the water markets does not provide security to irrigators.

A key failure of the MDBA analysis has been a failure to consider the adaptive response of farmers to low water allocations due to drought. Farmers draw down on equity to maintain production during drought because a drought is temporary and there is a need to retain productive capacity to allow a recovery. The analysis showing that the low allocation year of 2006-07 only led to a 1% decline in production can be attributed to the dedicated and innovative nature of farmers. However, a permanent reduction in SDLs will lead to less water across regions on a permanent basis leading to a permanent reduction in productive capacity.

3.2 Direct impacts on regional communities

The proposed reductions in the Sustainable Diversion Limit (SDL) and their impact on regional communities cannot merely be assessed by looking at generalised basin wide statistics. On closer assessment at natural resource management (NRM), local government area (LGA) or irrigation district level the devastating impact of a reduced SDL is uncovered.

Farmers will directly face businesses losses where reductions in water availability are imposed on an irrigation district.

Local government areas of Mildura, Swan Hill, Gannawarra, Campaspe and Moira are within the Goulburn, Murray and Loddon irrigation districts. Farmers within these regions will have to make decisions about the continued viability of their business.

Business financial stress

With reduced water availability, farming enterprises suffer financial stress on two broad levels. Firstly, reduced farm profitability as operational costs increase and returns for farm output decrease. Second, is the gradual loss of farm savings and equity as businesses draw on financial reserves to sustain the increased costs arising as a result of reductions in water availability.

Across all sectors of the industry farm debt has increased as farmers draw on savings reserves for immediate response to reduced water allocations through the drought. VFF dairy members reported an average yearly increased in debt of 10%, although a number of members were sustaining losses in excess of 10% per annum for the last three years¹⁰. This is consistent with Dairy Australia's findings that a 7-9% increase in debt has been sustained by irrigated dairy farms in northern Victoria for the 2008-2009 season¹¹.

The understanding that the MDB Plan would require State government to modify allocation methodology in years of below average inflows is of significant concern. Regulation of irrigator's entitlements will reduce certainty and could see many irrigated farming businesses cease production. The importance of reliability of water supply is just as great as overall availability. Dairy farmers have some capacity to alter production practices to manage entering a season with low confidence in reliability of timing of water availability. Permanent planting are far less capable of adapting to changing sequences in water availability.

The reliability of water supplies is as an important attribute of a water product as the volumetric status of the entitlement. Victoria has seen a growth in high value irrigated agriculture due to the high reliability of its water entitlements underpinned by a certain and conservative allocation methodology. High value agriculture leads to a greater level of sunk costs and higher risk exposure to low delivery. Retaining the reliability of Victorian water shares is as important as retaining water entitlements.

It would seem that the draft accreditation tests of the MDBA *Guide to the Proposed Basin Plan* (Volume 2 Appendix E) would require the Victorian Government to alter the allocation system that

¹⁰Telephone survey of Victorian Farmers Federation members, Murray, Goulburn and Campaspe irrigation districts. Personal Communication. 23/11/2010 to 7/12/2010.

¹¹Dairy Australia (2009), *Dairy 2009 Situation and Outlook*. Dairy Australia, Melbourne.
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underpins Victorian water entitlement reliability in order to have their Water Resource Plan accredited by the MDBA. In the VFF estimation the “equitable sharing test” of the accreditation rules will result in a reduction in the reliability of high reliability water shares.

Reducing reliability is no different to acquiring a portion of the water share. A farmer will hold a level of entitlement that assures a volume of water for a proportion of the time; ie the reliability factor. If the proportion of time the volume will be delivered is reduced, additional entitlement is necessary to rebuild the level of delivery reliability for a given volume of water. Therefore reducing reliability is akin to taking water entitlement without payment, or in other words a compulsory acquisition of entitlement.

Farm businesses have sold both temporary and permanent water to generate cash flow. Federal government purchases of water have taken advantage of the precarious position faced by some irrigators, where the sale of some of their equity (in the form of water shares) is the only viable option to ensure that they are able to continue farm production. Income generated from the sale of water is split between use for the purchase of off farm feed or farm equipment and use in paying off debt and outstanding bills.

Selling permanent water is “the last thing that individual irrigators want to do”¹² and in most situations has been done to help ease farm financial pressures. VFF members involved in the sale of permanent water have done so primarily to clear debt to banks. For this reason the VFF argue that generally irrigation communities do not benefit from the sale of permanent irrigation water.

If available to irrigators, each megalitre of water in dairy production can generate \$2632¹³ in product (gross value). Cash flow on a farm business will be fed back into the community through services and retail purchases. The Federal government buy back has taken advantage of the financial desperation of farmers in the region and has limited the continued cash flow that a regional town could receive from farmer’s income when the water is applied to productive use.

Conversely, since 2006 many farms have been forced to enter the temporary water market to secure irrigation supply. 73% of VFF dairy and horticultural producers surveyed made purchases of temporary water to supplement low allocations. Purchase of temporary water is yet another cost to production under reduced water availability. State monitored restrictions on water availability proposed in the MDBA Plan are of great concern to the VFF. If the additional water buybacks proposed in the Guide to the Basin Plan are implemented, less water can be expected on the temporary market. A high temporary water price based on supply and demand in dry times will make it more difficult for farmers to manage low allocation years.

¹² Alston, Whittenbury, & Haynes, (2010) *The social impacts of declining water availability and ongoing drought in the Murray Darling Basin: Short Report*, Monash University, Melbourne.

¹³ Adapted from: ABS (2010) Victoria - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09 cat no. 4610.0.55.008

Restructuring agricultural business

For every hectare of irrigated agricultural land, there are 52 hectares of land used for dryland agriculture in the MDB¹⁴. Basin and even state wide, gross value of dry land production is very likely to exceed the gross value of irrigated agriculture purely due to the far greater area of land in the Basin devoted to dryland agriculture. At a regional level, the VFF challenge Wittwer's (2010) assertion that in an average year, gross value of dry land produce exceeds the value of irrigated produce. In its draft form, the proposed Basin Plan outlines some very real threats to regional economies. It is essential that wherever possible a regional approach is adopted to assess the value of irrigated produce is adopted by the Murray Darling Basin Authority to ensure that the true value of a productive unit of land (hectare) is accurately calculated.

The value of irrigated agriculture against non-irrigated agriculture per hectare is depicted in table 2. On average across all the irrigation districts of Victoria, value of dryland agriculture produced per hectare will only be 8% of the value that can be generated from irrigated agriculture.

On a state wide scale, irrigation averages a contribution of 33.7% to the overall gross value of agriculture. The average across the whole of the state does not clearly show the important contribution of irrigation to regional Victorian communities. Within Victorian irrigation districts across all seasons, the contribution of irrigation to the total gross value of agricultural produce has generally exceeded 50%.

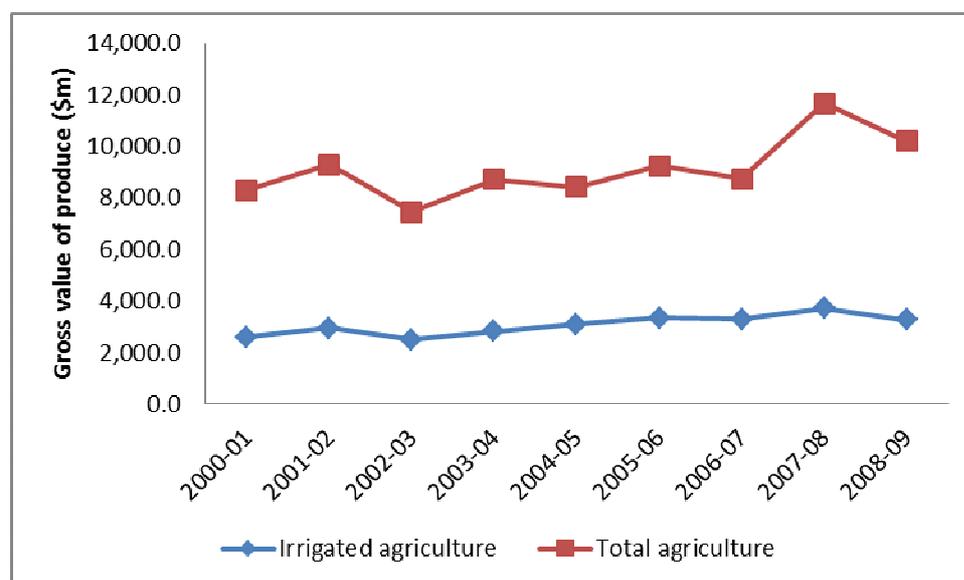


Figure 4. Victorian gross values of agricultural produce¹⁵

¹⁴ Wittwer, G. (2010) *The regional economic impacts of Sustainable Diversion Limits*, Murray Darling Basin Authority, Canberra.

¹⁵ Adapted from: ABS (2010) *Victoria - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09* cat no. 4610.0.55.008

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Where irrigation makes a large contribution to the overall gross value of agricultural produce for a region, direct and the consequential indirect impacts from reduced water availability will be most significantly felt.

Table 1. Variance in irrigated agricultures contribution to total gross value of agricultural product per NRM region¹⁶

	2005-06	2006-07	2007-08	2008-09
Goulburn Broken	67%	67%	67%	64%
Mallee	44%	59%	44%	48%
North Central	43%	43%	36%	32%

Irrigated agriculture within the Goulburn Broken catchment is one such region where there is a large reliance on irrigation water for the overall gross value of agriculture in the region. Significant decreased in water availability (figure 6) have resulted in more concentrated production.

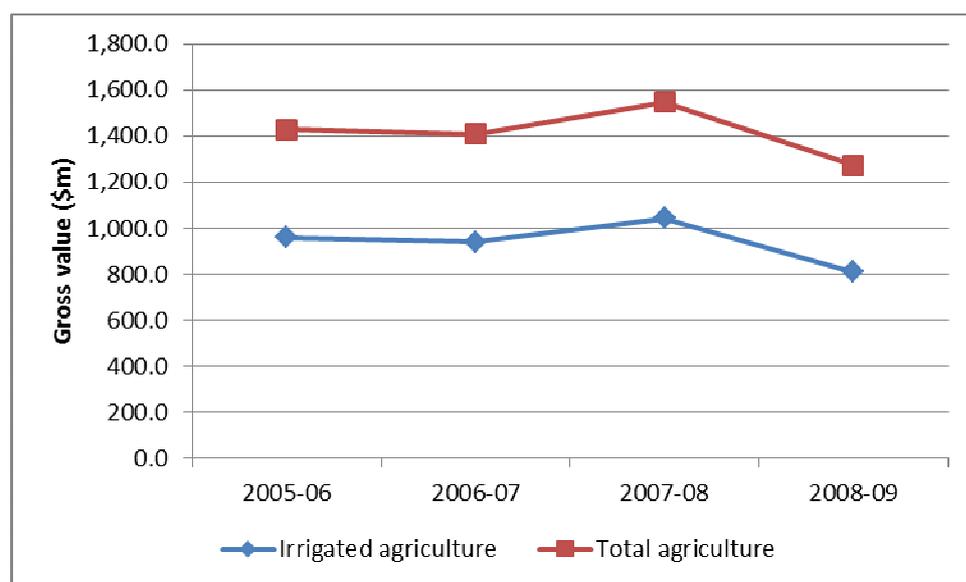


Figure 5. Goulburn Broken NRM region gross values of agricultural produce¹⁷

It is reasonable to assume that the gross value of production per megalitre of water used is bolstered by improved use of water on farm and other drought mitigation strategies including

¹⁶ Adapted from: ABS (2010) Victoria - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09 cat no. 4610.0.55.008

¹⁷ Australian Bureau of Statistics 2010, *Victoria NRM Regions - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09*, 'Table 4:NRM Region- Goulburn Broken', data cube: Excel spreadsheet, cat no. 4610.0.55.008, viewed 9th December 2010

supplementary feeding. However farm gross profit will be decreased where the increased cost associated with mitigation strategies need to be subtracted from gross value.

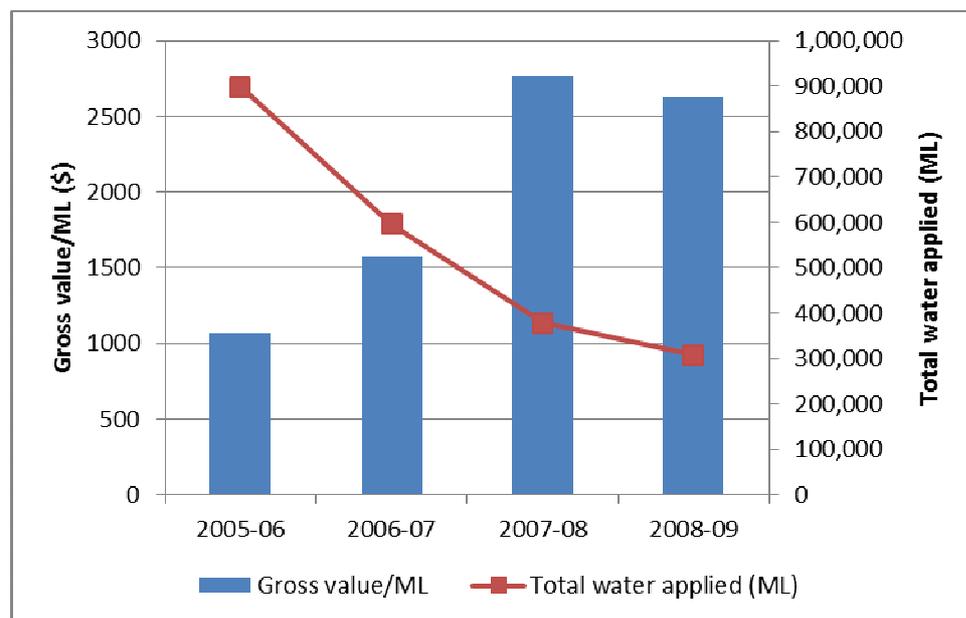


Figure 6. Goulburn Broken NRM region water use and gross value of produce¹⁸

The assessment by the MDBA that value of irrigated agricultural will only decline by between 13 to 17 per cent grossly understates the impact that will occur. Cuts in the SDL of 3000 or 4000 GI, will be equivalent on the valley by valley breakdown of up to a 79 per cent reduction in irrigation water, and applied across Victoria equates to an average reduction of irrigation water of between 39 and 51 per cent. Even at the low end, 3000 GI reduction, it is difficult to understand the rationale that would lead to a conclusion of the removal of almost 40 per cent of water for irrigation would only result in a 13 per cent reduction in the value of production.

While there will be some offsetting of the percentile cut by more water being diverted from low value uses than high value uses, this will not provide a balance to the extent predicted by the MDBA.

The VFF is concerned that in some areas it will be the more entrepreneurial farmers driving production hardest that are most exposed to the impact of the basin plan. These types of farmers tend to have more risk exposure and are more highly geared than others and are more sensitive to any loss of confidence or shift in costs. There is no evidence put forward by the MDBA that would justify their conclusions that water trade would soften the impact of the reductions in SDLs and result in only a 13 to 17 per cent drop in irrigated agriculture production.

Conversely the MDBA has included figures in the Guide that demonstrate that a shrinking of consumptive water will have a large impact. In simplistic terms the less water available the less land

¹⁸ Adapted from: Australian Bureau of Statistics 2010, *Victoria NRM Regions - Gross Value of Irrigated Agricultural Production, 2000-01 to 2008-09*, 'Table 4:NRM Region- Goulburn Broken', data cube: Excel spreadsheet, cat no. 4610.0.55.008, viewed 9th December 2010
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will be irrigated. The per hectare return comparison of dry land and irrigated land shows this stark drop in production (Table 2).

Table 2. Dryland and Irrigated Average Value of Production

Region	Average gross value non-irrigated production (\$/Ha)	Average gross value irrigated production (\$/Ha)	Dry Land average value as a percentage of irrigated average value (%)
Ovens	488	7025	7%
Goulburn Broken	461	4496	10%
Murray	79	4261	2%
Campaspe	546	4142	13%
Wimmera	291	4813	6%
Loddon	366	2236	16%
Average	372	4495	8%

Adapted from Guide to the proposed Basin Plan p 87

Using an average application of irrigation water of 4.1 Ml/Ha^[4] the Victorian cut in SDL of 982 to 1302 GJ would result in 240 000 to 317 000 Ha of irrigated land being taken out of production. Applying the average per Ha gross value of production difference between dry land and irrigation of \$4123/Ha gives an estimated loss of gross value of agricultural production of between \$987 million to \$1.3 billion per annum for Victoria alone.

Average gross values of both irrigated and non-irrigated produce shown in table two help to explain why 45% of the land equipped for irrigation in the Goulburn Murray Irrigation District is now severely underutilised¹⁹. Irrigated farms, by their nature, are inherently smaller than other broad acre farming businesses and it is unsurprising that such a large percentage of productive land is no longer utilised in the Goulburn Murray irrigation district. If conversion from irrigated production to dry land production were forced, to remain viable farm units would need to be amalgamated into substantially large landholdings.

Any approach based on the simple conversion of farms from irrigated enterprises to predominantly dry-land are overly simplistic and do not appreciate the intricacies and different skills employed in each different production system.

^[4] ABS (2005) Farm Water Use cat. No. 46180

The accounts for 2003-04 were used as the allocations on the major systems were at 100% of High Reliability Entitlement.

¹⁹ HMC Property Group (2010) *Changing land use in the GMID 2006-2010*, Shepparton.

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Employment

Irrigated agriculture enterprises are more labour intensive than dry land farms and consequently have a higher business expenditure on labour. Where poorer seasons have constrained the cash flow of farm businesses, the ability to provide employment to additional workers is limited. This not only results in the loss of jobs to the region. The remaining owner (and/or employees) on the farm have the pressure of picking up the additional workload to ensure the business remains profitable. This can have devastating social impacts, pursued further in this report.

The linkage between jobs and reduction in water availability has been modelled by Judith Stubbs and Associates. An estimated 15.9 direct jobs are generated from every gigalitre of water utilised in fruit production, 4.2 direct jobs for every gigalitre used in grazing enterprises and 1.2 direct jobs in cotton production²⁰. Based on the estimate for low labour intensity cotton production, 3600 direct jobs are expected to be lost from the MDB if an overall SDL of 3000GL were applied to the Basin. Based on the lowest requirement for labour in a farming enterprise, this data alone suggests that the working behind the initial figures identifying the loss of 800 jobs in the MDB is essentially flawed.

Analysis of local government statistical districts shows that an average of 15% of jobs in the agricultural sector have been lost across the key local government areas of Mildura, Swan Hill, Gannawarra, Campaspe and Moira.

As farms increase productivity, operating efficiencies and reliance on machinery, there is consequentially a decrease in labour demand in the agricultural industry. The number of jobs that have been lost from irrigation districts in the last 10 years cannot conceivably be considered as part of this gradual decline. Reduced water availability has been the main factor in reduced agriculture employment. In the Shire of Campaspe alone, 601 jobs in the agricultural industry were lost between 1996 and 2006. This brings into serious question the Murray Darling Basin Authorities estimate for the loss of 800 full time jobs across the entire Basin²¹.

A loss of 451 jobs from the agricultural industry within the Shire of Campaspe occurred between 2001 and 2006. This cannot be interpreted as anything other than a response to the drastic drop in water availability in the Campaspe irrigation district- from 100% water availability in 2003-2004 to 39% in 2004-2005 (Figure 7). The VFF expects that the 2011 census data will show the continued downward trend in agricultural employment opportunities.

²⁰ Judith Stubbs and Associates (2010) *Exploring the relationship between community resilience and irrigated agriculture in the MDB: Social and Economic Impacts of Reduced Irrigation Water (Report 4)*, Cotton Catchment Communities CRC, Narrabri.

²¹ Murray Darling Basin Authority (2010) *Guide to the proposed Basin Plan, Volume 1*, Murray Darling Basin Authority, Canberra.

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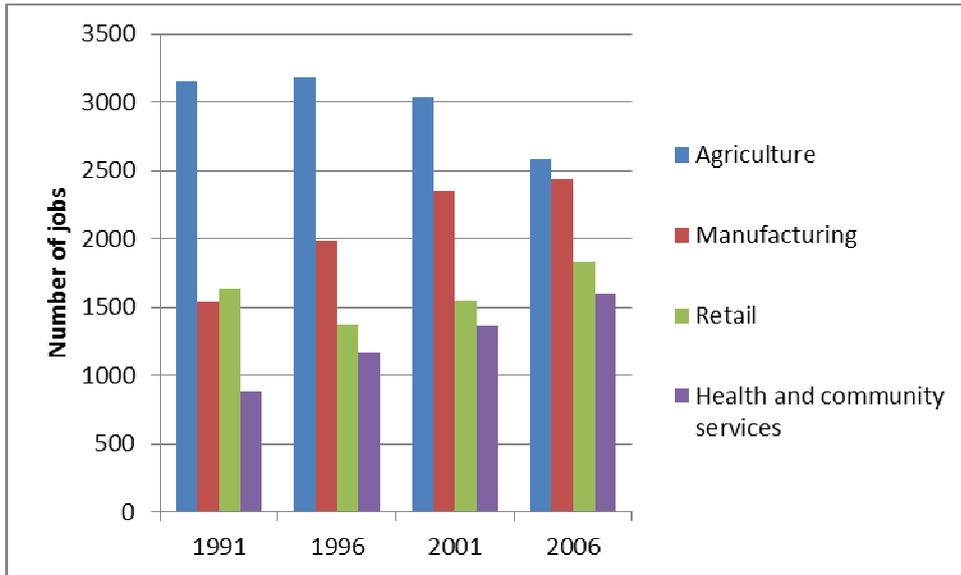


Figure 7. Campaspe employment opportunities by sector²²

The loss of employment in agricultural industries in some cases has been buffered by an increased demand for employment in other industries. Additional employment opportunities have developed in the manufacturing and retail sectors. However as secondary industries in the agricultural supply chain it cannot be expected that these industries can be sustained if farm businesses diminish and there is less financial input into these communities. An increased population of tree changers to Echuca and a sound tourism industry will offset jobs lost in agriculture to some extent, but not enough to offset overall amount of employment lost through declining agricultural production. Not every town is a tourist destination though, and many will not have the capacity to expand industrial development.

While there have been employment losses from the agricultural sector to this point, reductions in the sustainable diversion limit are expected to further reduce employment opportunities in Campaspe. A 10% reduction in SDL is expected to decrease employment by 2.2%, 25% SDL reduction to decrease employment by 5.4% and a 10.9% reduction in employment where water availability decreases by 50%²³. Based on the population of the Shire in 2006, losses at the lower spectrum amount to 351 jobs and at the upper spectrum 1739 jobs. Job losses amounting to 10% across the Shire would have devastating impacts for remaining members of the community and a consequential decrease in population will be the result.

The larger regional economy of Mildura is particularly exposed to job losses with reduced water availability. In Mildura trends in employment are consistent with those seen in Campaspe. 729 jobs were lost from agriculture between 2001 and 2006 (Figure 8), a loss of jobs which is close in

²² Adapted from ABS (2006) Census of Population and Housing 'Campaspe LGA – Industry of Employment by sex for time series', cat no. 2068.0

²³ Judith Stubbs and Associates (2010) *Exploring the relationship between community resilience and irrigated agriculture in the MDB: Social and Economic Impacts of Reduced Irrigation Water (Report 4)*, Cotton Catchment Communities CRC, Narrabri.

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comparison to a 10% reduction in water availability imposed by the Basin Plan. Between 689 and 3059 jobs could be lost from the Mildura region where SDL's are decreased between 10 and 50%.

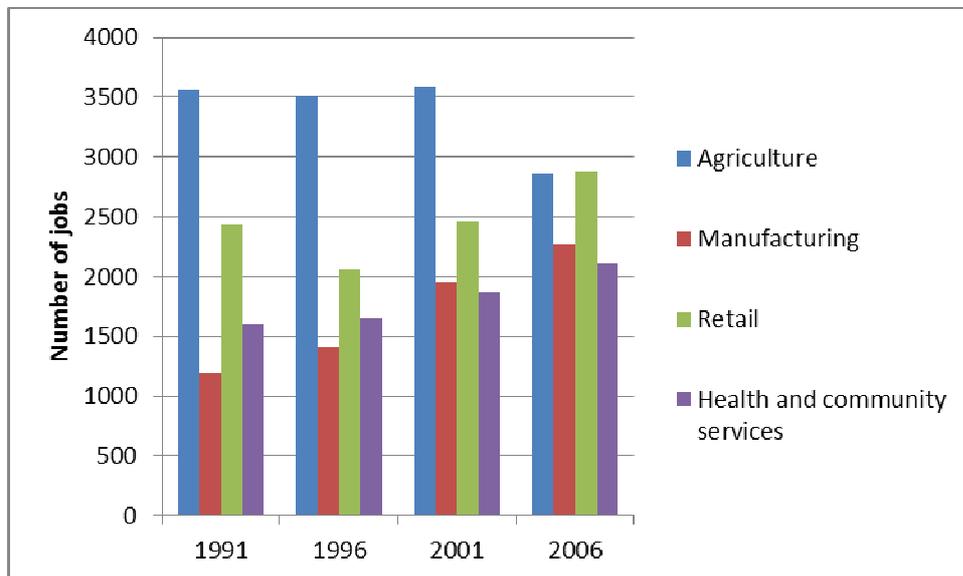


Figure 8. Mildura employment opportunities by sector²⁴

²⁴ Adapted from ABS (2006) Census of Population and Housing 'Mildura LGA – Industry of Employment by sex for time series', cat no. 2068.0

3.3 Indirect impacts on regional communities –community and social impacts

The indirect impacts of reduced water availability on regional communities are many and varied. They can however all be directly tracked back to reduced farm profit as a direct result of reduced water availability.

Indirect impacts are not merely limited to the increased costs in service provision borne by the remaining irrigators when water is transferred out of a region. A secure off farm income source becomes vital, health and wellbeing of farm families begins to deteriorate due to increased stress and community support for various activities shrinks.

Services and retail businesses

Retail stores, wholesale trade, transport and storage, finance and machinery are all affected by farmers spending patterns²⁵. Purchase of the items essential for farm production will be maintained, although limited. It is however the investment purchases of large items such as farm machinery which slow, as businesses continue to make do with what they have. These types of retailers in smaller towns are more vulnerable than their counterparts in regional centres. The last Kyabram based farm machinery retailer has recently closed down; farmers must now travel to Shepparton if a machinery purchase is necessary.

VFF members commented that there is a definite flow on effect to town centres when farm income is reduced with comments that they “will not be spending much in town”²⁶ and “if it hurts me it hurts the town”²⁷. Behavioural patterns in drought affected communities have changed as a response to reduced water availability and imposed financial pressures.

Reduction in the irrigated area of Victoria will increase the proportion of fixed costs which are payable per unit of delivered water. Studies commissioned by the VFF into the Campaspe irrigation district found that when the overall water right of the region was reduced, the fixed costs associated with delivery of irrigation water would be spread across a smaller volume of water²⁸. Consequentially, price per megalitre of water would increase to ensure that these fixed costs were recovered from users of the system.

At the time of investigation in 2006 the total gravity irrigation tariff for the irrigation district was \$1,226,280²⁹. Spread across the systems water right of 33,000ML, irrigators were paying \$37.16/ML. A 20% reduction in water availability to the region resulted in a tariff increase to \$45.72. A 37% reduction in water availability in the region increased the tariff to \$58.79/ML.

The requirement for these infrastructure and delivery costs to be covered by farmers remaining in an irrigation district is causing significant concern to farmers. This is somewhat compounded by the

²⁵ Drought Policy Review Expert Social Panel (2008) *It's all about people:changing perspectives on dryness*, Commonwealth of Australia, Canberra.

²⁶ VFF member survey. Dairy Farmer, Cohuna, Victoria. Personal Communication. 24/11/2010.

²⁷ VFF member survey. Dairy Farmer, Tatura, Victoria. Personal Communication. 24/11/2010.

²⁸ Farmanco Pty Ltd (2006) *Campaspe Water Sale Investigation*; Victorian Farmers Federation.

²⁹ Ibid.

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secretive nature of water buybacks- farmers are being left with no idea of the extent of permanent water transfer out of their section of the system. This uncertainty is holding back farm investment in improvements above those necessary for basis production.

Off farm income

Securing off farm income has become a necessary adaptation measure to reduced water availability in the Murray Darling Basin. Numerous qualitative studies have uncovered the increasing trends in farm families actively seeking and relying on off farm income as a necessity to secure a steady stream of income. Seeking a secure source of income for security is unsurprising for an industry where business income can fluctuate from season to season due to weather and market pressures. However, with continued financial constraints on farm businesses under reduced water availability, the need to seek and retain off farm income has negative impacts on the health and wellbeing of the individual working off farm as well as the entire family unit.

Mothers in rural areas had a greater presence in the workforce than mothers in urban centres and this trend increased between 2001 and 2006³⁰ through the escalation of the drought. Typically, women seek off farm employment but still remain an integral member of the farm workforce. Undertaking these dual roles, as well as other family responsibilities places enormous pressure and stress on women. Time spent away from the farm is minimal with many people employed in off farm pursuits taking holidays to assist during busy periods on farm³¹. Mounting farm debt requires the continued income from off farm employment. One respondent to a Monash University survey on the impact of drought and reduced water availability indicated that “even after the drought’s finished I am now looking at working probably forever”³².

Equity and land prices

Decreased gross profit from irrigated agriculture to the farmer as a result of reduced water availability is a direct impact to the community. The costly adaptation measures to ensure continued production such as increased purchase of temporary irrigation water or the purchase of stock feed are reducing farm savings. Permanent sale of irrigation water is also reducing farm equity as sacrificing assets to generate cash flow.

The precarious financial situation businesses are placed under in an effort to mitigate the impacts of reduced water availability has a cascading effect across the agricultural supply chain. VFF members feel that in their local region all businesses and service providers “are all under the same pressure,

³⁰ Drought Policy Review Expert Social Panel (2008) *It's all about people: changing perspectives on dryness*, Commonwealth of Australia, Canberra.

³¹ Alston, Whittenbury, & Haynes, (2010) *The social impacts of declining water availability and ongoing drought in the Murray Darling Basin: Short Report*, Monash University, Melbourne.

³² Ibid

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everyone has the same cash flow problems”³³ because of decreasing investment in the agricultural industries.

Health and wellbeing

Managing the health and wellbeing of regional communities during times of hardship is essential. Employment positions in the health and community services areas are increasing³⁴ in response to the heightened requirement for these services in the community.

Where reduced farm profit has limited the amount of money available to employ farm labour, both the physical and emotional wellbeing of farmers are compromised. Farmers under financial pressure do not have much down time when they are both living and working on the farm.

When asked how the farm family would manage the impacts of decreased water availability a VFF member from a horticultural enterprise responded “*Absolutely no idea. No doubt work 20 hours a day for seven days a week instead on 18 hours per day. Reducing staff means no holidays and no weekends off*”³⁵. Farmers are not only concerned about their current workload, but are actively considering the prolonged impacts of this workload on the business and wellbeing.

The somewhat secretive nature of Federal government water buy backs has not helped to foster community morale. Many farmers have expressed concern about their lack of knowledge of permanent water sales occurring in their area and the potential impact that this may have on the costs of their water supply. Without knowledge of other sales occurring in the local irrigation area, farmers are left uncertain of future service costs for their irrigation system which may be too costly for continued viability.

Industry confidence has wavered in the wake of the drought. The VFF holds extreme concerns about farmer’s confidence in the future viability of their business. When queried on the perceived impact of the 26-37% reduction in water availability on their individual business a number of respondents indicated concern that farming would no longer be viable and they would be forced to exit the industry.

Community activities

Where regional populations are decreasing as a result of reduced water availability community sporting and activity clubs are suffering due to decreased sponsorship and members³⁶. A permanent reduction in SDL will only contribute to the further loss of population and support for community activities. The once strong Nanneella tennis club failed to form a team in 2010, where there had

³³ VFF member survey. Dairy Farmer, Kyabram, Victoria. Personal Communication. 24/11/2010.

³⁴ Australian Bureau of Statistics (2006) *2006 Census Community Profile Series Working Population Profiles – Gannawarra, Mildura, Campaspe, Moira and Swan Hill.*

³⁵ VFF member survey. Perennial horticultural producer, Swan Hill district. 7/12/2010 .

³⁶ Drought Policy Review Expert Social Panel (2008) *It's all about people:changing perspectives on dryness*, Commonwealth of Australia, Canberra.

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been three teams in the previous season³⁷. These reduced opportunities do not help to promote these areas for further investment.

Emergency services including the Country Fire Authority (CFA) and State Emergency Service (SES) are reliant on the contribution of community member's time and skills. Volunteerism has decreased³⁸ as the workload of on farm activities for farm families increases and both time and finances cannot stretch to facilitate their participation. Remaining volunteers are being pushed to the limit as they attempt to undertake an increased workload. An aging population is further hampering volunteerism.

Without the volunteer workforce, the safety of the community is compromised.

³⁷ VFF member survey. Dairy Farmer Nanneella, Personal Communication. 25/11/2010

³⁸ Drought Policy Review Expert Social Panel (2008) *It's all about people: changing perspectives on dryness*, Commonwealth of Australia, Canberra.
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4. Economic growth and diversification

The VFF believe that there will be very little ability for regional communities to grow and diversify when water availability is restricted. While a number of impacts on the community will be directly felt by irrigated producers, security of investment for complementary industries will be diminished as a result of the fluctuations in farm income and decreased cash flow for producers to spend on farm improvements.

Irrigation businesses may be forced to diversify into dryland agricultural pursuits. If this change were to be seen on a large level in Victoria, expendable farm income would be reduced as a function of the gross value of produce that can be generated on the same area of land without irrigation. Further, reduced water availability will see decreases in primary produce utilised in manufacturing processes. Future capacity for manufacturing investment in the Goulburn and Murray irrigation district may be limited to manufacturing which is independent of the agricultural supply chain.

The Goulburn Murray irrigation district is promoted as 'Victoria's food bowl' and an ideal location for investment in manufacturing and supply chain services. The larger regional centres of Shepparton and Mildura have experienced expansion in recent years as these secondary industries have expanded and offered additional employment to the region. Further, a number of small towns in the district are centred around one particular manufacturing operation. Rochester, Tongala, Stanhope and Leitchville are examples of such towns where population is highly dependent on the presence of agricultural supply chain enterprises.

The closure of the Murray Goulburn Cooperative milk factory in Leitchville has dealt a heavy blow to the town of Leitchville and closely located Cohuna and Gunbower. Relocation of job opportunities to other factories will further decrease spending in the local economy and place pressure on remaining businesses.

Water Use Efficiency

There are significant gains to be made in water use efficiencies in a number of areas. Options remain in infrastructure improvements to improve irrigation systems and on farm water use and significant efficiencies can be made in the delivery and use of environmental water in achieving a given environmental outcome.

Environmental works

The efficient use of water through structural and engineering works to assist in watering wetlands and floodplains can go a substantial way to achieving the environmental outcomes of the Basin plan from the existing pool of environmental water. The construction of environmental asset works should be a tool implemented to increase the efficacy of environmental water delivery and use. Investing in infrastructure to deliver environmental water, just as in the case of water for other uses minimizes losses thereby reducing the volume of water needed to achieve any particular outcome.

There are potential savings of significant magnitude to be achieved through environmental water infrastructure investments. A number of projects have been assessed in Victoria that provides

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substantial savings without compromising environmental outcomes. The VFF has calculated the annualised savings potential from three key projects that have been developed by the Victorian Department of Sustainability and Environment (DSE). Table 3 gives a summary of the estimated savings for these projects.

Table 3. Estimated annualised savings

Project	Potential savings (annualised GL)
Lindsay Island	277.5
Gunbower Forest	185
Hattah	371.3
Total	833.8

These savings are based on the discrete gains for each site with a frequency of watering for each site as below.

- Lindsay Island: every 4 years
- Gunbower Forest: every 4 years
- Hattah Lakes every 10 years

The exact savings are difficult to calculate as there are many variables that will affect the final outcome. However, the potential to achieve environmental outcomes with less water is clearly demonstrated and should be explored by the MDBA prior to establishing a reduction in the Sustainable Diversion Limit. The process to more accurately assess the efficiency gains to be made must include close liaison with the State Department and involve the development of a complete and comprehensive watering plan that factors in the efficiency gains to be made.

It is impossible to provide definitive lists of possible projects or provide an accurate calculation of savings that can be used to offset reductions in SDL due to poor information provided by the MDBA in the Guide to the plan. The Guide has not provided a detailed watering plan nor provided sufficient clarity around the environmental outcomes to be achieved. The premise that returning 60 to 80 per cent of pre-development flows to the system is needed to achieve the required environmental outcomes does not allow a considered and rational discussion on treating key environmental assets and key environmental functions to occur with the managers of the systems; the States.

The first step in addressing this is to reset the plan and start an iterative process where environmental watering needs and efficiency gains are examined and tested to develop an environmental watering plan that meets the environmental needs as effectively as possible and balanced with the socio-economic impacts of less water for rural communities.

On Farm and System Investments

The VFF has long opposed governments taking the convenient option to buy water from irrigators in the MDB to provide water to the environment. Our opposition has always been based on ensuring food security, social stability and the dependence of rural communities on the economic activity and food production that is generated by irrigation. Governments should firstly explore investment opportunities in irrigation infrastructure. When Governments invest in infrastructure, the community maintains the economic benefits and the environment receives the water savings without damaging the important economic contribution of agriculture. If, as a last resort, Governments need to enter the market on behalf of the environment, the VFF supports the development of rules for Governments' buying water; these include transparency, accountability, targeted purchase, mature market and an integrated approach that considers alliance of infrastructure upgrade and buyback.

On-Farm Irrigation Efficiency Program

VFF strongly supported the Commonwealth's \$300 million On-Farm Irrigation Efficacy Program, targeted in the Southern Basin. This funding, forming part of the Federal Government's \$12.9 billion *Water for the Future* plan, will be used to upgrade on-farm irrigation infrastructure. This program aims to recover 115GL of water, 50% of which will be transferred to the Commonwealth Environmental Water Holder.

Increasing on-farm irrigation efficiencies will assist irrigated agriculture confront a future with less water without compromising productivity whilst simultaneously assisting the Federal Government to achieve its environmental water acquisition volume. On-farm irrigation upgrades would complement the off-farm irrigation modernisation and a key aspect missing from *Water for the Future*.

System Efficiency

The Food Bowl Modernisation Project Stages I and II are major investments in the Victorian delivery system. The finalisation of these projects should see total savings in the order of 425 GL of which 75 has been earmarked for transfer to Melbourne. However, there is some uncertainty about this transfer as the incoming Victorian Government has a policy commitment to only use the North South pipeline in times of water shortages. The North South pipeline is the only feasible way of transferring water saved in the Murray Goulburn Irrigation District to Melbourne.

With the construction of the de-salination plant with a 150 GL per annum capacity at Wonthaggi to provide water to Melbourne it is hard to envisage the circumstance where Melbourne would be critically short of water in the foreseeable future.

Continuation of the investment in the Food Bowl modernisation project is essential in not only providing an efficient irrigation system and as a basis to support on farm modernisation but also as a means of delivering water for the environment without decreasing agricultural production.

The Sunraysia modernisation project, which is yet to be approved, has the capacity to deliver savings and whilst the VFF has not been privy to the business case for the project understands that it will deliver desirable outcomes for irrigators and the environment.