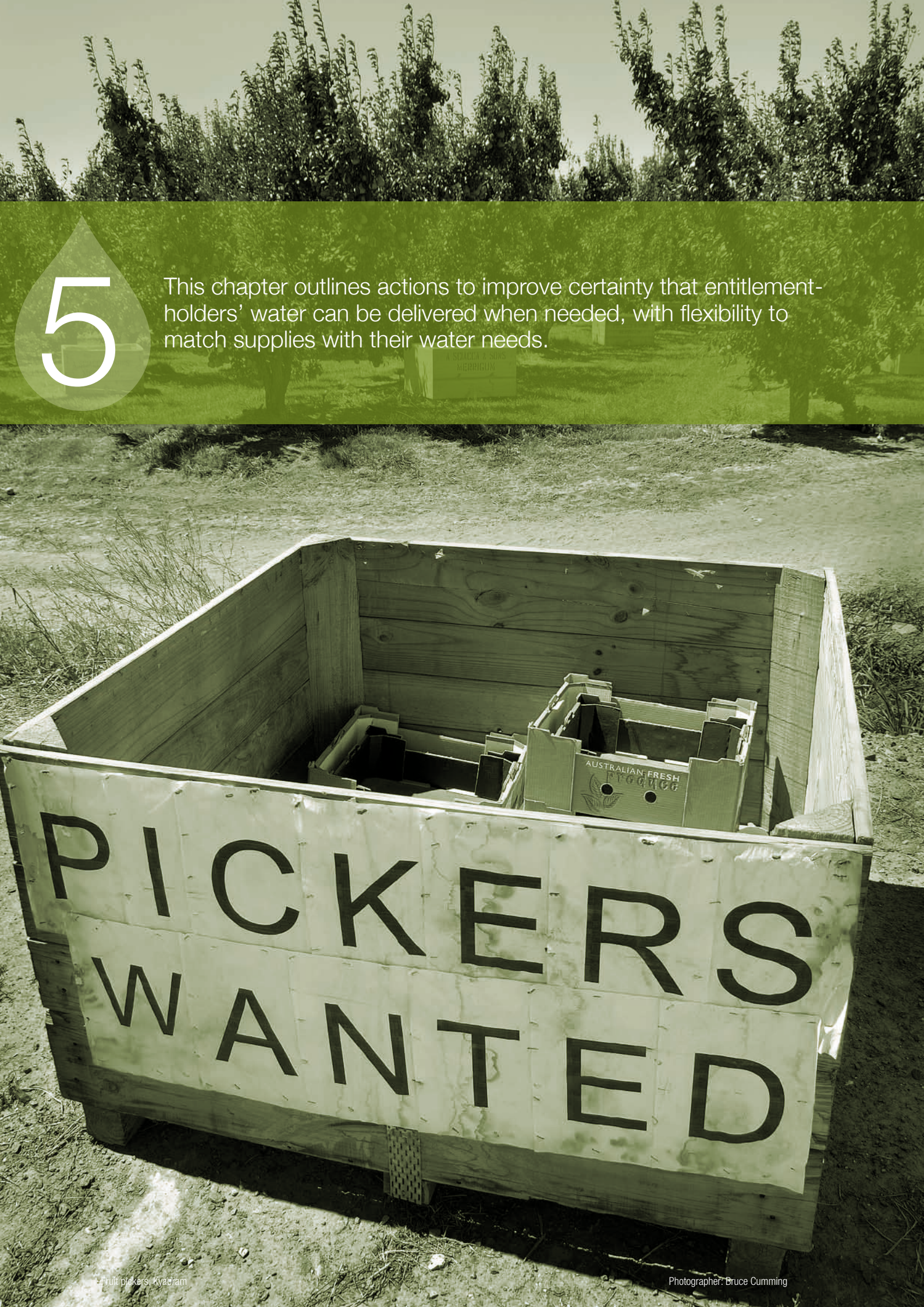
5

This chapter outlines actions to improve certainty that entitlement-holders' water can be delivered when needed, with flexibility to match supplies with their water needs.



Fruit pickers, Kyabram

Photographer: Bruce Cumming

Certainty and flexibility for entitlement-holders

Guide to the chapter

Section 5.1 Operating the distribution system in all years

- Amending the reserve policy
- Shortening the irrigation season
- Final allocation date

Section 5.2 Carryover

- Limitations of the existing carryover rules
- Reviewing the carryover rules
- Introducing spillable water accounts
- Implementation issues to resolve
- Groundwater carryover

Section 5.3 Water trading

- Principles to guide trading rules
- Changes to major trading rules
- Other improvements to trading rules

What is the issue with the existing arrangements?

With reduced water availability, it is more difficult for entitlement-holders to meet their water needs. Urban water corporations may not be able to meet critical human needs; irrigators may have insufficient allocations to water their crops; environmental allocations may be inadequate to protect refuges for important plant and animal populations. Existing arrangements provide some protection – reserves are set aside so that distribution systems can be operated in dry years and processes exist that allow entitlement-holders to buy, sell and carry water over. However, recent years have demonstrated that these processes need to be improved to provide additional flexibility and certainty.

What improvements does the Strategy make?

- System reserves will be increased to enable available water to be delivered when and where it is needed, even during severe droughts. This allows entitlement-holders to always access risk management tools such as trade and carryover.
- Innovative carryover arrangements will be introduced to reduce the risk of entitlement-holders losing their water in average or wet years. This creates additional incentives and increases the usefulness of carryover in all climatic conditions.
- Trade rules will become more flexible to ease current limitations on entitlement-holders who wish to buy and sell their entitlements. Key changes relate to the four per cent limit, 10 per cent limit and trade in unregulated systems.

As outlined in Chapter 2, climate change and variability are the most significant risks to water resources. Climate change could result in a number of years where regulated rivers and irrigation distribution systems cannot be run for the whole season to deliver water to users (see Background Report 5). This would make trade and carryover ineffective for managing water availability in drought years.

Many enterprises in the irrigation districts require continuous water supplies. A year where no water can be delivered would write-off substantial investment. Towns that receive water via regulated systems and irrigation distribution systems would need to cart water to supply critical human needs, as would many domestic and stock customers. A lack of water could also place important plant and animal populations at risk in the wetlands connected to distribution systems.

As the region faces the prospect of its thirteenth year of drought, arrangements need to be in place to deal with these possibilities. This chapter seeks to improve certainty for entitlement-holders by being clear about how water is allocated and how distribution systems operate in average and drought conditions. But the main aim is to change system reserve policies and set aside water earlier in the year to ensure these systems can always be operated. This will allow entitlement-holders to get their water delivered when they need it.

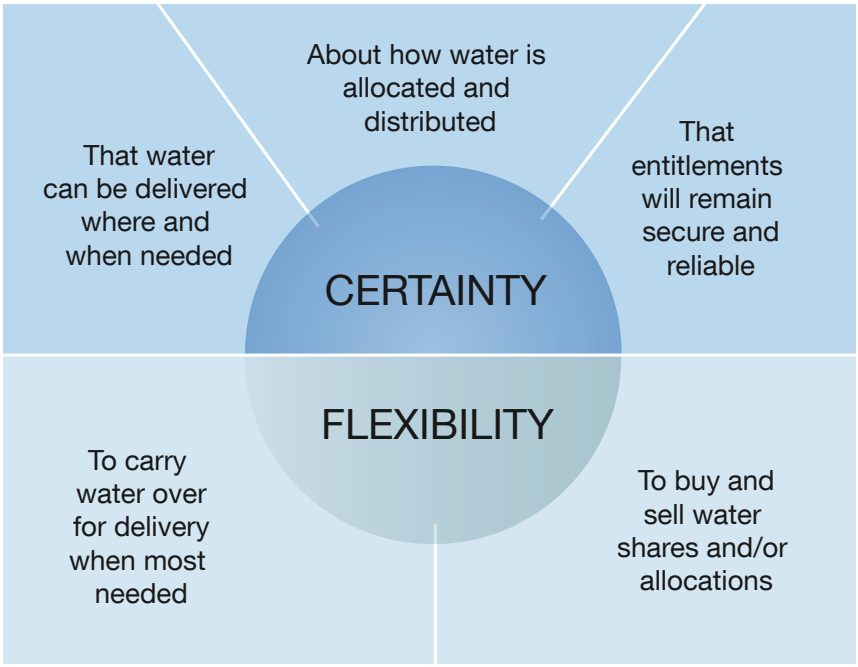
With this certainty, the rules governing carryover and trade can be improved to increase flexibility for entitlement-holders to manage the risk of variable water availability. Trade and carryover are the key tools, and the actions in this chapter will provide more choice in how they can be used, while still preventing impacts on other people or the environment.

> *"… future allocation frameworks must provide security for future investment… the risk of zero allocations, where trade and carryover become ineffective risk management tools, is completely untenable."*
>
> – Draft Strategy submission DS108

Figure 5.1 summarises the certainty and flexibility provided by the Strategy, including the importance of protecting the reliability and tenure of entitlements. This is discussed in Chapters 3 and 4.

It is important that the key changes are effectively communicated to entitlement-holders. General information will be available from the Department of Sustainability and Environment. More specific information about the reserve policy, carryover and trade for individual farm businesses will be communicated through Goulburn-Murray Water, the Department of Primary Industries' regional extension programs and through industry service providers.

Figure 5.1 How does the Strategy provide certainty and flexibility?



5.1 Operating the distribution system in all years

The distribution system is the series of large storages and the river and channel network used to deliver water to users and the environment. Before they can receive their water, there must be sufficient water to operate the system; in other words, to cover evaporation and seepage, provide passing flow and so on (see page 71 for further discussion of 'system operating water').

In recent years, the consequences of being unable to fully operate the distribution system have become clear. If there is insufficient water to do so, no allocation can be made to entitlement-holders; carryover water cannot be delivered at all times; little water is available for irrigation; and there can be no effective water market. Zero allocation years effectively eliminate the normal risk management tools available to water users.

For some domestic and stock customers, it has been necessary to cart water, which is an expensive and time-consuming exercise. There are insufficient tankers in Australia to cart water to all domestic and stock customers in the Goulburn-Murray Irrigation District[49]. Fortunately this has not been necessary due to contingency actions taken by Goulburn-Murray Water, including:

- only operating some channels such as those that provide urban supplies
- only operating channels part of the time
- reducing environmental flows (this requires a qualification of rights – see page 11)
- pumping dead storage (see page 71).

While necessary at the time, these contingencies introduce inequity and uncertainty for some entitlement-holders and it is preferable if they can be avoided. The following section outlines actions to increase the likelihood of operating the distribution system in all years without the need for contingencies. Operation of the system in all years is fundamental for water users across northern Victoria to provide certainty that the water an individual holds can be delivered when it is needed.

5.1.1 Amending the reserve policy

Bulk entitlements contain rules to calculate resource availability and allocate it or keep it in reserve for the following year; these 'system reserve policies' manage year-to-year variability and determine the volume and reliability of water supplied by the entitlement. Rule changes could significantly impact the entitlement value; therefore, this is only possible through the processes set out in the *Water Act 1989* which are designed to protect the integrity of the water shares supplied by these bulk entitlements.

Generally, water is allocated according to the following hierarchy:

1. Water set aside to cover operation of the major storages, river and distribution system (system operating water) for the full irrigation season.
2. Allocations of up to 100 per cent to high-reliability water shares.
3. Water held in reserve to ensure the following season's high-reliability water shares can be fully allocated, with sufficient system operating water for it to be delivered.
4. Allocations to low-reliability water shares for the current season.

This policy, which has evolved over the past 100 years, had been successful because it ensured distribution systems could be run every year and that 100 per cent allocations were available in about 96 years out of 100. This reliability underpinned the growth of high-value irrigated agriculture in northern Victoria.

However, the experience of the past 12 years, and the predicted impact of climate change, suggests that this policy may no longer be effective. Chapter 2 shows that with reduced water availability under medium climate change (Scenario B) or a continuation of the recent low inflows (Scenario D), there could be several years with zero allocations for the entire year. Amending the reserve policy can help to:

- address the risk of zero allocation years and improve the reliability of entitlements
- operate distribution systems for the full irrigation season, even in extreme drought years
- ensure the delivery of critical human needs and avoid the need to qualify rights
- increase early season allocations in dry years
- support an effective water market in dry years.

In line with the Strategy's guiding principles (see page 5), changes to the reserve policy aim to address the risks associated with the most severe climate scenario while avoiding unacceptable costs if this doesn't occur. Hydrological modelling was undertaken to assess the benefits and costs of amending the policy in the region's major river systems. To assess and compare the options, the following objective was used:

> *Where the benefits outweigh the costs, system reserves will aim to run the distribution system in all years (that is, provide for system operation, critical human needs and at least one per cent opening allocation in August).*

A major problem with the current reserve policy is that no water is set aside in reserve until high-reliability water shares are fully allocated. In dry years there may be no reserve set aside, resulting in years where the distribution system cannot be run and no allocations made. Setting water aside in reserve before high-reliability water shares are fully allocated means reserves are set aside earlier, but the maximum volume of reserve is not increased.

Weighing up the costs and benefits

Setting reserves aside earlier provides insurance against drought and the potential impact of climate change. But there is a trade-off because system reserves effectively redistribute water between years; water is not allocated in one year and used for system operation and allocations in the following year. Using reserves to ensure there are no zero allocation years will generally mean a reduction in the frequency of full allocation years (see Figure 5.2). It is necessary to weigh this up against the need to deliver water in drought years.

The impact of reserve policy changes depends on the climate scenario used. Changing the reserve policy has little impact under the long-term average climate because there are few years with less than full allocations. This means there are few years when additional reserve is set aside and very few zero allocation years to be addressed. Under climate change, the risk of zero allocation years is greater and, as there are more years with less than full allocations, additional reserve is set aside more frequently. Ideally, system reserves would be set aside early enough to address the most severe climate change scenario, but in some systems the impact of reduced allocations in average or wet years could be unacceptable to entitlement-holders.

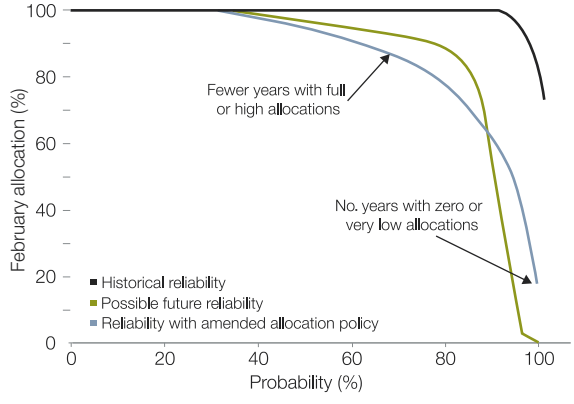
Changes will impact entitlement-holders differently. Each high-reliability water share holder will contribute the same proportion of their entitlement to reserve for the following year. Consultation feedback highlighted that the benefits are not as great for private diverters, whose water delivery relies only on operation of the river and not the irrigation districts. However, they will still benefit from higher opening allocations and better access to water trade. Equally important will be the establishment of a reserve for River Murray operations which will benefit private diverters and district irrigators (see page 92).

The appropriate reserve policy will vary between systems because each system is forecast to receive a different volume of inflows, has different system operating requirements and different entitlement to be allocated. In the Goulburn system, the change is highly effective and the cost is considered acceptable. In the Murray, it is less effective because river operating requirements are higher. Before implementation, agreement will be required to ensure the additional reserves set aside by Victorian water users will not supplement river operating commitments of other states.

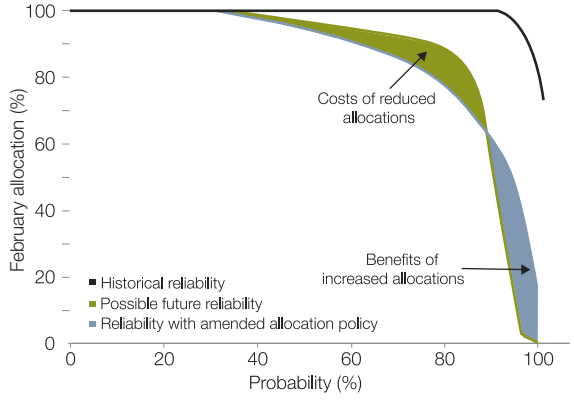
In the Campaspe, the change could be effective, but the cost is high and customers do not support it. In the Loddon, no reserve policy is entirely effective and again customers do not support a change. Further information is required on the decommissioning of Lake Mokoan before reserves can be assessed in the Broken system. In partially regulated systems, such as the Ovens, or unregulated systems where there is no on-stream storage capacity, it is not possible to establish or improve reserves.

In systems where the reserve policy is amended, flexibility will be needed to adapt to changing conditions. For example, system operating and reserve requirements will be reduced as a result of modernisation (see page 113). Predictions of future water availability may be more reliable as a result of improved climate knowledge or updated modelling assumptions and this could also reduce the amount of reserves required. The Department of Sustainability and Environment and rural water corporations will reassess the reserve policy as required to ensure it still meets its stated objective. Any changes required will need to be approved by the Minister for Water.

Figure 5.2 Impact on reliability of supply from adjusting the system reserve policy (schematic only)



(a) Adjusting the seasonal allocation policy (blue line) could improve reliability in very dry years



(b) The benefits of adjusting the seasonal allocation policy (blue area) need to be considered against the costs (green area)

Note:
In terms of the volume of water delivered, the green and blue areas (cost and benefit respectively) are similar in volume, if not equal. See Tables 5.1 and 5.2 to compare the change in average annual diversions when the current allocation policy is amended to the preferred option under a range of water availability scenarios. Note that this schematic illustrates how reliability could change with an amended seasonal allocation policy. Actual modelling results can be found in the supporting background reports available from www.ourwater.vic.gov.au/programs/sws/northern.

The Draft Strategy explored the option of increasing system reserves by purchasing or resizing entitlements as an alternative to amending the reserve policy. These options are not preferred because they are less robust to a range of climate scenarios. If entitlements were purchased or resized based on a scenario that was too wet, it would be ineffective in protecting against zero allocation years. If it were based on a scenario that was too dry, entitlement-holders would have given up entitlement unnecessarily. See Background Report 5 for more information.

Goulburn system

In the Goulburn system, the reserve policy will be amended so that the risk of zero allocation years is addressed under all modelled climate scenarios, meeting the objective outlined on page 88. This change means that even under the most severe scenario (Scenario D), it will be possible to make opening allocations in August and run the distribution system for the full season in all years.

Up to 340 GL of water will be set aside in reserve before allocations for high-reliability water shares are made in full. This is equivalent to 20 per cent allocations plus the system operating water required to deliver it. The reserve will be used to operate the system and make allocations in the following season.

Table 5.1 outlines the impact of this change on reliability of supply. It shows that under the most severe scenario, the risk of zero August allocations in 11 years out of 100 is removed. Early season allocations are increased and the minimum February allocation is increased from zero to 10 per cent.

The cost is slightly fewer years of full allocations. With long-term average water availability, the frequency of full allocation years is reduced from 96 years out of 100 (under the old reserve policy) to 93 years out of 100 (under the new reserve policy). With the most severe climate scenario, full allocation years are reduced from 28 to 25 out of 100. The new policy does not significantly impact on total yield because the water that is held back from allocations is simply stored for use in the following season. The modelling shows that, with long-term average water availability, average annual diversions will be reduced by 3 GL, and under the most severe climate scenario, they will be reduced by 11 GL. In both cases, this is less than one per cent of diversions. This low cost, and the significant benefits, means this is a highly effective insurance policy. See Background Reports 5 and 6 for a comparison with other options investigated.

Note that there is no impact on low-reliability water shares because the maximum volume of reserve set aside in any year does not change. In other words, it is still necessary to set aside enough reserve to make full allocations for next season's high-reliability water shares before allocating low-reliability water shares in the current season.

Table 5.1 Impact of the new reserve policy on high-reliability water shares in the Goulburn system

Option	Indicator	Scenario		
		Base case (long-term average)	Scenario B (medium climate change at 2055)	Scenario D (continuation of recent low inflows, July 1997-June 2007)
Current policy (Use all resource improvement to start system reserve when allocations 100% for HRWS)	0% Aug allocation	0 years out of 100	2 years out of 100	11 years out of 100
	< 5% Aug allocation	0 years out of 100	4 years out of 100	18 years out of 100
	Min Feb allocation	27%	0%	0%
	< 30% Feb allocation	1 year out of 100	4 years out of 100	9 years out of 100
	100% Feb allocation	96 years out of 100	79 years out of 100	28 years out of 100
	Av. annual diversion (GL)	1,638	1,389	1,139
New policy (Use 1/2 resource improvement to start system reserve when allocations 30-50% for HRWS)	0% Aug allocation	0 years out of 100	0 years out of 100	0 years out of 100
	< 5% Aug allocation	0 years out of 100	0 years out of 100	2 years out of 100
	Min Feb allocation	35%	20%	10%
	< 30% Feb allocation	N/A	1 year out of 100	4 years out of 100
	100% Feb allocation	93 years out of 100	69 years out of 100	25 years out of 100
	Av. annual diversion (GL)	1,635	1,386	1,128

Action 5.1: System reserve policy for the Goulburn system

Who: Goulburn-Murray Water; Department of Sustainability and Environment **Timeframe:** 2010

The system reserve policy for the Goulburn system will be amended in accordance with the following hierarchy:

a) Water is set aside to operate the major storages, river and distribution system (system operating water) for the full irrigation season.

b) Allocations are made to high-reliability water shares up to 30 per cent.

c) After allocations reach 30 per cent, half the resource improvement is used to further increase allocations, with the other half set aside in reserve.

d) After allocations reach 50 per cent, further resource improvement is dedicated to increasing allocations for high-reliability water shares up to 100 per cent.

e) After high-reliability shares are fully allocated, water is set aside in reserve to ensure the following season's high-reliability water shares can be fully allocated and delivered.

f) Allocations are made to low-reliability water shares for the current season.

During consultation on the Draft Strategy, many farmers expressed concern that water would be set aside in reserve instead of being used when allocations are only at 30 per cent. Experience in recent years has highlighted the difficulties faced by farmers and regional communities when allocations are low. Many submissions supported the idea of setting reserves aside earlier, but suggested this occur when allocations are higher then 30 per cent.

The reason this cannot be done is that putting aside water at higher allocations does not work under the most severe climate scenario. There is still a risk of zero allocation years, when carryover cannot be delivered, the water market cannot operate and domestic and stock needs cannot be supplied as normal. The rationale for setting aside reserve when allocations are at 30 per cent is that:

- water is not set aside in very dry years; there is no impact, only benefits, in years when allocations are less than 30 per cent
- when allocations are at 30 per cent, there is generally sufficient water for the water market to operate, which means individuals have a means of controlling their own supplies
- water is set aside in reserve early enough to meet the stated objectives and address the risk of zero-allocation years; waiting until allocations reached, for example, 50 per cent before putting aside reserve would not meet this objective.

Murray system

The analysis on the Murray was similar to that undertaken on the Goulburn system, however none of the options eliminated the risk of zero allocation years under Scenario D. Even so, changing the reserve policy does have some benefits, particularly when combined with other contingency actions. The number of years with zero starting allocations is reduced, and in dry years, starting allocations are increased. For the same reasons as the Goulburn system, 30 per cent is considered an appropriate allocation at which to start setting aside reserve. Setting aside reserves any earlier would come at a greater cost in average seasons without eliminating the risk of zero allocation years.

Up to 260 GL of water will be set aside in reserve before allocations for high-reliability water shares are made in full. This is equivalent to 20 per cent allocations plus the system operating water required to deliver it. The reserve will go to operating the system and making allocations in the following season.

Table 5.2 outlines the impact of this change on reliability of supply. It shows that under the most severe scenario, the risk of zero August allocations is reduced from 16 to 14 years out of 100. When combined with other actions, such as reducing the season length when necessary, this is reduced to five years out of 100. Without the change to the reserve policy, such measures alone would only be able to reduce the number of years with zero allocations in August by two years, from 16 to 14 years out of 100.

The cost of changing the reserve policy is slightly fewer years of full allocations. With long-term average water availability, the frequency of full allocation years is reduced from 98 years out of 100 (under the old reserve policy) to 97 years out of 100 (under the new reserve policy). With the most severe climate scenario, full allocation years are reduced from 68 to 63 out of 100. As with the Goulburn, water is only held back temporarily, so the new policy does not significantly impact on total yield. Modelling shows that, with long-term average water availability, average annual diversions are reduced by 2 GL and under the most severe climate scenario, they are reduced by 7 GL. In both cases, this is less than 0.5 per cent of diversions. Note that there is no impact on low-reliability water shares because the maximum volume of reserve set aside in any year does not change. See Background Reports 5 and 6 for a comparison with other options investigated.

Table 5.2 Impact of the new reserve policy on high-reliability water shares in the Murray system

Option	Indicator	Scenario		
		Base case (long-term average)	Scenario B (medium climate change at 2055)	Scenario D (continuation of recent low inflows, July 1997-June 2007)
Current policy (Use all resource improvement to start system reserve when allocations 100% for HRWS)	0% Aug allocation	1 year out of 100	6 years out of 100	16 years out of 100
	< 5% Aug allocation	1 year out of 100	7 years out of 100	17 years out of 100
	Min Feb allocation	71%	0%	0%
	< 30% Feb allocation	N/A	4 years out of 100	9 years out of 100
	100% Feb allocation	98 years out of 100	89 years out of 100	68 years out of 100
	Av. annual diversion (GL)	1,697	1,563	1,445
New policy (Use 1/2 resource improvement to start system reserve when allocations 30-50% for HRWS)	0% Aug allocation	0 years out of 100	5 years out of 100	14 years out of 100
	< 5% Aug allocation	0 years out of 100	5 years out of 100	15 years out of 100
	Min Feb allocation	73%	0%	0%
	< 30% Feb allocation	N/A	4 years out of 100	7 years out of 100
	100% Feb allocation	97 years out of 100	85 years out of 100	63 years out of 100
	Av. annual diversion (GL)	1,695	1,558	1,438

Action 5.2: System reserve policy for Victoria's Murray system

Who: Goulburn-Murray Water, Department of Sustainability and Environment **Timeframe:** 2011*

The reserve policy for the Murray system will be amended in accordance with the following hierarchy:

a) Water is set aside to operate the major storages, river and distribution system (system operating water) for the full irrigation season.

b) Allocations are made to high-reliability water shares up to 30 per cent.

c) After allocations reach 30 per cent, half the resource improvement is used to further increase allocations, with the other half set aside in reserve.

d) After allocations reach 50 per cent, further resource improvement is dedicated to increasing allocations for high-reliability water shares up to 100 per cent.

e) After high-reliability shares are fully allocated, water is set aside in reserve to ensure the following season's high-reliability water shares can be fully allocated and delivered.

f) Allocations are made to low-reliability water shares for the current season.

Before implementation, interstate negotiations will need to ensure that the additional reserves set aside by Victorian entitlement-holders are quarantined from shared resources and sufficient contingencies are in place to guarantee River Murray operation (see page 46).

* Timing is dependent on interstate negotiations. Goulburn-Murray Water will advise customers on implementation timing as negotiations occur.

The risk of insufficient water to make an August allocation in five years out of 100 means that further action is needed to make this an effective policy. A changed reserve policy will not be as effective as with the Goulburn system, largely because more water is required to operate the River Murray where commitments include flows to South Australia. In very dry years, it is possible that existing interstate water-sharing rules will result in the reserves set aside by Victorian entitlement-holders being used to supply interstate entitlement-holders. This is clearly a major disincentive for Victorian Murray entitlement-holders to set reserves aside earlier. Any change to Victoria's Murray reserve policy will depend on Murray-Darling Basin Ministerial Council agreement that these reserves are held solely for the benefit of Victorian Murray water share-holders. An additional, shared reserve is required to ensure that the River Murray can be operated in all years (see page 46).

Pear picking, Orrvale Photographer: Bruce Cumming

Two Murray reserves – what is the difference?

There is the potential for confusion over different 'reserves'. A reserve is simply a store of water that has been put away for the following year, instead of being used in the current year. This could be for a variety of reasons. Victoria has always set aside reserves to support allocations to and delivery of high-reliability water shares, before allocating to low-reliability water shares.

With the dry conditions of the past 12 years, it has become apparent that more may be needed. This Strategy commits to setting reserves aside earlier to ensure that the Northern Region's irrigation distribution systems can be operated in all years – even under the most severe climate scenario (see page 88). As discussed in Chapter 3, the Strategy also recommends that the Basin states consider setting aside additional reserves to ensure that the River Murray can be operated in all years. The following table highlights the differences between these two reserves.

	Northern Region system reserves (see Actions 5.1 and 5.2)	**Shared River Murray reserve (see Action 3.3)**
Who?	In line with bulk entitlements, Goulburn-Murray Water manages system reserves. Water for additional reserves comes from and benefits Victorian entitlement-holders.	In line with the *Murray-Darling Basin Agreement*, the Murray-Darling Basin Authority is responsible for operating the River Murray. Water for additional reserves must be agreed by, comes from and benefits Victoria, New South Wales and South Australia.
Why?	This reserve aims to ensure that irrigation distribution systems in the Northern Region can be run for the entire season in all years. Operating the distribution system is critical for carryover and trade to be effective risk management tools.	This reserve would aim to ensure that the River Murray can be run in all years. This is necessary for water to be delivered for critical human needs. A reserve would avoid the need for ad hoc interstate sharing arrangements. It also supports the Northern Region system reserve on the Murray – water cannot be delivered to the distribution systems if the river is not running.

Campaspe system

Since the release of the Draft Strategy, reserve options for the Campaspe system have been modelled, but following consultation with Campaspe stakeholders, a change to the reserve policy is not supported.

The modelling showed reserves could be used to address the risk of zero allocation years. Under the most severe climate scenario, instead of having 21 years out of 100 with no allocation in August, there would be none. However, this comes at a significant cost. From zero to 100 per cent allocations, it would require half of all resource improvement to be put in reserve, while the other half would be used to increase allocations. Up to 56 GL more water would be set aside in reserve before allocations for high-reliability water shares are fully allocated. This reserve would go to operating the system and making allocations in the following season. With water being stored for longer, there is more evaporation and this would reduce total yield by an average of two to 10 per cent a year.

These results were discussed with the Strategy's Consultative Committee, working groups, Goulburn-Murray Water's Rochester-Campaspe Water Services Committee and Campaspe Catchment Committee. In addition, a letter was sent to all Goulburn-Murray Water Campaspe customers. Feedback from all of this consultation confirmed that a change to the reserve policy is not supported by the Department of Sustainability and Environment, Goulburn-Murray Water or its customers at this time. It was generally felt that the cost of lower allocations in good years (by setting aside additional reserves) was too great. See Background Report 5 for more detailed modelling results.

The future water needs of the Campaspe Irrigation District will be reviewed and the most cost-effective and beneficial options assessed as part of NVIRP (see page 114).

Loddon system

Since the release of the Draft Strategy, reserve options for the Loddon system have been modelled. Similar to the Campaspe system, a change to the reserve policy is not supported at this time.

The most extreme option was setting half of all resource improvement aside in reserve from zero allocations right up to 100 per cent. The other half would go to increasing allocations. Under this option, it was also assumed that no supplementary supplies were provided to the Goulburn system. Essentially, the modelling results showed that even this extremely conservative reserve policy did not address the risk of zero allocation years. Under the most severe climate scenario, there are 34 years out of 100 with zero August allocations. The most conservative option only reduced this to 20 years out of 100. See Background Report 5 for more detailed modelling results.

These modelling results were discussed with the Strategy's Consultative Committee, working groups and Goulburn-Murray Water's Loddon Catchment Committee. Feedback from this consultation confirmed that a change to the reserve policy is not supported by the Department of Sustainability and Environment, Goulburn-Murray Water or its customers at this time.

Some customers have found alternative solutions to manage through drought years, including:

- conjunctive surface and groundwater use
- investment in annual/opportunistic crops or dryland enterprises
- on-farm storage for domestic and stock needs.

Broken system

Under its *Our Water Our Future* initiative, in 2004 the Victorian Government committed to decommissioning Lake Mokoan, an inefficient storage with high evaporation rates on the Broken system. Since then, the Department of Sustainability and Environment has been working with affected water users to finalise the operational details of this project and ensure that reliability of supply will not be impacted. The effectiveness of changing the reserve policy on the Broken system could vary depending on how this project is implemented. Therefore, reserve options on the Broken will be assessed and discussed with entitlement-holders after implementation details of the Lake Mokoan project are finalised (expected by late 2009).

Ovens system

Because the Ovens system is largely unregulated, it is not possible to store water for system reserve. Water availability for entitlement-holders is governed by restrictions and bans rather than a reserve policy. See page 62 for more information about management of unregulated systems.

Action 5.3: Assessing reserve policy options on the Broken system

Who: Department of Sustainability and Environment; Goulburn-Murray Water **Timeframe:** 2010

Hydrological modelling will be undertaken to assess the effectiveness of changing the reserve policy on the Broken system to address the risk of zero allocation years. This will be done following finalisation of the implementation details for the Lake Mokoan project.

5.1.2 Shortening the irrigation season

Shortening the irrigation season reduces the amount of water required to operate the irrigation distribution system and this saved water could be used to enable the season to open on 15 August and to help make an opening irrigation allocation. River operations would continue as normal. Shortening the season by two months in 2007/08 (ending 15 March) saved about 130 GL of operating water, which was then used to support opening allocations in the same year of 15 per cent and five per cent respectively in the Goulburn and Murray systems. Inflows received during the season were used to ultimately achieve a full season.

Shortening the irrigation season enables distribution systems to operate, so that entitlement-holders can get their carryover or purchased water delivered. This Strategy aims to formalise a process to decide when and how the irrigation season can be shortened, rather than making ad hoc decisions in drought years. This will allow greater transparency, improve market certainty, and enable more informed planning for water users.

The objective is to ensure a full irrigation season in gravity districts in all seasons. This is the foundation of robust irrigation districts because it provides certainty to entitlement-holders that they can get their water delivered when needed. A full season is important to support the wide variety of farming enterprises that rely on the distribution system at different times of year.

The first step is to ensure the irrigation season opens on 15 August in all years. This is important for dairy farmers and graziers to provide water for pastures in the lead up to spring when they are most productive. For cropping farmers, it provides access to water at a time that allows crops to reach their full potential.

The next priority is to ensure a full irrigation season before allocations are raised. If allocations were increased before extending to a full season this would be at the expense of those who require water delivery at the end of the season. Certainty about how the irrigation season will be shortened (if required) allows individuals to plan their water supplies through actions such as carryover and trade, and ensures that water users in irrigation districts are not denied opportunities to manage their own water needs.

If, as in 2007/08, a full season is ultimately achieved, the cost for entitlement-holders of announcing a shorter season is uncertainty in deciding when during the season to use water. If a full season cannot be achieved, the cost is more real for district irrigators who would be unable to have water delivered in autumn. Private diverters, who pump directly from the river, will not be affected by this policy, and will continue to have access to their allocations or carryover for the full year. Improvement in allocations would benefit all irrigators, including private diverters, while the cost of the shortened season would impact on district irrigators.

Shortening the season will occur only as a contingency measure to enable irrigation districts to operate in a succession of dry years when system reserves are insufficient to allow a one per cent allocation. Note that changes to the reserve policy (Actions 5.1 and 5.2) are predicted to eliminate the need for this in the Goulburn system and reduce the need in the Murray.

It is important to note each of the affected water corporations will have flexibility to advise their customers of any effect on system operation, such as a shortened season or reduced levels of service, as they deem necessary until sufficient resources are available to fully operate the distribution system.

Policy 5.1: Shortening the irrigation season

The length of the irrigation season will be shortened only as a contingency action (in conjunction with Actions 5.1 and 5.2) to enable distribution systems to operate in extremely dry years. From the 2008/09 season, this will be done according to the following guidelines:

a) Provided there are sufficient reserves, the irrigation season in gravity districts will always *start* on 15 August (1 July in pumped districts), with discretion for the water corporation to delay this in wet years when there is no demand to irrigate.

b) The irrigation season in gravity districts will always *end* on 15 May, however when there is insufficient resource to operate the distribution systems for a full season, water corporations will announce an earlier end date to help meet the objective of operating the system with a one per cent opening allocation in August.

c) If it is necessary to shorten the irrigation season, water corporations will announce this as soon as possible to provide certainty for entitlement-holders.

d) If an early end date is announced (to enable the system to be operated with a one per cent allocation in August), further resource improvement will be used first to extend the season to full length before improving allocations.

5.1.3 Final allocation date

Traditionally, allocation announcements have been made up to the end of April. However, in recent years, final allocation announcements have been brought forward to the start of April. Any inflows that occur after this time have been put aside for system operations and allocations in the following season.

Allocating all resource improvement after 1 April to operating the system in the coming year will provide certainty to entitlement-holders for their late season water use and carryover planning. It adds additional assurance that there will be sufficient water to operate the system in the following year.

This date was brought forward from the Draft Strategy proposal of 15 April as a result of the decision to allocate all resource improvements after 1 April 2009 to build reserves for system operations in 2009/10. This decision was made in response to the risk of having insufficient water to operate the River Murray in 2009/10, given the low inflows being experienced and the very low volumes of water in storage.

In exceptionally wet times when system operating requirements for the following year are fully covered, the resource manager could decide to announce allocation increases after 1 April. Historically, increases in allocations after March are rare. With the recent low inflows, the biggest reductions in seasonal rainfall have occurred in autumn and winter, resulting in the loss of the autumn break. If this trend continues, it is even less likely that there will be late season improvements to allocations.

Policy 5.2: Final allocation date

Final allocations will be announced on 1 April to provide certainty to entitlement-holders for their late season water use and carryover planning. All resource improvement after 1 April will be dedicated to operating the system in the coming year. Where sufficient reserves are already established for the following year, the resource manager may decide to announce allocation increases after 1 April.

Fruit for sale

Photographer: Bruce Cumming

5.2 Carryover

Carryover was introduced in northern Victoria in 2006/07 as an emergency drought response measure. It allows individuals to keep their unused water allocation in the storages for use in the following season. It is available to holders of high and low-reliability water shares, both of which provide a right to inflows and storage capacity. Carryover is a tool to redistribute water between years that enables individuals to manage their own reserves – and their own risk. It encourages the efficient use of water by giving entitlement-holders more flexibility to use their water when it is of greatest value to them.

Carryover is a particularly important tool in low allocation years because, provided the distribution system is operational, it provides water at the beginning of the season when seasonal allocations may be low. It can also offer more certainty about the minimum volume of water available in any season. Together with trade, which allows water to be redistributed between users, carryover gives individuals greater control over their own water supplies.

For horticulturists, carryover provides a way to guarantee that water will be available at crucial crop times such as fruit set and bud set. For dairy farmers and graziers, it helps to ensure that irrigation can occur in spring when the highest growth responses to water are likely to occur. For cropping farmers, it ensures that crops can realise their production potential by having adequate water in spring.

Urban water corporations can use carryover to help avoid severe water restrictions. This reduces the need to qualify rights to water (see page 11), a benefit for all entitlement-holders. Carryover also gives environmental managers the opportunity to store water for release early in the season when it is most needed for survival flows during droughts or for high flows and floods (see page 147).

5.2.1 Limitations of the existing carryover rules

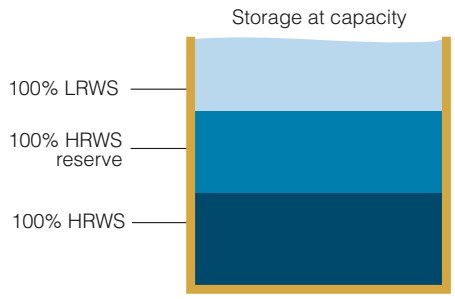
Under existing carryover rules, the volume of water available to an entitlement-holder in any year is limited to 100 per cent of their entitlement (that is, an individual's carryover plus allocations cannot exceed 100 per cent). This rule is in place to prevent individuals from using more storage capacity than they are entitled to. Without it, carryover could affect the reliability of other entitlements in wet years (see Figure 5.3).

While there is good reason for the 100 per cent rule, it means entitlement-holders who carry over water will miss out on allocations in average and wet years when there are full allocations. In essence, the existing rules work well as year-by-year insurance to help manage through dry years. However, they are not so useful in average to wet years, when entitlement-holders would miss out on allocations due to the 100 per cent rule. In addition, an individual that wishes to accumulate allocations over several years to meet larger demands is unable to do so, even when storages are at low levels and storage capacity is not constrained. This is a particular disadvantage for environmental managers, but also for mixed farmers who do not necessarily irrigate every year.

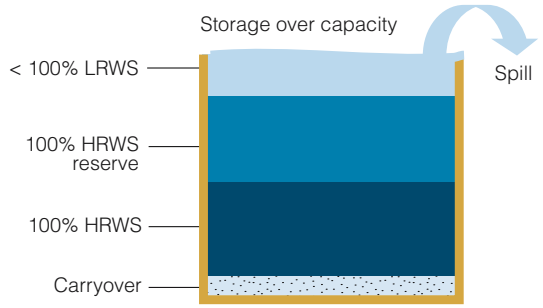
> *"Carryover limitations should be liberalised as much as workable with as few penalties as possible... Penalties need only apply if the storages are actually spilt caused by the carryover."*
>
> – Draft Strategy submission DS152

Another limitation of existing carryover rules is the 50 per cent rule where entitlement-holders can only carry over up to 50 per cent of the volume of their high and low-reliability water shares. This limit was raised from 30 per cent in February 2009, as proposed in the Draft Strategy. The rule was initially intended to limit the impact of carryover on the reserve pool and therefore, other entitlement-holders.

Figure 5.3 Potential impact of carryover without the 100 per cent rule



a) Storages at capacity can hold the full volume of high reliability water shares (HRWS) and low-reliability water shares (LRWS), and next season's reserve.



b) Allowing individuals to accumulate allocations above the volume of their entitlements could reduce storage capacity for low-reliability shares and next season's reserve.

Before the introduction of carryover, unused water was returned to the reserve pool to be reallocated to all entitlement-holders. Now that water can be carried over, the amount of unused water going to the reserve pool could be reduced, resulting in potentially lower seasonal allocations. Limiting the maximum amount that could be carried over was designed to limit the potential magnitude of this impact.

However, as we are approaching full utilisation of water and the value of water is increasing, there is less unused water at the end of a season. This is particularly the case in dry years when almost all water will be used unless individuals consciously choose to save it for carryover. This means that raising the 50 per cent rule and allowing individuals to carry over up to their entitlement volume would have minimal impact, and it would allow individuals maximum flexibility to manage their own risk.

5.2.2 Reviewing the carryover rules

When carryover arrangements were made a permanent option for entitlement-holders in December 2007 it was intended that the effectiveness of the rules would be reviewed when allocations reached 80 per cent on either the Goulburn or the Murray systems. Given the uncertainty of when this would occur, it was proposed that the review should be conducted through the Northern Region Sustainable Water Strategy. The Draft Strategy proposed that the review should be finalised in time for the 2010/11 season.

Objective of the carryover review

The objective of the review is to provide maximum flexibility and certainty to entitlement-holders, while preventing third party impacts. Entitlement-holders should have access to the tools to manage the risks associated with variable water availability. This should be done at minimal cost to the individual and their decisions should not be allowed to adversely impact on third parties, including other entitlement-holders and the environment. The costs and risks of carryover should be clear and explicit, allowing individuals to make informed decisions. Rules should be simple, and consistent across systems where practical.

Principles underpinning the carryover review

1. ***Water allocated to an entitlement-holder belongs to them.*** Provided it does not impact on third parties, entitlement-holders should not be limited in carrying water over.
2. ***All entitlements that allow water to be kept in storage have the right to carry water over.*** This includes both high and low-reliability water shares, since they are both legally recognised entitlements with a right to a share of inflows and a share of storage capacity. It includes environmental entitlements that have similar characteristics to consumptive entitlements (for example, the Murray Flora and Fauna Bulk Entitlement) but not rules-based environmental entitlements (for example, Goulburn 80GL flood release).
3. ***The storages at capacity are fully utilised to support existing entitlements, assuming average usage levels.*** This means that when the storages are full, individuals cannot store more than the volume of their entitlement as this would impact on reliability of supply for other users.
4. ***Water carried over, like seasonal allocation, should be tradeable.*** Carryover should not impose unnecessary barriers to water being traded to its highest value use, whether environmental, economic or social.

Consultation on the carryover review

In late 2007, a working group was established to review the operation of carryover, with membership from irrigation and environment interest groups, rural and urban water corporations and catchment management authorities. The group made recommendations that led to the Minister for Water's announcement that carryover arrangements would be ongoing from 2007/08 as a permanent option for entitlement-holders. As part of these arrangements, it was intended that the rules would be reviewed when allocations reached 80 per cent on either the Goulburn or the Murray systems.

Further work was undertaken by the Northern Region Sustainable Water Strategy working groups, one of which was an expansion of the original carryover group. A proposal paper was released in March 2009 for further consultation through Goulburn-Murray Water and Lower Murray Water's customer committees and grower groups. Through this consultation, community members offered a range of views on the carryover proposal. There was particular support for reducing the risk of individuals unnecessarily losing their water when storage levels are low, and many noted that the changes would see carryover being used as more than a drought response mechanism.

The carryover review focused on overcoming the limitations of initial rules and maximising the flexibility and benefit of carryover. More specifically, it explored ways to allow entitlement-holders to use available storage capacity to retain their water and only lose carryover if the storage physically spills, rather than limiting water users to their entitlement volume through the 100 per cent rule.

The outcome of the review allows entitlement-holders casual (that is, opportunistic) access to storage space while there is capacity in the dams. This gives more flexibility to irrigators, urban water corporations and environmental managers to manage their own water availability. Spillable water accounts (SWAs) are an innovative way to keep track of any casual access to storage to ensure that this water spills first when the dams are full. This protects existing entitlements to water and storage capacity.

5.2.3 Introducing spillable water accounts (SWAs)

The value of carryover as insurance against drought years cannot be denied, but its usefulness is limited in average and wet years. As described on page 98, the 100 per cent rule results in individuals missing out on allocations when allocations plus carryover reach 100 per cent. Carryover governed by spill rules reduces the risk of entitlement-holders losing their carryover in full allocation years, thereby making carryover a more useful tool in all years. If there is less risk of losing carryover in average or wet years, there is more incentive to invest in carryover as insurance against droughts.

SWAs enable accurate accounting of water held in storage above an individual's full entitlement volume while there is available capacity in the storage. This is critical for managing spill rules to protect the rights of existing entitlements to water.

Entitlement-holders' allocations, trade and water use are currently managed in their allocation bank accounts (ABAs), recorded in the Victorian Water Register (see page 11). All water in these ABAs is treated equally; it can be traded at any time, and used whenever delivery is possible. If entitlement-holders were allowed to store carryover water above the volume of their entitlement in their ABA, it would be very difficult to keep track of water that should spill from individual accounts when the storage physically spills. Individuals could use trade to get around spill rules, and adversely impact other entitlement-holders. Using a separate account, the SWA, to keep track of water that is casually occupying storage space ensures that this water is the first to spill when the storages physically spill.

Managing carryover with the SWA is similar to existing arrangements, except that once allocations plus carryover reach 100 per cent of entitlement volume, all further allocations are credited to the SWA rather than being lost to the entitlement-holder.

Water held in the SWA belongs to the entitlement-holder, but cannot be used unless there is minimal risk of storages spilling. It is lost to the entitlement-holder when there is no spare storage capacity available and storages physically spill. This condition retains the intent of the original 100 per cent rule; it ensures that carryover does not take up storage space that is allocated to and needed by other entitlement-holders. Without this condition, carryover could affect reliability of supply for other entitlement-holders.

Note that unlike previous carryover rules, there is no limit to how much water can be carried over.

Figure 5.4 provides an example of how the SWA might work for one entitlement-holder. Background Report 7 contains more detailed examples of how an irrigator may choose to use the SWA. Table 5.3 provides a simple comparison of the different characteristics of an ABA and SWA.

Cattle at feeder Photographer: Allison Pouliot

Figure 5.4 A new concept – the spillable water account (SWA)

A practical example

1. An individual with a 100 ML entitlement carries 20 ML over from Season 1 to Season 2. This water is available in their allocation bank account (ABA) at the start of Season 2.
2. Allocations in Season 2 reach 80% and 80 ML is credited to the individual's ABA, to take the total to 100 ML, equal to their full entitlement volume.
3. There is a further seasonal improvement and allocations are increased to 100%. This additional 20 ML is credited to the individual's SWA.
4. Once the system operator declares that there is a very low risk of the storage spilling for the rest of the season, this 20 ML is transferred to the individual's ABA. It can now be used or traded. Until this declaration, the water remains in the SWA and cannot be accessed.
5. If the storage spills, water in the SWA is lost to the individual.
6. As water in the SWA is always either transferred to the ABA or spilled prior to the end of the season, carryover of all unused water in the ABA at the end of the season occurs automatically as it does now.

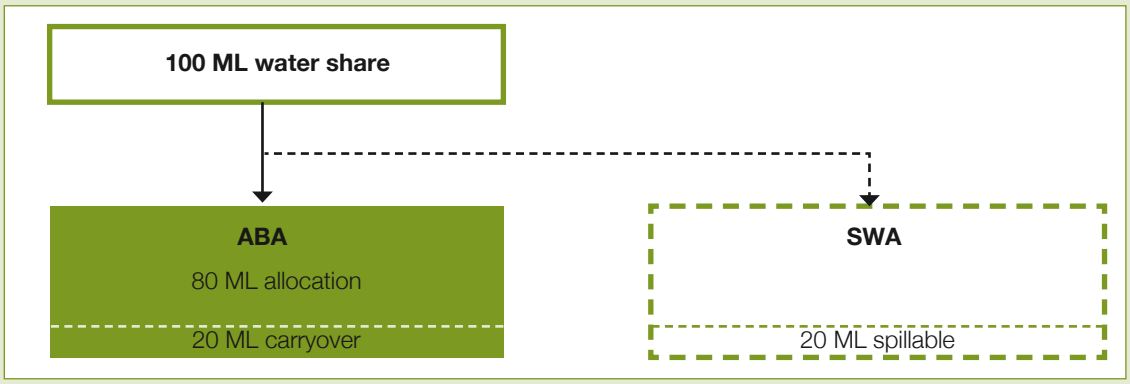


Table 5.3 Comparison of an allocation bank account (ABA) and a spillable water account (SWA)

Water held in an ABA:	Water held in an SWA:
i) Secure storage of seasonal allocations and carryover.	i) Casual (opportunistic) storage of additional water after carryover plus allocation in the ABA reaches 100%.
ii) Carryover plus allocations limited to entitlement volume (until water from SWA is transferred after it is declared there is a very low risk of spill).	ii) Not limited in volume.
iii) Available for use or trade at any time.	iii) Cannot be used until it is declared there is a very low risk of spill. It is then automatically transferred to ABA for use, trade or carryover at the end of the season.
iv) Cannot spill.	iv) Can be lost when storage physically spills.

Implications of the SWA for existing carryover rules

After the introduction of the SWA, there will no longer be a limit on how much water can be carried over. This will give more flexibility for all entitlement-holders – irrigators, urban water corporations, and environmental managers – to manage their own water availability. Some irrigators have told us that the current 50 per cent rule is sufficient to manage their risk; however removing this restriction will provide more options for irrigators to manage their supplies, such as accumulating their unused water in average years to be called upon in dry times. This would reduce dependence on the water market in difficult years.

Not limiting carryover is particularly important for the environment, allowing environmental managers to accumulate allocations over several years to provide intermittent flooding events. This will mean that the environment can meet their needs with less entitlement than they would require under the current rules. This will benefit irrigators, by reducing the amount of entitlement the environment needs to buy back out of production.

"The environment has significant variability in its annual demand for water and needs maximum flexibility in carryover to minimise entitlement volumes required to provide environmental outcomes."

– Draft Strategy submission DS126

While the SWA reduces the risk of missing out on allocations for all entitlement-holders there is still value in allowing water to be carried over against low-reliability before high-reliability water shares. This reduces the need for many individuals to use SWAs, resulting in less water being 'quarantined' unnecessarily (that is, inaccessible until there is a very low risk of the storage spilling). This will increase the amount of water available for trade, helping to lower the market price of water. Having more water fully available for productive use increases the regional benefits from carryover and water resources more generally.

Action 5.4: Introducing new carryover rules

Who: Department of Sustainability and Environment **Timeframe:** 2010

The following ongoing carryover rules will be introduced effective from the end of the 2009/10 irrigation season:

a) Entitlement-holders can carry over any unused water in their ABA at the end of the season.

b) Where an entitlement-holder has both high and low-reliability water shares linked to the same ABA, water carried over will be deemed to be recorded first against low-reliability water shares, then against high-reliability water shares.

c) Carryover, up to entitlement volume, will be available in the ABA at the start of the following season. Carryover above entitlement volume will be held in a SWA.

d) After allocation plus carryover reach 100 per cent of entitlement volume, all further allocations will be credited to their SWA, rather than being lost to the entitlement-holder.

e) Water held in a SWA will be quarantined* until:

   i) the system operator declares there is very low risk of the storage physically spilling; then the water will be transferred into the entitlement-holder's ABA for use or trade

   ii) the storage physically spills; then water in all SWAs will spill proportionally and entitlement-holders fully bear this risk

   iii) there is a risk of the storage physically spilling; then water in the SWA continues to be quarantined until i) or ii) occurs.

f) Five per cent of water carried over at the end of the season will be deducted to account for evaporation losses in the following year.

An implementation committee will be established to resolve any detailed implementation issues.

*Quarantined = set aside for the entitlement-holder but unavailable to them for use or trade.

5.2.4 Implementation issues to resolve

The SWA is a simple concept that enables carryover to be governed by spill rules. This improves the flexibility and benefit of carryover by reducing the risk of missing out on allocations in average and wet years.

However, there are several implementation issues still to be worked through (see Table 5.4) for which an implementation committee will be established. Committee representation will be similar to the original carryover working group and subsequent Strategy allocation working group.

Table 5.4 Key considerations in implementing the spillable water account (SWA)

Topic	Issues to resolve
Development of spill rules and declaration of 'very low risk of spill'	Further work will be undertaken to identify appropriate spill rules (that is, triggers to declare that there is a very low risk of spill and entitlement-holders can access water in their SWA). This decision will be based on storage levels, inflow forecasts and length of the season remaining. Access as early in the season as possible would benefit all entitlement-holders. In particular, it would enable the environmental manager to successfully complete winter/spring watering events. Early access is dependent on the level of risk accepted that there will not be a spill later in the season (which would then impact on all other entitlement-holders). Other issues to resolve include identifying the most appropriate storage(s) on which to base spill rules upon, and developing protocols to govern announcements by the system operator that the risk of spill has passed.
Suitability to smaller water systems	It is proposed that SWAs will apply on the Murray, Goulburn and Campaspe systems but further work is needed to assess suitability for smaller systems like the Broken and Loddon.
Development of appropriate tariff arrangements	In principle, if a user is casually accessing additional storage capacity, they should pay a tariff to contribute to the costs of operating and maintaining the storages. A range of tariff options will need to be assessed, including 'no change to existing tariffs'. Under each option, Goulburn-Murray Water's total revenue will not be increased.
Ensuring no material impact on reliability of supply	Managing carryover using the SWA is not considered to affect the reliability of supply, however further work will be undertaken to confirm this. If there is considered to be a material impact on reliability, appropriate mitigating measures will be developed before the SWA is implemented.
Trade between SWAs	Further work will be undertaken to investigate opportunities for trade between SWAs.

5.2.5 Groundwater carryover

Groundwater carryover will enable groundwater users to capture the benefits enjoyed by surface water users, who now consider carryover to be a vital part of their water management. Carryover will mean increased flexibility for licence-holders to manage their water resources when groundwater (and surface water) allocations are low. It is an alternative to trade for sourcing additional water.

Carryover will enable unused licensed allocations to be retained in individual accounts rather than being returned to the communal resource. However, this indirect impact will not reduce the total amount of water resource available. It is possible to allow carryover of groundwater where aquifer storage is large relative to annual licence entitlements, but it is not appropriate for all systems, especially for shallow aquifers that rely on yearly recharge to maintain storage levels.

Aquifers appropriate for carryover will need to be identified, including where:

- there is adequate data about the aquifer and likely responses to extraction
- the licensed bores in the area are metered
- there is enough volume in the aquifer to buffer levels against variable pumping rates from year to year
- third parties, including the environment, are not adversely impacted
- relevant management arrangements are in place (for example, PCVs and trigger levels).

An upper limit is required for the volume of water that can be carried over in a given system. The relevant rules will aim to increase flexibility for licence-holders without causing unacceptable third party impacts. In regulated river systems, storage capacity limits are clearly defined with associated spill rules, but it is not yet clear how similar rules could be developed for groundwater. Rather than calculating complex spill rules, groundwater users will be limited initially to carrying over up to 50 per cent of their entitlement. This approach will be verified through local management rules to account for the specific storage characteristics of aquifers (see page 64). Over time the effectiveness of rules will be reviewed.

In surface water systems, water allocations, usage and carryover are all accounted for in the Victorian Water Register. Groundwater licences will be recorded in the register from September 2009, after which allocations and carryover for groundwater can be accounted for. The register will tell the licensing authority the total volume of carryover at the end of the season, and enable allocations for the following season to be calculated (that is, the resource available for allocation equals available water minus carryover water).

The introduction of carryover will not increase the average amount of water taken above the initial licensed volume, but it may change usage season by season (that is, water will have to be carried over before it can be taken). In addition, the extraction of groundwater from a bore may cause the draw down of the aquifer in a local area, otherwise known as bore interference. However, existing licence conditions should be sufficient to effectively manage the impacts of draw-down and other impacts to users and groundwater-dependent ecosystems; they place limits on the total amount that can be extracted over a year and pumping rates for a single bore. The introduction of carryover will not remove the need for licence-holders to comply with the pumping rate conditions of their licence. A licence-holder may apply to increase their pumping rate as a result of having access to carryover, but a decision to vary the pumping rate would need to take into account bore interference and environmental issues.

Action 5.5: Carryover rules for groundwater

Who: Department of Sustainability and Environment; rural water corporations **Timeframe:** 2010

From 2010, the following carryover rules will be able to be introduced for Section 51 licence-holders in appropriate groundwater systems:

a) Licence-holders will be able to carry over a maximum of 50 per cent of their entitlement. Local management rules may determine a lower percentage if appropriate.

b) Five per cent will be deducted to recognise that through-flow into deeper aquifers or groundwater dependent ecosystems will reduce the volume of carryover water physically retained in the system in the following year.

c) Carryover volumes may be transferred or traded.

Rules for carryover in specific aquifers will be determined through local management rules or a management plan. Where necessary the *Water Act 1989* will be amended to support groundwater carryover.

5.3 Water trading

A water market has existed in northern Victoria since 1991. Water trading is one of the most significant means for an individual to access additional supplies under the Murray-Darling Basin Cap on diversions (see page 11). It enables rural water users, urban water corporations and environmental managers to buy and sell water shares, seasonal allocations and Section 51 licences. While trading does not create new water, it does encourage more efficient use of water resources.

The water market is a fair and effective way to reallocate water to meet changing needs of individuals and the community in both the short and the long term. In times of water scarcity, it is a voluntary way to move water between uses. Without trade, irrigators could not buy additional water when allocations are too low to support their crops. Likewise, other irrigators could not sell their allocations to generate revenue.

> *"The water market has worked well, (especially this year as the market participants are gaining a better understanding of the situation) given the circumstances. The more intensive irrigators with viable businesses have been able to survive. The less intensive irrigators (water sellers) have fared better than they would have without trading."*
>
> – Draft Strategy submission DS152

If the market did not exist, other compulsory and more bureaucratic methods would need to be found to reallocate water. This type of government intervention reduces people's confidence in their entitlement and makes it harder for them to plan ahead. It is therefore important to ensure Victoria maintains the integrity of its entitlements so the community has confidence to invest. The high level of trade in 2007/08 demonstrates the importance of trade in a low allocation year (see Table 5.5).

In 2007/08, about 90 per cent of trade was undertaken by irrigators. The Commonwealth Government has committed $3.1 billion over 10 years to purchase water entitlements for the environment and as such will become a more active market participant; this is discussed further in Chapter 3. Urban water corporations have also participated in water trading. However, as urban water use in the Northern Region accounts for only four per cent of total water use, it is generally felt that their participation is unlikely to cause any significant market distortion or community impacts. (Note that Melbourne Water cannot purchase water from northern Victoria but will be able to sell water in the future, with the expansion of the water grid).

Figure 5.5 outlines recent trends in the movement of water across the Northern Region, which suggest that horticulture ventures in the Sunraysia area are securing water shares, but selling some or all of the allocations back until they are required. The sale of water shares and allocations in other areas could reflect the retirement of salt-affected land (for example, in Pyramid-Boort and Shepparton). Victorians purchased a net average of about 16 GL of allocation per year from interstate and sold a total of 34 GL of water shares.

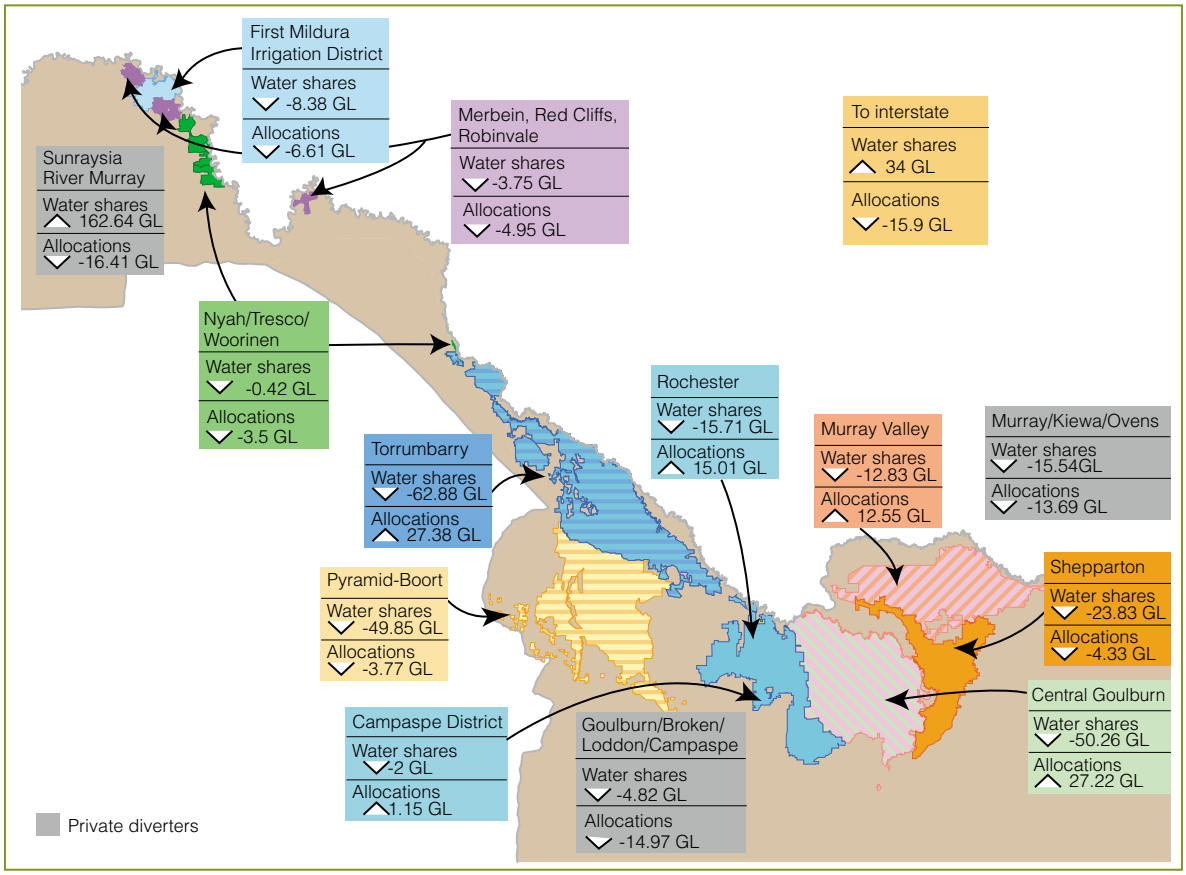
Table 5.5 Trade of high-reliability water shares# and allocations## in 2007/08^

	High-reliability water share (GL)		Allocation				
Supply system	Entitlement	2007/08 transfer	2007/08 season %	2007/08 season GL	2006/07 carryover (GL)	Total available (GL)*	Trade (GL)
Broken	26.4	0.6 (2%)	71%	18.7	0	18.7	1.4 (8%)
Bullarook	0.8	0.02 (3%)	0%	0	0	0	0 (0%)
Campaspe	37.1	1.1 (3%)	18%	6.7	0	6.7	1.6 (24%)
Goulburn	990.1	76 (8%)	57%	564.4	18	582.4	219.9 (38%)
Loddon	21.7	1.1 (5%)	5%	1.1	0	1.1	0.4 (37%)
Murray	1185.8	78.7 (7%)	43%	509.9	110	619.9	132.3 (21%)
Ovens	26.5	0.5 (2%)	100%	26.5	0	26.5	1.6 (6%)
Total	2288.4	157.9 (7%)	-	1127.3	128	1255.3	402.1 (32%)**

Notes:
Previously known as permanent trade.
Previously known as temporary trade.
^ At end June 2008.
* Trade is counted on the sellers side only.
** Does not include interstate inbound trade (72.3 GL).

Figure 5.5 Recent trends in the movement of water

Net trade of water shares[#] (1991/92 to 2007/08) and average trade of seasonal allocations[##] (2001/02 to 2006/07) into and out of major irrigation districts in Northern Victoria, and interstate



Notes:
Formerly 'permanent trade'.
Formerly 'temporary trade'.

The trade of water licences in unregulated river systems is not currently widespread (see Table 5.6). Trade of groundwater is also limited with about 12 GL being temporarily traded in 2007/08.

As water availability decreases, it is likely that licence-holders will want additional flexibility to trade their groundwater allocation and licences.

Table 5.6 Temporary trade in unregulated systems in 2007/08[#]

Trading zone	Volume traded (GL)*	Volume traded (as % of entitlement volume)
110 Goulburn unregulated	0.059	0.43%
130 Lower Goulburn unregulated	0.005	0.05%
160 Upper Murray unregulated	0.073	0.57%
180 Ovens and King unregulated	0.378	2.24%
191 Kiewa main stem unregulated	0.735	5.04%

Notes:
Permanent trade statistics are not yet available on the water register, but will be following register upgrades.
* Volume purchased.

Trade is a valuable tool to ensure that water can be moved between different users, and uses, to meet the changing needs of the community, but the associated adjustment issues must be acknowledged. As water moves around the region (refer to Figure 5.5), there are changes in the amount and type of irrigation that occurs in local areas. This affects local irrigation-dependent industries, businesses and ultimately population levels, unless alternative employment is found.

Water is not the only factor driving these changes and a strong, resilient community will adapt to them, provided it occurs at an acceptable rate and with appropriate support. This is discussed in Chapter 9. Chapter 3 discusses possible mitigating strategies to limit the adverse community impacts of the Commonwealth Government's $3.1 billion water purchase. The remainder of this section outlines the key actions to improve the water market and encourage responsible trade in northern Victoria.

5.3.1 Principles to guide trading rules

Trading rules have evolved as the water market has developed over the past 15 years. These cover all aspects of an operational water market including how much water can be traded, who can trade, where water can be traded, the types of transactions that can be made and the types of products that can be traded. Continuing to improve the water market means building on the developments and rules already in place.

The principles that guide the development of trading rules include:

1. Trade from one trading zone to another is generally permitted if the traded water can readily flow to the destination trading zone (that is, if the water can be physically delivered).
2. Trade upstream, for example from the Murray into a tributary (that is, 'back-trade') cannot occur unless there has been previous trade the other way.
3. Trade should not damage the environment or heritage assets – for example, there are limits on trade through the Barmah Choke to avoid summer flooding in the Barmah-Millewa Forest.
4. Trade should not create impacts on third parties by eroding other people's entitlements or level of service – for example, trade from an unregulated system (where there is no guarantee that allocations can be taken) to a regulated system (where allocations once made are guaranteed) is only allowed as back-trade. However, trade should not be prevented where impacts on others are caused solely by increased utilisation of pre-existing 'sleeper' entitlements.

Any changes to trading rules need to be considered in light of these principles.

Trading rules for regulated systems are set out by the Minister for Water in the *Trading rules for declared water systems,* available from www.waterregister.vic.gov.au. The Victorian Water Register also provides information about trading rules and guidelines, the trading history of water shares and allocations, summary statistics and processing times. Trading rules for unregulated systems are published in the *Policies for Managing Take and Use Licences*. Within unregulated systems, trading rules can vary with local circumstances and specific risks. Some trading rules within unregulated systems will be reviewed to ensure there are no unnecessary restrictions (see page 110).

Recent agreements between the State and Commonwealth Governments will result in the Commonwealth Government playing a greater role in setting water market and trading rules. Chapter 3 provides information on the role of the Commonwealth in the Murray-Darling Basin.

Water brokers and trader rights

Regional media has heightened the concern of some community members about the behaviour of water brokers and exchanges. Some also raised this issue in their submission to the Draft Strategy. In particular, there is concern that some brokers are taking unwarranted commissions and inappropriately keeping interest earned on irrigator's money (when there are delays in trade approvals). As a result there have been calls for increased regulation of brokers and exchanges.

Water brokers or exchanges are regulated by the *Trade Practices Act 1974* (TPA 1974). They are required to meet certain legal obligations, separate from contractual or other rights and obligations that may occur with a customer. The TPA 1974, and similar legislation in each state and territory, states that businesses and individuals, including water brokers and exchanges, must not:

- engage in misleading or deceptive conduct
- make false or misleading representations
- accept payment if they are unable to deliver
- engage in unconscionable conduct
- use harassment or coercion.

Fair trading obligations also prohibit anti-competitive conduct, such as agreements or understandings with other brokers or exchanges regarding prices or who to deal with. The Australian Competition and Consumer Commission (ACCC) enforce the TPA 1974, and provide a range of useful advice and information to brokers and customers (see www.accc.gov.au).

To avoid potential problems, individuals wishing to buy or sell water should consider the advice given by the ACCC in its publications, check trading information on the Victorian Water Register and use a reputable broker or exchange.

5.3.2 Changes to major trading rules

Water trade in regulated systems in the Northern Region is well established. This section outlines two key changes to these rules to provide greater flexibility for individuals.

The four per cent limit

The trade of water shares (permanent trade) out of Victorian irrigation districts is currently limited to four per cent of a district's total high-reliability water shares per season. For example, in a district that has 100 GL of high-reliability water shares, only 4 GL can be traded out in any one season. The trade of water allocations (temporary trade) is not constrained by the four per cent limit.

The limit was designed to address the risk of 'stranded assets' where distribution infrastructure is left with fewer customers to pay for its maintenance. This risk has now been addressed by the creation of delivery shares and introduction of termination fees. The limit also manages the rate of community adjustment as water is traded out of local areas.

A key issue with the limit is that it can negatively impact on individuals who wish to sell their water shares. An irrigator in a district that has reached the four per cent limit will be restricted to selling within their district, where the price may be less.

The Commonwealth Government was concerned that the four per cent limit on trade would prevent it from implementing its $3.1 billion purchase program (see page 45). The Victorian Government was concerned that an untargeted Commonwealth water purchase would severely affect communities resulting from trade out of highly productive areas.

On 4 June 2009, the Victorian and Commonwealth Governments agreed on better coordination of Commonwealth purchases with NVIRP. Under the agreement, and subject to a review of progress on the modernisation project, Victoria will begin to phase out the four per cent limit from July 2011, with a view to removing it entirely by 2014. In the meantime, the Commonwealth will be exempt from the four per cent limit where they purchase water from willing sellers in less productive areas. This allows the Commonwealth's purchase program to continue, while a phase out period allows communities time to adjust – a balanced outcome. Criteria have been agreed for the first round of exemptions which total 60 GL out of the Commonwealth's 2008/09 water tender (see page 117). The Commonwealth expects to purchase 460 GL from Victoria over the next five years.

The 10 per cent limit

Water entitlements are now separated from land. This means a person can own a water share without owning land. These arrangements were put into place in Victoria through unbundling. The legislation for unbundling enabled a limit to be placed on the amount of water shares that can be held by non-landholders or 'non-water users'. The initial limit was set at 10 per cent of water shares from each system.

In September 2009, legislation was passed which removed the 10 per cent 'non-water user limit'. The decision was reached after discussions at COAG and a government review responding to NWI commitments to ensure the limit did not become a barrier to trade.

While not yet an impediment to trade, once reached, the limit would mean that no more entitlement could be 'disassociated' from land. It would limit irrigators and other entitlement-holders who require additional flexibility by owning disassociated water shares. In addition, water purchases from outside irrigation districts, including interstate and Commonwealth environmental purchases, would be confined to the 10 per cent of entitlement that has already been dissociated. This limitation would ultimately hold back the value of 90 per cent of Victorian water entitlements.

5.3.3 Other improvements to trading rules

The water market provides entitlement-holders with a better chance of managing climate change and variability. When there are barriers to trade, for example from restrictive trading rules or ineffective trading processes, entitlement-holders are less able to manage through dry years and droughts. Individuals are less able to buy and sell as they need to. Trading provides water users access to additional resources.

Action 5.6: Improvements to trading rules

Who: Department of Sustainability and Environment; water corporations

Timeframe: Various (see Table 5.7)

Trading rules will be improved to provide better opportunities and increased flexibility for entitlement-holders while preventing third party impacts. See Table 5.7 for a list of the specific issues to be actioned.

Table 5.7 Improvements to trading rules

Theme		Context	Action
Trade in regulated systems	Setting upper limits on trade	Rivers have naturally low flows during summer, but this is when water users require water to be delivered on regulated systems. The unseasonally high flows in summer could have adverse environmental impacts.	Trading rules will be reviewed by 2012 to ensure that the delivery of water traded from the Goulburn system does not cause significant environmental damage to the lower Goulburn River. Similar analyses will occur for the Campaspe River, Broken River and Broken Creek if required.
	Trade in the Coliban and Broken systems	The Goldfields Superpipe from the Goulburn system to Bendigo brings opportunities for increased trade in the Coliban channel system. Currently there is no water trade allowed out of the Broken system.	The possibility of allowing trade within and out of the Coliban channel system and trade out of the Broken system will be investigated by 2011.
	Barmah choke trading rules	To avoid unseasonal summer flooding in the Barmah Forest, a Living Murray icon site, water trading through the Barmah Choke (a narrow section of the River Murray near the town of Barmah) is limited. However, in dry years, an exception could be made.	Victoria will work with the Murray-Darling Basin Authority to formalise the process for relaxing allocation trade through the Barmah Choke in dry years by July 2010.
	Leasing options	Leasing, a limited term transfer of water (typically multi-year rather than seasonal), can offer more flexibility for people and the environmental manager in regulated systems to manage the risk of reduced water availability. As with any commercial arrangement, a lease between two parties is best formalised in a contract.	A checklist of items to include in a leasing contract will be made publicly available to assist those wishing to participate in leasing options by July 2010.
	Interstate trade	Interstate trade will always be more complex, however processing times could be improved. Administration of interstate tagged entitlements could be more streamlined.	Victoria will work with New South Wales and South Australia to reduce approval times for interstate trade of allocations and to improve interstate trading processes by 2011.

Theme		Context	Action
Trade in unregulated systems	General trading rules and exceptions for unregulated trade	Historically in unregulated systems the general trading rules were conservative because unlike in regulated systems, releases from storage cannot be used to offset diversions. These rules have been found to be appropriate where no other tools exist to manage unregulated trade. Where demands within a reach are low compared to flows and the movement of a licence upstream will not result in third party impacts, an exception could be made. Annual demand in the upper Murray main stem is less than one per cent, and minimum flows are reliably maintained by releases from hydro-electric schemes.	Victoria's SDLs will be maintained (until the Basin Plan is introduced in Victoria) as a tool to assess the capacity to trade or transfer winter-fill licences between unregulated sub-catchments. The general trading rules, permitting downstream trade with a 20 per cent reduction in volume (unless to a winter-fill licence) and limiting upstream trade to winter-fill licences only, will be maintained. The Kiewa River (Trading Zone 191) will continue to be exempt from this rule and the upper Murray will be made exempt (including allowing upstream trade of direct pumping licences) by December 2009. Relaxing these trading rules in other part-regulated systems will be investigated by 2012, subject to assessment of third party impacts. In special circumstances, upstream trade to summer direct pumping licences may be allowed with a 20 per cent reduction, after an application by the licensing authority to the Secretary of the Department of Sustainability and Environment. This will be avaliable from December 2009.
	Improving trading information for unregulated systems	In highly stressed systems, a declared WSPA freezes trade until a management plan confirms that trade is possible without adverse impacts. In the future, local management rules will be developed and may replace management plans in some areas. In unregulated river systems, trade is managed by general trading rules and rules specific to the trading zone within which the trade is to occur. However, these rules may be unintentionally limited, especially when coupled with clear restrictions policies (see page 64 and 69). It may therefore be possible to redefine unregulated trading zones to free up trade without causing unintended third party impacts.	Rural water corporations will follow the 'Policies for Managing Take and Use Licences', released in September 2009 when assessing trade requests. Before trade opportunities are expanded in a given area, authorities should review restriction policies (winter and summer) to ensure they take into account the effects of trade and are in line with any other related management tools (for example, SDLs). The possibility of redefining trading zones in unregulated systems will be investigated by 2012 to determine whether trading can be liberalised.
	Trading between unregulated and regulated systems	Due to the differing characteristics of unregulated and regulated entitlements, facilitating trade between these products is difficult. A significant amount of additional work is required to see if trading opportunities can be improved.	Options to promote trade between unregulated and regulated systems will continue to be developed.
Trade in groundwater systems	Trade of groundwater	Trade is the only means for new users to access groundwater in areas where the PCVs have been fully allocated (see Chapter 4). Permanent trade is not permitted in WSPAs until a groundwater management plan is approved. This is a barrier to new development in many areas as new users are unable to secure water on a permanent basis. The Commonwealth's new limits on groundwater extractions (see page 44) may also restrict the issuing of new licences in some areas.	Options will be assessed by 2012 to encourage trade of groundwater allocation and licences, particularly the transfer of licences between groundwater management areas. These options will be considered in the context of the new Murray-Darling Basin Plan. Any changes will need to avoid unacceptable third party impacts, including on reliability and the environment.