

# 4

This chapter outlines actions to protect the security of water entitlements and clarify rights during severe and prolonged dry periods.



# Secure rights to water

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## What is the issue with the existing arrangements?

Victoria's entitlement framework has effectively allocated water over the past 100 years, but the extremely dry conditions of the past 12 years have highlighted areas for improvement. Under recent water shortages, the Minister for Water has qualified rights to water which redistributes water between entitlement-holders, resulting in uncertainty and inequitable sharing of the available resource.

## What improvements does the Strategy make?

-  Improves the management of domestic and stock supplies to protect the environment and reliability of supply for future generations.
-  Clarifies licensing arrangements to better equip groundwater and unregulated water users to manage their own risks under continued low inflows.
-  Refines bulk entitlements to improve certainty for entitlement-holders during periods of water shortages.
-  Quantifies the volume of water required to operate distribution systems to improve the transparency and accountability of system operators.
-  Refines environmental entitlements to maximise benefits and better share the risk of future climate change.

## 4.1 Introduction

Victoria's entitlement framework, outlined on page 9, aims to clearly define rights to water and promote its efficient and sustainable use for the benefit of present and future Victorians. Traditionally, Victoria's water management arrangements have been effective in providing investment certainty, managing competition for water resources and settling disputes.

The majority of surface water used in the region is by individuals who own water shares. Chapter 5 contains actions to provide greater certainty and flexibility to these entitlement-holders so they can best meet their individual needs. This chapter aims to clarify the remaining rights to water and ensure they are secure even in the face of increased scarcity and competition. The actions in this chapter are designed to:

- improve the management of domestic and stock supplies to protect the environment and reliability of supply for future generations
- improve the management of licensed water use from unregulated river and groundwater systems, particularly to provide clarity to licence-holders about how entitlements will be capped and seasonal variability managed
- clarify bulk entitlements and environmental entitlements to ensure they can cope with extended periods of low inflows and avoid the need for ad hoc decision making and qualifications at times of scarcity.

One water use not currently covered by the entitlement framework is major land use change, such as large plantations. Changes in land use could undermine the reliability of existing entitlements. Work is underway to identify the policy options to account for and manage the impact of land use change on water resources. This work is being progressed outside this Strategy (see page 20) but will include engagement with communities and organisations in the Northern Region.

### 4.1.1 Recognising existing rights to water

Recognising existing rights to water has been a guiding principle in developing this Strategy (see page 5). The *Water Act 1989* protects existing rights by outlining clear and transparent processes that must be followed to change them.

*"... [The submitters] oppose any attempt to remove existing property rights, without adequate compensation. The availability of water is intrinsic to property values..."*

– Draft Strategy submission DS134

The Minister for Water can only qualify rights on a temporary basis once all other viable contingencies have been implemented. The qualification must follow clear and transparent guidelines which require a risk analysis including implications for the environment. Equally, the Minister cannot arbitrarily make permanent changes to existing entitlements. Section 51 licences, which are issued for a defined period, can only be amended:

- when a licence is renewed; however the Minister must have regard to a number of matters and must renew the licence unless there are good reasons not to do so (see page 63)
- through the development of a management plan (see page 64)
- following a 15-year review of water resources (see page 11).

Bulk entitlements, environmental entitlements and water shares, which are all permanent rather than renewable rights, can only be amended:

- at the request of the entitlement-holder, for example following the completion of water savings projects (see page 115)
- following a 15-year review of water resources (see page 11).

Reliability and security are two characteristics of a water entitlement. A secure entitlement is one with legal tenure that is certain and protected, with known arrangements for sharing available water during dry and drought years. The reliability of an entitlement relates to the amount of water provided to an entitlement on an annual basis. Reliability may be reduced as a result of climate change, however the right to a *share* of the available resource will be protected.

There have been significant changes in the way water resources are managed within the Murray-Darling Basin and Victoria in recent years. Victoria has been steadfast in protecting the security of the State's entitlements. Ensuring reliable and secure entitlements will give the community continued confidence to invest.

### Policy 4.1: Recognising existing rights to water

In advancing the management of water resources in northern Victoria, all existing rights and entitlements, including those of water users and the environment, will be recognised consistent with the *Water Act 1989*. This includes the security of entitlements and the right to a share of available water in a given year.

## 4.2 Domestic and stock water use

This section summarises the approach to protect current and future water users and the environment from uncontrolled growth in domestic and stock water use.

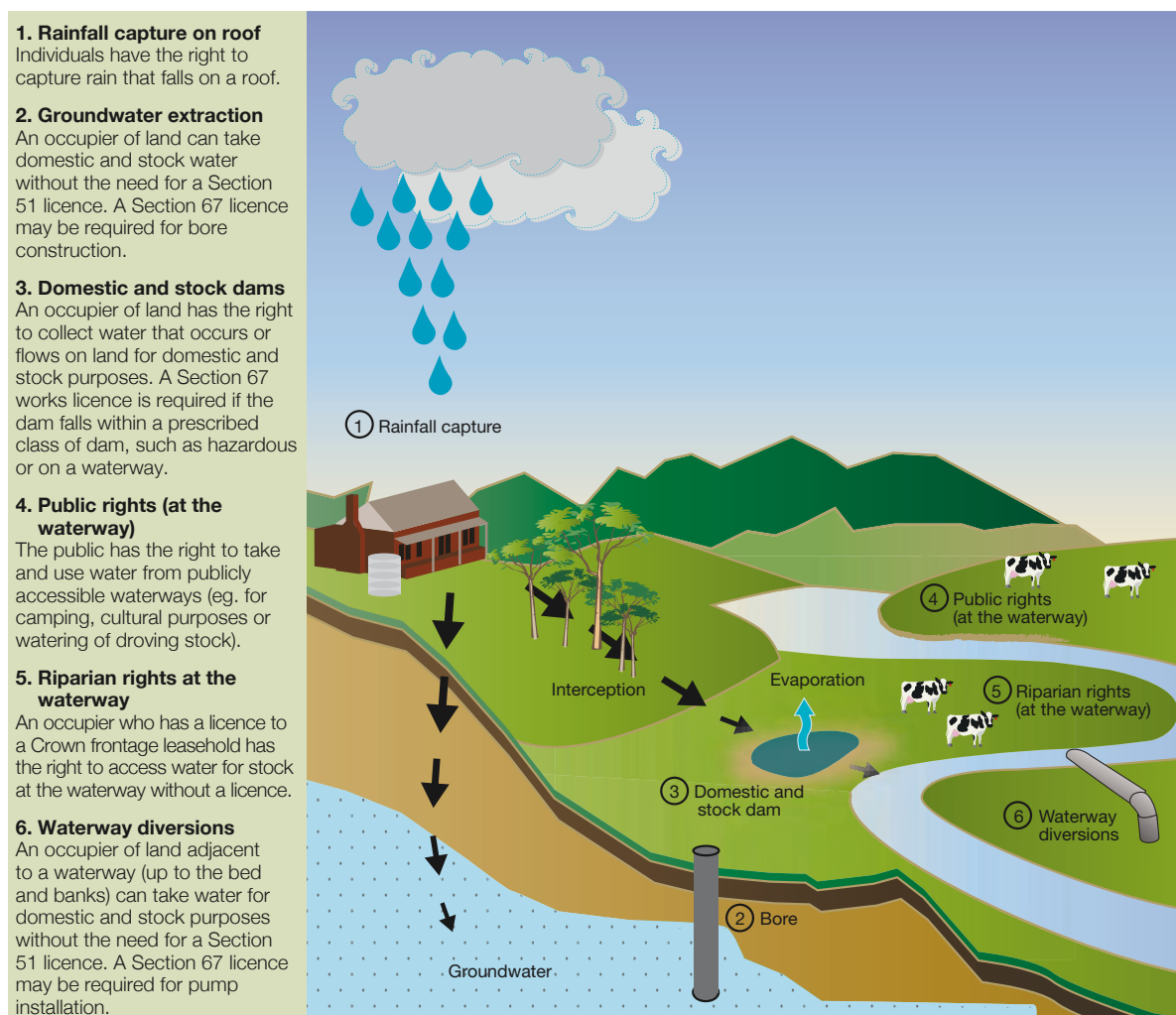
Section 8 of the *Water Act 1989* allows individuals to take and use from surface and groundwater sources for domestic and stock purposes, without an entitlement and free of charge, under specific arrangements (see Figure 4.1). The *Water Act 1989* defines 'domestic and stock use' as the use of water for household purposes, animals kept as pets, the watering of cattle or other stock, watering of land for fire prevention purposes (limited to certain sources) and irrigation of a kitchen garden. A kitchen garden is further defined as a garden used solely in connection with a dwelling; and its size varies depending on when the land was alienated from the Crown and whether the garden is irrigated by surface water, groundwater

or both. The Act excludes the use of domestic and stock water for intensive or commercial uses such as piggeries and dairies and the irrigation of a garden from which any produce is sold. In practice, water captured under the pretext of Section 8 'private rights' is currently also used for purposes not described in the Act (for example, water captured in a dam for aesthetic purposes).

Water use in accordance with Section 8 private rights is essentially an opened-ended right, which means that:

- the location where water is taken is not always recorded
- the volumes taken are not metered
- there are no restrictions in times of shortage
- the security and reliability of water supplies are not protected from the effects of new users entering the system.

Figure 4.1 Rights to water for domestic and stock use (private rights)



### 4.2.1 Why are we concerned about domestic and stock use?

The impact of domestic and stock use on the environment or existing users comes under little scrutiny because, in most instances, no licence is required. Quality information is scarce on the volume of water used for domestic and stock purposes and the growth in use. This makes it difficult to determine if water resources are being used sustainably. Domestic and stock use could undermine the reliability of supply for all water users because:

- the cumulative impact of historically uncontrolled use could pose a serious threat to water availability at the catchment scale;
- the potential increase in utilisation of these rights may cause additional pressure on water resources and undermine existing entitlements; and,
- the lack of verified data may mean we underestimate the impact of domestic and stock rights on overall water resource availability.

Estimates of existing domestic and stock use have been made using State-wide assessments, bore construction approvals or works licences and specific case studies. These estimates indicate that for northern Victoria, domestic and stock use from groundwater or surface water accounts for about four and six per cent of total water use respectively<sup>41</sup>. This proportion will become more significant as overall water availability decreases. Monitoring and better data on growth and existing use is required to ensure impacts can be appropriately managed as they arise.

At a local scale, some catchments are more impacted than others by domestic and stock use. Detailed investigations in the Campaspe catchment (see Background Report 1) show that small catchment dams intercept 11 per cent of surface water assuming long-term average conditions, and 29 per cent under a continuation of recent dry conditions. Unlicensed domestic and stock dams make up between 80 and 90 per cent of this total.

Rapid growth in the number of domestic and stock dams has occurred as a result of the increased numbers of ‘lifestyle’ farms around large urban areas. Figure 4.2 shows an example of the growth in domestic and stock dams within the Mt Ida region of the Campaspe catchment, from 1982 to 2008. The Campaspe system has several areas where such development can occur, because farming properties have been subdivided into smaller land parcels.

This proliferation of domestic and stock dams is occurring in rural residential areas across the state. A large number of subdivided allotments are available to be built on, which could further increase the number of domestic and stock dams and bores. These allotments are generally found in the Rural Living Zone, but significant numbers are also located in the Farming Zone. As an example, around Melbourne’s fringe there are currently 53,000 parcels (or lots) of land that do not have houses, but could activate their domestic and stock rights<sup>42</sup>.

The use of groundwater for domestic and stock purposes is also increasing. Approximately 60,000 groundwater bores have been constructed in Victoria since the 1970s with more than 16,000 constructed since 2006<sup>43</sup>. Growth is likely to continue in rural areas as land is developed and in reticulated urban areas where land-holders seek to avoid water restrictions.

**Figure 4.2 Domestic and stock dams in the Mt Ida sub-catchments, Campaspe Basin (aerial photograph)**

a) As a rural setting in 1982



b) As a peri-urban subdivision in 2008



Source: Coordinated Imagery Program, Department of Sustainability and Environment

### Public support for improved management

The Draft Strategy asked several questions about managing domestic and stock water use and specifically about small catchment dams and groundwater use. Many submissions acknowledged the limitations of current arrangements, especially in controlling the proliferation of domestic and stock dams in rural residential areas.

*“There needs to be a dramatic overhaul of the farm dams policy in Victoria and across the Murray-Darling Basin. The proliferation of on-farm dams in the last 15 years is compounding the effect of drought.”*

– Draft Strategy submission DS163

There was no consensus on changes that may be required to manage domestic and stock use into the future. Responses ranged from no action to targeted management to calls for a comprehensive licensing regime. Support for a comprehensive licensing regime for domestic and stock use of groundwater was stronger than for dams. Submissions cited cap compliance, protection of the resource and lack of understanding of the groundwater resource as reasons why it should be licensed for domestic and stock use. Other submissions raised concerns about the cost of increased regulation of domestic and stock water use outweighing the benefits.

### National obligations

The National Water Initiative requires that by no later than 2011, ‘significant’ interception activities must be recorded, and use above a certain threshold must purchase water entitlements. It is unclear whether domestic and stock use will be classified as significant, although it clearly can be significant at a local scale, such as the Mt Ida catchment.

The Murray-Darling Basin Cap does not formally account for domestic and stock use, which is not currently limited in any way. The Cap will be replaced by environmentally sustainable limits on diversions set in the Murray-Darling Basin Plan (see page 42). The Basin Plan could adopt a similar approach to the current Cap, or it could seek to account for and limit domestic and stock water use. Victorian water users would be exposed by not having a management framework that adequately records and accounts for domestic and stock water use.

### 4.2.2 Options for better management

Four broad options emerged from public responses to the Draft Strategy to govern the overall management of domestic and stock water use. These range from recording use through to a comprehensive licensing regime covering all water use (see Figure 4.3 and Table 4.1).

Figure 4.3 Domestic and stock management options

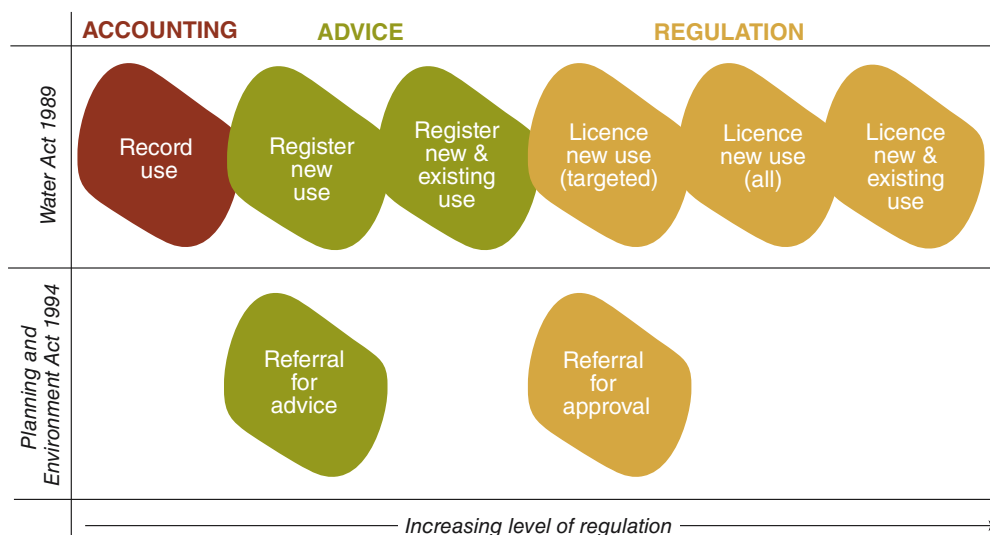


Table 4.1 Broad options for managing domestic and stock water use

Option	Comment
Recording use	<p>Records and tracks use over time using: a) regulations to report use; b) photographic imagery; or c) self-assessment procedures.</p> <p>Improves datasets and tracks changes in use but would be expensive on a State-wide basis. In addition, this option only provides retrospective analysis, which cannot be used to promote sustainable use of the resource.</p>
Requiring referrals under Victorian planning provisions	<p>Requires property owners to obtain a planning permit before constructing a new domestic and stock dam. The application for a permit would be referred to the relevant water corporation for advice or approval.</p> <p>Some councils already require a permit to construct a dam. However, the approach is not consistently applied across the State; only some councils refer permit applications to water corporations and even where permits are required, this has not provided useful data. Very clear directions would need to be given to ensure the approach is applied consistently across all municipalities.</p> <p>This option would not entirely solve the problem without also providing water corporations with clear directions on how they should consider and process any referral.</p> <p>This option is not consistent with the approach adopted for commercial farm dams, which sought to reduce the regulatory burden and avoid duplication by regulating commercial farms dams through one agency (i.e. the relevant water corporation). Duplication at the permit approval stage should be avoided, but a complementary approach between planning provisions and the <i>Water Act 1989</i> may be appropriate at earlier stages in the planning cycle (e.g. new developments and subdivisions).</p>
Registering use	<p>Registers new domestic and stock use from all/some sources (including dams).</p> <p>Improves datasets and provides an opportunity to promote sustainable use of water resources in accordance with guidelines for reasonable domestic and stock use (see page 61) because registration would be required before constructing a dam or bore.</p> <p>While it would be possible to register existing use, this would be expensive and would not provide an opportunity to promote sustainable use of the resource.</p>
Licensing use	<p>Converts Section 8 right to a right subject to obtaining a Section 51 licence.</p> <p>Represents the most substantial change from existing rights and would be extremely costly and resource intensive. These costs could not be justified on a State-wide basis.</p> <p>However, this option is best for resource protection as it provides the greatest capacity to redistribute water to the highest value use and prevents growth in use if this is not sustainable.</p>

Background Report 13 considers each of these options in more detail. Each option is evaluated in terms of the ability to:

- recognise and protect existing water users;
- be easily understood and straight forward to administer;
- account for and encourage the efficient and sustainable use of available resources; and,
- ensure that the benefits of a new system outweigh the costs.

### 4.2.3 Approach to improve management of domestic and stock water use

The challenge is to manage the risk of domestic and stock use where required, without imposing significant costs or preventing regional growth in areas where the resource is not stressed.

The preferred approach is to improve our understanding and management of domestic and stock use by registering new use in high risk areas and monitoring growth in domestic and stock use over time. As well as registering new use in high risk areas, the Minister for Water will issue guidelines on 'reasonable domestic and stock water use' to promote sustainable use. The Minister for Water will also commission a review of domestic and stock management once more is known about how domestic and stock use will be treated in the Murray Darling Basin Plan, due for release in 2011.

#### Registering new use in high risk areas and monitoring growth

We already register all new domestic and stock groundwater extractions, most waterway diversions and some forms of private dams through the process of requiring a Section 67 'works licence' for bore construction and works on waterways. These licences ensure minimum construction standards and also provide information about the nature and location of the works and provide an opportunity for information to be shared between prospective users and the water corporation before a bore or pump is constructed.

Based on public feedback on the Draft Strategy and evidence from the Campaspe Basin case studies (refer to Background Report 1), the Government will require all new stock and domestic dams in rural residential 'lifestyle' areas to be registered with the relevant rural

water corporation before they are constructed or altered. Most stakeholders agreed that these areas pose the greatest risk for expansion of domestic and stock dams within the landscape.

Registration of new stock and domestic dams in rural residential areas will:

- provide an accurate record of the location and nature of new domestic and stock use on rural residential properties;
- seek to ensure dams do not exceed the capacity required to meet the definition of 'reasonable domestic and stock' needs and meet all construction standards; and
- improve information sharing between prospective users and the water corporation before a dam or bore is constructed, including advice on alternative supplies.

Private dams (that is, domestic and stock dams) may also require a Section 67 work licence before they are constructed or altered if they fall within a prescribed class of dam that will have certain height and capacity characteristics. Landholders will be advised if their proposed construction or alteration of a dam requires a Section 67 licence when they register their proposal with the relevant water corporation.

Registration of new use in rural residential areas will be coupled with existing tools to track domestic and stock use over time. Tracking growth in domestic and stock use will provide the ability for each water corporation to assess the impact of use on available water supplies. This information will inform future decisions on whether more active management is required to protect existing water users and the environment.

## Action 4.1: Improving management of domestic and stock water use

**Who:** Department of Sustainability & Environment, rural water corporations, local councils, catchment management authorities

**Timeframe:** 2009

Management of domestic and stock water use will be improved by:

- requiring the registration of all new or altered domestic and stock dams within rural residential areas and promoting sustainable use in accordance with guidelines for reasonable domestic and stock use (see Action 4.2);
- monitoring growth in domestic and stock use; and,
- clarifying the need to obtain a Section 51 licence for harvesting water for uses other than domestic and stock purposes.



**Defining ‘reasonable’ domestic and stock use**

It is difficult to define a reasonable volume of water for domestic and stock water use at a specific site from the definition in the *Water Act 1989*. To assist licensing authorities and landholders to determine reasonable domestic and stock use consistent with the Act, ministerial guidelines will be developed.

The guidelines will provide clarity as to the purposes for which domestic and stock use applies and also provide for the consistent calculation of ‘reasonable domestic and stock’ volumes for any new assessment of domestic and stock needs, thereby promoting sustainable use of the resource. The calculation of reasonable use will be based on the area of a property, local climatic conditions, stocking rate in the local area, the reliability of water supplies, the water needs of a typical household and the needs for fire protection.

These requirements will apply to water taken from groundwater bores, extracted from a waterway or captured within a dam.

The guidelines will be an important tool for property owners when planning for their water needs and for local councils that require works applications to build stock and domestic dams. The guidelines will also assist referral agencies such as water corporations and catchment management authorities when considering the water supply needs of new developments.

**Adapting to requirements in the Murray-Darling Basin Plan**

As mentioned above, it is not as yet clear how the Murray-Darling Basin Plan will address domestic and stock water use. On release of the draft Basin Plan, Victoria’s approach (described in Action 4.1 and 4.2) will need to be examined against what has been

prescribed within the draft plan and any required changes to the way we manage domestic and stock use will need to be made before the final Murray-Darling Basin Plan is released in 2011.

**Promoting efficient use of water**

Requiring rural residential land-holders to contact their local rural water corporations before constructing a new domestic and stock dam will promote efficient capture and use of water. For example, having small, shallow dams in every paddock is very inefficient and over summer these dams tend to dry up and fail. Alternatively, a larger deeper dam piped to each paddock has lower evaporation rates and is a more reliant supply. Evaporation rates are highest in areas of low rainfall and low humidity; as high as 1.8 metres a year. Evaporation rates are also expected to increase by between two and 10 per cent as a result of climate change (see Figure 2.5).

Rural water corporations will be able to advise landholders of the best options for securing their domestic and stock requirements; this may include access to reticulated domestic and stock supplies (see Action 8.2). Promoting efficient domestic and stock water use is important for individual land-holders to ensure they have sufficient supplies to meet their needs, as well as ensuring maximum water is provided to downstream users and the environment.

Local government also has an important role to play in planning future developments and considering the potential impact of regional growth on existing water supplies. Every opportunity to promote use of the most sustainable supplies should be encouraged and in some areas, where there is evidence of resource stress, options to prevent the proliferation of domestic and stock use through planning controls should be explored.

**Action 4.2: Determining ‘reasonable domestic and stock guidelines’**

**Who:** Department of Sustainability & Environment, rural water corporations, catchment management authorities, stakeholders, local government

**Timeframe:** 2010

The Minister for Water will issue technical guidelines on calculating the maximum volume of ‘reasonable domestic and stock use’ to ensure consistency and fairness in exercising Section 8 domestic and stock rights. A steering committee will be established to advise on the development of these guidelines.

The guidelines will be used to promote sustainable domestic and stock water use and will assist water corporations and landholders to determine if a Section 51 licence under the *Water Act 1989* is required.

**Action 4.3: Reviewing the approach to domestic and stock water management**

**Who:** Department of Sustainability & Environment, rural water corporations, catchment management authorities, stakeholders

**Timeframe:** 2011

A steering committee with members from key stakeholder groups, including farmers, will be appointed to assess the implications of the draft Murray-Darling Basin Plan on Victoria’s approach to the management of domestic and stock water use. The committee will report to the Minister for Water on its findings.

This review will also consider the growth of domestic and stock use in resource stressed areas and the effectiveness of the reasonable domestic and stock guidelines in promoting efficient use of water.

## 4.3 Licensed water use from groundwater and unregulated river systems

In groundwater systems and unregulated river systems (that is, with no large dams or weirs), the Victorian Government allocates water by issuing individuals with a Section 51 licence to take and use water from:

- waterways
- on-stream and off-stream dams
- springs and soaks
- works of an authority
- groundwater.

A licence provides for the maximum volume of water that can be extracted from a defined source of water, and includes a range of conditions. Licences may be issued for up to 15 years and the *Water Act 1989* permits new or changed licence conditions to be included.

To access water under a Section 51 licence, the holder will also need to operate works. This may involve the construction of a bore or dam and/or the use of pumping equipment which require a Section 67 works licence.

The management of unregulated river and groundwater systems has developed over recent decades in response to changing conditions.

*“The management of unregulated systems has changed over time and the access to water for licence-holders has often been reduced through increased rationing or bans.”*

– Draft Strategy submission DS068



Dam excavations

Photographer: Alison Pouliot

The need to change groundwater management in particular has become evident in recent years due to increasing use and value of the resource. Over the past 12 years, people have turned to groundwater to provide emergency supplies in response to drought. Towns historically supplied from surface water, such as Wangaratta, have put in bores to secure supplies. Many farmers have also put in bores for domestic and stock supplies when their farm dams have dried up. This trend is likely to continue, with deeper, previously non-viable groundwater sources being accessed and poorer quality resources being used after treatment.

A decade ago the emphasis was on managing rising groundwater levels and the resulting land salinity problems. Management has now started to adapt to increased use, climate change and falling groundwater levels. Examples of improved management have included: capping local resources; metering commercial and irrigation use; preparing management plans; restricting use when required; allowing trade; and increasing licence fees. In addition, Victoria has established a comprehensive state observation bore network to monitor groundwater levels and recharge rates. 1,056 state observation bores are located at 606 monitoring sites across northern Victoria.

Groundwater management is complex. While licensing arrangements are similar to unregulated rivers, some groundwater resources have significant storage capacity; this means some groundwater systems are similar to regulated river systems.

Whenever possible, all licencing arrangements should aim to mirror the key characteristics of regulated entitlements, which have allowed customers to invest with certainty and manage their own risks in the face of continued low inflows. These characteristics include:

- clear documentation of processes and rules used to manage entitlements and seasonal variability (see page 63)
- well-defined limits on the volume of entitlement that can be issued and certainty around the timing and processes for revising the limits (see page 67)
- well-defined and transparent annual processes to allocate water to entitlements (see page 69)
- the ability to trade and move water to its highest value use (see Chapter 5)

### 4.3.1 Clearly documented licensing rules

The responsibility for issuing licences to take and use water in northern Victoria has been delegated to Goulburn-Murray Water. Ministerial guidelines are issued outlining how this delegated function is to be performed including performance standards, roles and responsibilities and the application of new management tools. The guidelines will be amended to clarify the expectations on licensing authorities and to improve consistency in this role across the Northern Region and the state. The first stage of this process was completed in September (2009) with the release of revised 'Policies for Managing Take and Use Licences'.

Across the state this licensing role sits with a number of different water corporations, resulting in varying conditions being placed on licences. To provide consistency across Victoria, a standard set of licence conditions will take effect from September 2009. All new licences issued will include the set of standard licence conditions as well as site-specific conditions and all existing licences will be updated with the standard licence conditions when they are renewed or traded.

There is an ongoing commitment to improve the recording and transparency of licence information to enable proper accounting. All licences will be recorded on the Victorian Water Register from the second half of 2009. This will benefit licence-holders and licensing authorities by improving water accounting and facilitating trade and carryover of licence volumes.

Across northern Victoria there are about 120 unregulated rivers, 15 GMAs and WSPAs with active diversions or extraction, and currently unincorporated groundwater areas. The characteristics of these systems, including water availability, can differ significantly. Therefore, in addition to ministerial guidelines that describe state-wide arrangements, it is appropriate to have flexibility in local management arrangements. Depending on the required level of management in a given system, two approaches have been employed:

1. Local management rules apply where water resources can be managed without the need to change licence conditions and the rules govern how licensing arrangements and functions apply to a local system.
2. Management plans apply where changes to licence conditions are required to protect domestic and stock users, existing licence-holders and the environment.

## Action 4.4 Ministerial guidelines for licensing of unregulated and groundwater supplies

**Who:** Department Sustainability and Environment; rural water corporations

**Timeframe:**  
Ongoing until 2011

Ministerial guidelines for delegated licensing functions will be reviewed to:

- enable clear, transparent and equitable management of Section 51 licences
- confirm arrangements regarding the issuing of licences, setting/revising permissible consumptive volumes and the role of sustainable diversion limits for surface water systems
- outline a consistent, straight-forward process for the development of local management rules and associated roles and responsibilities
- clarify opportunities for licence-holders to access tools such as trading and carryover of licence volumes
- outline the roles and responsibilities of the relevant parties (including water corporations and catchment management authorities) in the management of groundwater and unregulated rivers and associated diversions.

## Action 4.5: Standard licence conditions and improved records of licence information

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

**Timeframe:**  
Ongoing from 2009

A set of standard licence conditions will be developed for Section 51 and Section 67 licences. All new licences will be issued based on the standard licence conditions. Existing licences will be updated to reflect the standard licence conditions at the time of their renewal, trade or transfer.

The Victorian Water Register will record all bundled water entitlements (including Section 51 and Section 67 licences, environmental entitlements and bulk entitlements).

### Local management rules

Section 51 licences include conditions for the take and use of water. Local management rules explain to licensees (and the broader community) the specific management arrangements for the water resource from which they extract and the rules that apply to them as users of that resource. They explain how water will be shared in times of shortage.

Local operating rules have already been developed by rural water corporations over many years in consultation with affected licence-holders or in response to water shortages. However, they have little formal recognition. These rules are now critical for defining rights to water and to protect the environment, and the process for setting and amending the rules needs to be formalised. The development of local management rules will be guided by Ministerial guidelines (see page 63).

### Management plans

Arrangements documented in local management rules will provide a sufficient level of management for most unregulated rivers and groundwater systems. However, in highly stressed systems, the water-sharing arrangements or the total licensed volume committed from the resource may need to be revised. In these cases, a WSPA will be declared in accordance with Section 32 of the *Water Act 1989* and a management plan prepared which may change licence conditions prior to the renewal of the licence.

The development of a management plan for a WSPA can take 18 months or longer and requires the Minister for Water to appoint an overseeing consultative committee and extensive consultation with licensees. This process will be reviewed to ensure it operates as efficiently as possible.

## Action 4.6: Developing local management rules for groundwater and unregulated river systems

**Who:** Department of Sustainability and Environment; Goulburn-Murray Water; catchment management authorities

**Timeframe:** Progressively to 2015

Local management rules will be formally documented, adopted and published for all surface water and groundwater systems that do not require a management plan. They will document (if applicable):

- the area to which they apply
- management objectives
- any limits, including sustainable diversion limits, permissible consumptive volumes or extraction limits that apply to the area/system
- surface water passing flow requirements for summer and winter
- trigger levels for applying restrictions on groundwater licences
- rules for applying rosters and bans for surface water and groundwater systems
- groundwater carryover (where appropriate)
- trading zones and rules
- monitoring and reporting requirements
- additional requirements specific to the system.

Existing operating arrangements for northern Victorian surface water systems will be formalised as local management rules. Where no formal arrangements exist, or where existing operational arrangements are insufficient, local management rules will be developed in consultation with catchment management authorities, the Department of Sustainability and Environment, local communities and urban water corporations. In developing local management rules, the rights of existing licence-holders and the environment will be recognised.

## Action 4.7: Developing and streamlining management plans

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

**Timeframe:** Ongoing

WSPAs will be declared and a management plan developed for highly-stressed or utilised systems if:

- there is a need to amend licence volumes or conditions before licence renewal
- permanent or ongoing restrictions on licensed extraction are required to protect consumptive licences, domestic and stock use or the environment
- overall licensed commitment needs to be reduced

The process for developing management plans will be reviewed to identify options for streamlining.

Through *Our Water Our Future*, five unregulated rivers and six GMAs were identified as priority systems for the development of a management plan. Since then, technical studies and resource appraisals have been completed, resulting in a reassessment of priorities in northern Victoria. Several external factors will influence the level of management required. For example, the February 2009 bushfires impacted the hydrology of

the Yea River and King Parrot Creek catchments, as well as on local communities and licence-holders. Due to the uncertainty surrounding the bushfire-affected areas, intensive management for these catchments is currently inappropriate.

For these reasons, the management arrangements for these priority systems have been revised (see Table 4.2).

### Action 4.8: Revised management arrangements for *Our Water Our Future* priority systems

**Who:** Goulburn Murray Water; catchment management authorities; Department of Sustainability and Environment

**Timeframe:** Various (see table below)

Management arrangements for each of the priority areas identified within *Our Water Our Future* will be revised as per Table 4.2.

**Table 4.2 Summary of actions for priority groundwater and unregulated river systems identified in *Our Water Our Future* (2004)**

Action	System
Maintain existing water supply protection areas and associated management plans	Campaspe Deep Lead WSPA (2010), Katunga WSPA (complete) and Shepparton WSPA (complete).  Spring Hill WSPA and Upper Loddon WSPA will be merged and a single management plan will be developed by Goulburn-Murray Water in consultation with the North Central Catchment Management Authority, the Department of Sustainability and Environment and relevant urban water corporations by 2010.
Declare water supply protection areas and associated management plan	A integrated groundwater and surface water management plan will be developed for the upper Ovens system by Goulburn-Murray Water in partnership with North East Catchment Management Authority and the Department of Sustainability and Environment by December 2010.
Develop local management rules	Mid-Loddon GMA and King Parrot Creek and Yea River WSPAs will be revoked and local management rules developed by 2011 for each system in place of a management plan.  Local management rules will be developed for the Kiewa River and Seven Creeks by 2011.

One of the objectives of the NWI is to recognise the connectivity between surface and groundwater resources; it recommends management of connected systems as a single resource. Management should recognise that in some connected systems increased groundwater extraction can reduce streamflow and therefore the reliability of surface water entitlements. Allocation, trade and management rules must recognise the level of interaction.

With the exception of the upper Ovens system, groundwater systems in the Northern Region do not strongly interact with surface water systems<sup>44</sup>. However, where there are significant connections, the *Water Act 1989* provides for joint management plans to be prepared.

An integrated management plan is being developed for the upper Ovens, which has been identified as a highly-connected groundwater and surface water system. The outcomes of this process will be used to inform the management of highly-connected systems in the future.

It is important to note that integrated management does not mean issuing a single licence that provides access to both surface water and groundwater from a defined system. It means that water extracted from one source of water (for example, groundwater) considers the impact on the other source of water (for example, contribution to river baseflows).



Groundwater drill

Photographer: Alison Pouliot

### Action 4.9: Managing groundwater / surface water interaction

**Who:** Goulburn-Murray Water; catchment management authorities; Department of Sustainability and Environment **Timeframe:** Ongoing

Systems with high groundwater and surface water interaction will be identified and integrated management plans prepared.

The outcomes of the upper Ovens integrated management plan will be used to progress the development of other integrated plans.

### 4.3.2 Well-defined limits on entitlements

Critical to the success of Victoria's entitlement framework are clearly defined limits on the volume of entitlements issued.

The volume of entitlement that can be issued is currently limited by the Murray-Darling Basin Cap, and Victoria's PCVs. By 2011, the Murray Darling Basin Authority will set environmentally sustainable limits on the amount of surface and groundwater that can be taken (see Chapter 3). These limits will replace the Murray-Darling Basin Cap but they will not be introduced in Victoria before 2019.

The Murray-Darling Basin Cap applies to licensed water extraction including from unregulated river systems. As such, no new licences can be issued

in the Northern Region. However the Murray-Darling Basin Cap does not account for any unlicensed water diversions which can be divided into two categories:

- water used for domestic and stock purposes (see page 60)
- unlicensed farm dams primarily for dairy wash (see page 70).

In the event that these uses become licensed, improved management and accounting of these existing uses must not have any unintended third party impacts. Therefore Victoria will work with the Murray-Darling Basin Authority to ensure that limits are increased to formally recognise these existing uses of water.

## Action 4.10: Limiting entitlement volumes in unregulated river systems

**Who:** Department of Sustainability and Environment

**Timeframe:** 2012

The accounting of authorised, currently unlicensed water use in unregulated river systems will be improved through its recognition under the Murray-Darling Basin Cap on diversions. For example, water extracted for dairy wash (when formally accounted through registration or licensing), and water extracted for stock when crown frontages are fenced off and licences are issued to recognise historical use (see Action 7.5).

Currently GMAs and WSPAs are based largely on topographic features in areas of intensive use. They do not cover all potential groundwater sources (see page 12) and boundaries may not fully reflect physical boundaries and aquifer characteristics. In response to increasing groundwater demand and improved understanding of systems, the Department of Sustainability and Environment is reviewing the boundaries of GMAs and WSPAs.

In the Northern Region, the volume of groundwater entitlement that can be issued in a GMA or WSPA is limited by PCVs. These have been set at either the volume of existing entitlement or based on an assessment of groundwater system yield, whichever is greater. Authorised but unlicensed uses of the resource are not limited by PCVs; this includes water for domestic and stock or in some instances dairy wash purposes and in some situations interception by plantations. PCVs have not been set for unincorporated areas.

PCVs may not necessarily represent sustainable levels of use for a groundwater system. Sustainable management should be based on agreed management objectives for a given system. In some instances, it will be reasonable to allow groundwater levels to decline to prevent land salinity problems. In other cases, community benefits will be maximised by maintaining stable groundwater levels. Finally, in some instances it may be possible to increase the amount of water taken from some groundwater systems. This will be permitted where it can be safely done and it provides value to the community.

Any rebalance between consumptive use and the environment must maintain the integrity of water entitlements.

### Action 4.11: Defining areas and limiting entitlement volumes in groundwater systems

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

**Timeframe:** 2012

Groundwater management area and water supply protection area boundaries will be reviewed based on the latest hydrogeological information, and groundwater management areas will replace unincorporated areas.

Once defined in management areas, permissible consumptive volumes (PCVs) will be progressively set and gazetted. These will consider current licensed extractions, estimates of unlicensed use (that is, domestic and stock), future extraction capacity of the resource and the needs of groundwater-dependent ecosystems.

Existing groundwater PCVs will be adjusted upwards:

- to account for water extracted for dairy wash
- to account for existing authorised but unlicensed water use, such as domestic and stock
- where it is determined that groundwater systems can sustain extraction above that currently allowed
- under existing PCVs, only after a resource appraisal that considers the needs of existing users and groundwater-dependent ecosystems.



### 4.3.3 Annual processes to allocate water

Once limits are set on the entitlement volume, the next step is to restrict annual water use in response to seasonal variability.

In regulated systems, the amount of water available to an individual in any year is termed a 'seasonal allocation'; this allocation process is well understood by entitlement-holders. There is a clear relationship between allocations, entitlement volume and storage levels and entitlement-holders understand that there is no guarantee that they will receive 100 per cent allocation in any given year. The rules are designed to allocate water only when it is available.

For unregulated rivers there is no large on-stream storage capacity; instead it is necessary to manage instantaneous flows. In these systems, seasonal variability is managed by introducing restrictions and bans on licensed extraction when a system hits a point of stress. These are known as minimum passing flows. The objective of restriction rules is to share the available flow between all licence-holders while maintaining a minimum flow in the stream. This means that a licence-holder may be able to take their full entitlement over the period specified by the licence conditions, but they may be banned from taking water for some months of the year when river levels are too low. Restriction rules have been established on a needs basis for streams in northern Victoria, however, the process for reviewing, revising and publishing them needs to be formalised to better protect the environment and the rights of licence-holders. This will be done through the development of local management rules and management plans (see page 64).

Access to groundwater resources can be restricted in the same way as unregulated streams, but this has not been a common practice in northern Victoria as groundwater has been a generally secure resource over the last 12 years. Where rates of decline are identified, restrictions are introduced to protect agreed management objectives that reflect community's economic, social and environmental needs. The frequency and period of restrictions depend on the characteristics of the local system, and accordingly will be governed by local management rules and plans. It is important to formalise these arrangements and make them easily accessible to all licence-holders and the broader community.

Where groundwater aquifers provide significant storage capacity, they behave more like regulated systems, and therefore it may be possible to use seasonal allocations, rather than restrictions to share the available resource. While they are conceptually similar, seasonal allocations allow water to be allocated at the start of a season based on the resource status, rather than restricting extraction once a system is under decline.

#### Action 4.12: Managing seasonal variability in unregulated river and groundwater systems

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

**Timeframe:**  
Progressively to 2015

Appropriate restriction policies for groundwater and unregulated river systems will be developed through local management rules and management plans, including levels or minimum passing flows that trigger the introduction of restrictions.

The merits of using seasonal allocations, rather than restrictions, will be investigated for appropriate groundwater systems by 2011.

### 4.3.4 Further improvements to licensing arrangements

#### Unbundling Section 51 licences

It may be appropriate to 'unbundle' some or all licences in the same way that water rights were unbundled into a water share, delivery share and water-use licence for regulated systems in 2007. Unbundling provides an opportunity to clarify entitlements and provide consistency across Victoria. However it is not clear how a water share could be defined for a diversion from the unregulated system.

A water-use licence, linked to the water share, requires water to be applied to land in a sustainable way. Water from a Section 51 licence is not subject to the water-use licence. In areas where land-holders have a water share and a groundwater licence, the licensed volume can be applied on this land in excess of the volume specified on the water-use licence. This problem could be overcome if the licence was unbundled, in which case the water-use licences would regulate all water applied to the land.

Some of the benefits of unbundling can be achieved by clarifying licence conditions (for example, the conditions by which water can be applied to the land). More work is required to determine the benefits of unbundling Section 51 licences.

#### Management of sleeper licences

Many Section 51 licences are currently inactive, used sporadically or only partially used. For example, sleeper licences represent between 14 per cent (Kiewa) and 53 per cent (King Parrot Creek)<sup>45</sup> of the total licensed volumes in unregulated systems. In 2006/07, groundwater usage in the Upper Loddon, Shepparton and Spring Hill WSPAs was less than 50 per cent of entitlement volumes. This level of under-utilisation is not as evident in regulated catchments where entitlements and allocations are actively sold on the water market.

There is some concern that the increased utilisation of existing licences could reduce the reliability of supply for other users and on the environment. However, an individual who does not fully utilise their licence has the same legal rights as one who does fully utilise their licence, and pays the same fees and charges.

#### Management of dairy wash licences

Historically, water used to wash down farm dairies was estimated to be relatively small. In most instances, Section 51 licence volumes were below the actual volumes used or no licence existed as it was incorrectly assumed to meet the definition of Section 8 rights. This position represents a historical inconsistency between policy and accounting for actual dairy wash use.

#### Action 4.13: Unbundling Section 51 licences

**Who:** Department of Sustainability and Environment

**Timeframe:** 2010

Options to unbundle Section 51 licences will be investigated for:

- surface water systems that are part-regulated (Kiewa River) or semi-regulated
- deep lead groundwater systems with large storage capacity
- areas where land-holders hold both water shares and licences.

#### Policy 4.2: Sleeper licences

The rights of Section 51 licence-holders will continue to be recognised, independent of their historic water use and if activated, will be subject to the same management rules applied to active licence-holders (for example, restrictions or bans at times of scarcity).

#### Action 4.14: Management of dairy wash licences

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

**Timeframe:** 2010

A dairy wash licence transition program will be implemented until the 26 February, 2010. During this period, land-holders without a Section 51 licence, or with a Section 51 licence that does not sufficiently represent their current water use for dairy wash, can apply to have a new/revised licence issued based on historical or agreed usage. All these licences may be metered, subject to additional conditions issued by the water corporation, and will incur ongoing fees and charges.

## 4.4 Bulk entitlements

The following section describes how bulk entitlements will be amended to include water-sharing arrangements that have been developed in recent years in response to severe droughts. The aim is to provide greater clarity and certainty to all water entitlement-holders during water shortages and to improve the transparency and accountability of system operators.

### 4.4.1 Bulk entitlements for regulated systems

#### Clarifying source bulk entitlements

Source bulk entitlements cover the majority of supplies in regulated systems. They provide for a share of storage capacity and inflows and the right to take water from specified points in the system. At the time they were finalised, it was not thought necessary to set out how 'dead storage' (the water held in the bottom of storages that is below the normal outlet level) should be shared. However, in recent years it has been necessary to pump the dead storage of some reservoirs to meet critical human needs.

Pumping dead storage affects water availability to entitlement-holders in the following year, because inflows are required to replace the dead storage before water can be released from the normal outlets. This may have several consequences including:

- delaying water supply in the following year
- reducing the volume supplied in the following year
- stopping flows downstream of the storage.

Setting out the water-sharing and cost-sharing arrangements for supplying water above and below the minimum operating level of storages will help to manage potential competition during times of scarcity, and allow for more effective planning.

It should be noted that as a drought response in 2007, the operating level of the Waranga Basin was lowered by the installation of pumps. In this example, dead storage is considered to be below the minimum operating level with the pumps in place.

### Policy 4.3: Principles to guide access to dead storage

- Water corporations will plan to access water below the normal minimum operating level of storages ('dead storage') only to supply critical human needs during times of water shortages, with consideration of third party impacts.
- The cost of supplying dead storage will be borne by the customers being supplied with the water consistent with the bulk entitlement.



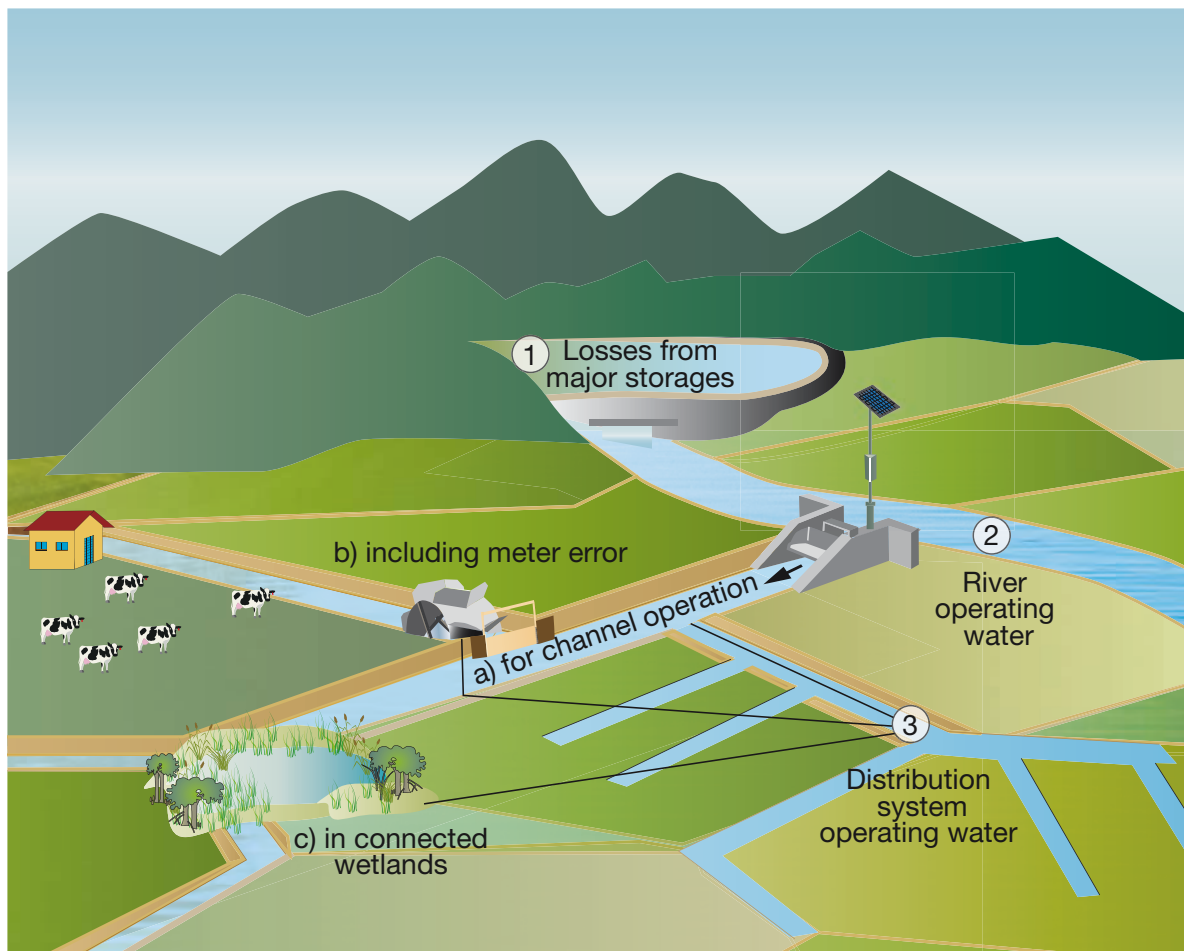
Cardross Lakes

Photographer: Bob Meriin, Mallee Catchment Management Authority

Source bulk entitlements for regulated systems include the water needed to operate the system for customers. Figure 4.4 illustrates the three components of 'system operating water' which are:

1. Storage losses, including water lost to evaporation, seepage and spills from the major storages in Victoria.
2. River operating water, used to operate regulated rivers (in accordance with bulk entitlements) and deliver water to off-take points for distribution systems, including evaporation, seepage and water to provide passing flows for riparian rights and maintain environmental and other assets.
3. Distribution system operating water, used to operate the irrigation distribution system from the river off-take to the farm gate, including evaporation, seepage, leakage, outfalls and meter error. Some water may also be used to maintain environmental assets that are part of the distribution system (for example, in the Torrumbarry system).

**Figure 4.4 Components of system operating water**



In all cases, bulk entitlements include the water necessary to operate the system. System operating water is included implicitly in older bulk entitlements and explicitly in more recent bulk entitlements. Updating older bulk entitlements to explicitly quantify and account for distribution system operating water enables the system operator to be accountable for the efficient operation of the system. It also allows for incentives to improve efficiency.

Explicitly defining distribution system operating water allows water savings (from modernisation – see page 119) to be quantified, ensuring they do not impact on other entitlements, particularly water shares. It also allows any temporary savings from system operation changes, such as closing down a channel as a drought contingency measure, to be identified and potentially allocated to entitlement-holders.

Explicitly quantifying distribution system operating water in bulk entitlements means this water can be progressively allocated on a pro-rata basis to distribution system operators. This provides more flexibility for operators to implement special operating arrangements to save water during extreme water shortages. For example, in recent drought years, Lower Murray Water and Goulburn-Murray Water were able to operate their system differently to meet the needs of their respective customers. These decisions should be made in close consultation with customers and announced as soon as possible to provide certainty for entitlement-holders. See page 96 for guidelines on shortening the irrigation season if there is insufficient system operating water.

The system operator’s primary role is to deliver water to its customers in an efficient and effective manner. When improving efficiency, the system operator must supply water to entitlement-holders and meet any environmental obligations specified in the bulk entitlement or other management arrangement. See [www.ourwater.vic.gov.au/programs/irrigation-renewal](http://www.ourwater.vic.gov.au/programs/irrigation-renewal) for more information, including the *Water Savings Framework for NVIRP*.

### Action 4.15: Amending source bulk entitlements

**Who:** Department of Sustainability and Environment; water corporations

**Timeframe:** 2011

The following amendments will be made to improve source bulk entitlements:

- a) Following a review of source bulk entitlements, the water-sharing and cost-sharing arrangements for accessing dead storage will be specified as appropriate.
- b) Distribution system operating water will be quantified and separated from entitlement water (which is delivered to water share-holders). The system operator will be required to operate the system within this allocation.
- c) Distribution system operating water will be progressively allocated as it becomes available.
- d) The potential for water savings in river operating water will be assessed, including consideration of environmental impacts.

### Delivery bulk entitlements

For towns supplied from the regulated systems, urban water corporations generally hold delivery bulk entitlements. These provide a volume of water each year, subject to defined restrictions during declared water shortages. These entitlements could be improved to enable the urban water corporations to better manage town supplies, particularly during droughts.

For example, the Minister for Water was required to qualify rights to allow for carryover (see page 98) as a drought contingency action for delivery bulk entitlement-holders on the Murray, Goulburn, Broken, Campaspe and Loddon systems. Permanently amending the entitlements to include carryover would provide more security and clarification for entitlement-holders.

Delivery bulk entitlements were issued before the unbundling of water rights into water shares, delivery shares and water-use licences and clarifying access to delivery channels would ensure these entitlements are consistent with the operation of irrigation systems.

Urban entitlements on the regulated Murray, Loddon and Campaspe systems are amalgamated into one primary entitlement for each water corporation. However, on the regulated Goulburn system, Goulburn Valley Water and Coliban Water each hold a number of delivery bulk entitlements that have details on annual volumes and daily extraction rates for a specified point. Provided this does not impact on other users or the environment, amalgamating these into one entitlement for each water corporation would:

- enable them to manage the resource as a whole
- allow them to transfer water between supply points
- encourage better commercial decisions around improving system efficiency.

## Action 4.16: Amending delivery bulk entitlements

**Who:** Department of Sustainability and Environment; urban water corporations

**Timeframe:** 2011

Where required, delivery bulk entitlements will be amended to:

- ensure consistency of entitlements in the unbundled world
- provide one amalgamated entitlement for each water corporation in a trading zone.

The ability to carry over water without the need to qualify rights will be facilitated by amending the *Water Act 1989*.



Sheep drinking trough, Tamleugh

Photographer: Bruce Cumming

### 4.4.2 Bulk entitlements for unregulated systems

Some urban water corporations hold source bulk entitlements to take water from unregulated streams. These generally include an obligation to provide passing flows and a requirement to stop taking water when streamflows fall below minimum levels. In some cases, these requirements are different from the rules to restrict extraction by Section 51 licence-holders (see page 69). These inconsistencies can favour the right of one user over another.

In recent years it has been necessary for the Minister for Water to declare a water shortage and qualify rights on some unregulated streams in order to meet critical human needs (see page 11). In doing this, the water corporations, catchment management authorities and the Department of Sustainability and Environment have worked closely together to determine flow-sharing arrangements which provide for both critical human and environmental needs. Two broad approaches have been adopted, depending on local circumstances.

The first is to temporarily qualify rights by reducing the amount of water released from the storage to provide for passing flow obligations. This approach is generally applied where the water system relies on on-stream storages (for regulated systems) such as Maryborough’s supply from the Loddon system. Generally, the consequences of reduced passing flows on downstream water users are mitigated by a range of measures such as:

- requiring a portion of the passing flows to be released as flushing flows
- requiring the quality of downstream refuge pools to be monitored and water released from stored passing flows if predetermined triggers are hit
- carting water.

The preferred approach is to avoid qualifying rights by revising bulk entitlements to allow pumping at higher rates during wet periods of low environmental stress, generally winter, to be stored for use in dry periods with high environmental stress. This approach is appropriate where town supplies are provided by pumping streamflows into off-stream storages, such as Mansfield. Neither the existing passing flow requirements nor the total amount of water able to be taken are changed, but the diversion rate during winter is increased.

Several issues need to be considered before implementing either approach, including:

- demonstrable need to meet critical human needs
- no increase in annual entitlement volume
- adequate modelling of the hydrological regime of the system
- adequate modelling of the consumptive requirements of its customers
- mitigation of impacts on the environment and consumptive users in the system.

## Action 4.17: Amending bulk entitlements for unregulated systems

**Who:** Department of Sustainability and Environment; urban water corporations

**Timeframe:** 2011

Where required to ensure critical human needs can be met, bulk entitlements for unregulated systems will be amended to allow additional water extraction to an off-stream storage during wet periods. This will be allowed provided a number of conditions are met to demonstrate need and protect the environment and other water users in the system.



Bogong High Plains

Photographer: Alison Pouliot

## 4.5 Environmental water reserve (EWR)

The various components of the environmental water reserve (EWR) are described on page 10 and are discussed in more detail in the following section.

### 4.5.1 Environmental entitlements

Some environmental entitlements have the same characteristics as consumptive entitlements; environmental managers receive seasonal allocations and can call this water out of storage as they need it, just as irrigators do. Other environmental entitlements have special rules governing the allocation and use of water (for example, the rules-based environmental allocations for the Barmah Forest). Where possible, it is desirable for environmental entitlements to have the same attributes as other consumptive entitlements. This gives environmental managers the flexibility to maximise environmental benefits. It also means the risk of climate change is better shared across all entitlement-holders.

However, it is not always possible to create environmental entitlements with similar properties to consumptive entitlements; at least, not without changing the reliability of the environmental water and affecting existing entitlement-holders. In these cases, it is necessary to create more 'rules-based entitlements' that reflect the characteristics of the environmental water.

In some cases, specific watering regimes may be needed to efficiently meet environmental objectives. For example, large floods may be required every five years rather than annually. It may be possible to provide additional flexibility to environmental entitlements to meet these needs without adverse impacts on other entitlement-holders.

### Creating entitlements from existing environmental water

As outlined in the *Murray-Darling Basin Agreement*, the Murray-Darling Basin Authority may declare a period of surplus flows when a number of conditions are met, including:

- commitments to South Australia (1,850 GL/year) have been met for a specified period of time
- consumptive demands of Victoria and New South Wales have been met
- there is insufficient capacity to divert or store these surplus flows in Lake Victoria.

Surplus flows can be opportunistically diverted for consumptive use in New South Wales. These flows could be available in years when it is not possible to make allocations for low-reliability water shares, for example, if the surplus flows result from a flash flood that cannot be captured in storage. However, as use of these surplus flows is accounted for under the Murray-Darling Basin Cap, they could reduce reliability for low-reliability water shares. To protect these shares, Victoria gave up its right to use surplus flows for consumptive use, which offered an opportunity to provide them to the environment.

Historically, Victoria has used some of its excess flows to provide public benefits within Victoria before agreeing to declare a period of surplus flow. For example, water has been provided to create flooding in Gunbower Forest, water river red gums and for recreation in Lake Boga. This water comes from Victoria's share of Murray resources as currently set out in the *Murray-Darling Basin Agreement*. Converting this water to an environmental entitlement will provide certainty for the environmental manager that the water that has been used for the environment in the past can still be utilised when it is available. Such water is likely to be available far less frequently under climate change. When it is available, it will be used for environmental and recreational purposes at places such as Hattah Lakes, Gunbower Forest, Lake Boga and for watering river red gum floodplains.

### Policy 4.4: Properties of environmental entitlements

Where possible, new environmental entitlements will be defined in a way that is consistent with consumptive entitlements, including with seasonal allocations based on a share of the resource and the ability to call water out of storage and use it when and where it is needed.

Environmental entitlements will be tailored to meet environmental objectives where possible. This will only be done where there are no undue third party impacts including on existing entitlement-holders and the operation of the water market.



Consistent with the recommendations in the draft Murray Bulk Entitlement *Sharing the Murray*<sup>46</sup>, the entitlement will have a maximum volume of 40 GL and will recognise the current opportunistic characteristics of the water (that is, it is available only when other commitments have been met and there is insufficient capacity to store the water). It will not provide for water to be called out of storage and allocations will not be tradeable. Use of the entitlement is not accounted for under the Murray-Darling Basin Cap.

The use of water arising from this entitlement will take into account the requirements of the integrated environmental management of the River Murray. Victoria will continue to work co-operatively with the Murray-Darling Basin Authority to optimise the whole-of-river benefits generated from Victorian environmental entitlements, and determining priorities for the use of surplus flows.

#### 4.5.2 Environmental obligations on bulk entitlements

Water corporations release passing flows out of storages to operate river and distribution systems to provide for riparian rights and to maintain environmental values and other community benefits. These passing flows can be separated into river operating water and distribution system operating water (see page 71).

The volume of passing flows set aside purely for the environment is not clear in most bulk entitlements. It may be possible to differentiate the distribution system operating water intended purely to provide

environmental benefit (for example, where passing flow requirements include some level of seasonal variability). Where possible, this will be converted to environmental entitlements to provide environmental managers with greater flexibility to control when and how releases occur. This will only be done if the resulting environmental entitlement has the same reliability as the existing passing flows and there is no impact on other entitlement-holders. Where it is not possible to separate out distribution system operating water intended for the environment, it will remain an obligation on the bulk entitlement, recognising that it provides for a range of environmental, consumptive and other benefits (including river and distribution system operation).

Passing flow requirements are largely protected from the impacts of climate change because in most cases, these flows must be provided before water can be allocated for use. However, some bulk entitlements specify that passing flows are reduced or stopped when inflows are below a certain level. This reduction will become more common with climate change. Technical analysis is required to determine if passing flows could be redefined to maximise environmental benefit or better share the risk of climate change, without impacts on water users. In particular, the following bulk entitlements will be assessed:

- *Bulk Entitlement (Campaspe System - Goulburn Murray Water) Conversion Order 2000*
- *Bulk Entitlement (Eildon - Goulburn Weir) Conversion Order 1995*
- *Bulk Entitlement (Loddon River - Environmental Reserve) Order 2005.*

### Action 4.18: Creating an environmental entitlement from unregulated flows on the Murray

**Who:** Department of Sustainability and Environment

**Timeframe:** 2011

An environmental entitlement will be created to give legal recognition to unregulated flows that are available after consumptive demands have been met and before a period of surplus flows is declared.

The entitlement will have a maximum volume of 40 GL, will recognise the current opportunistic characteristics of the water and will not be callable or tradable. The use of the entitlement will not be accounted for under the Murray-Darling Basin Cap.

### Action 4.19: Passing flows for the environment

**Who:** Department of Sustainability and Environment; catchment management authorities

**Timeframe:** 2011

Where distribution system operating water is clearly intended for environmental benefit, it will be quantified in bulk entitlements and converted to environmental entitlements to provide the environmental manager with increased flexibility.

Where possible, passing flows will be redefined to better share the future risk of climate change provided there are no undue third party impacts.

### Barmah-Millewa Environmental Water Allocation

The Barmah-Millewa Forest Environmental Water Allocation is seen as a priority entitlement for redefinition. This water provides for the large floods necessary to maintain key species (including river red gums and colonial water birds) in this Living Murray icon site.

The operating rules for the Barmah allocation allow up to 700 GL of water to be stored in Lake Hume until it is released for the Barmah-Millewa Forest. When allocations of high-reliability water shares are less than 100 per cent, the stored water can be borrowed to increase allocations. The borrowed water has to be paid back when allocations reach 100 per cent. The rules also enable the environmental manager to bring forward up to 50 GL of the following year's allocation to complete a watering event.

The 'borrow and payback' arrangements of this allocation mean it is susceptible to the impacts of climate change. With reduced water availability, there would be more years with less than 100 per cent allocations, resulting in more years where water users are borrowing the Barmah water and fewer years where it is able to be used for forest watering. It would also mean delayed payback. With climate change, this allocation will not be shared between consumption and the environment as originally intended.

In implementing this action, there will be no change to the balance between consumptive use and the environment provided by the original sharing rules over the historic record – but they will be amended to better share the risk of climate change. The Department of Sustainability and Environment will undertake hydrological modelling to investigate options to redefine the triggers for water allocation, borrow and payback and assess the impacts of these.

Use of the Barmah-Millewa Environmental Water Allocation is governed by the *Barmah-Millewa Environmental Watering Plan*. The development and review of the watering plan in Victoria is the responsibility of the Goulburn Broken Catchment Management Authority, in consultation with the public land manager. Consultation will also occur with the Yorta Yorta Joint Body in accordance with the Yorta Yorta Co-operative Management Agreement. The Victorian Government has recently made a commitment to establish a board of management for the Barmah National Park comprising a majority Traditional Owner membership. Once established, this board will also be consulted on the environmental watering plan<sup>47</sup>.

## Action 4.20: Barmah-Millewa Environmental Water Allocation

**Who:** Department of Sustainability and Environment; Goulburn Broken Catchment Management Authority; Goulburn-Murray Water **Timeframe:** 2012

To better share the risk of reduced water availability in the future, the triggers for water allocation, borrow and payback for the Barmah-Millewa Environmental Water Allocation will be redefined. This will be done in consultation with Goulburn-Murray Water and Goulburn Broken Catchment Management Authority, and subject to agreement by the Ministerial Council.

### 80 GL flood release from Eildon

The environmental manager may call for the release of up to 80 GL of environmental water when inflows to Lake Eildon exceed triggers set out in the Goulburn Bulk Entitlement. This environmental water is non-tradeable because it is largely re-regulated at Goulburn weir.

The trigger for release of these flows has been exceeded only once in the past 13 years. Under most scenarios considered in the Strategy, these triggers are even less likely to be met in the future. At the time that the trigger was exceeded, it was not possible to release the flows due to the risk of flooding private property.

In order for this water to provide some environmental benefit when the trigger is exceeded in the future, it is necessary to develop a clear watering and monitoring plan. The plan will outline the environmental benefits that could be achieved with optimal use of this water in conjunction with other existing or planned environmental entitlements.

In developing the watering plan, the Goulburn-Broken Catchment Management Authority will need to consider the risk of flooding private land. The *Water Act 1989* does not indemnify environmental managers and system operators from damage which may arise from intentional or negligent conduct resulting in flooding private land. This means there will need to be appropriate mitigation measures in place to prevent the flooding of private land. This will be informed by a study, currently in progress, to assess the potential extent of Goulburn floodplain watering.

Once the catchment management authority is clear on how the water would be used, it may be possible to redefine the entitlement rules around its release to increase the environmental benefits.

### 4.6.3 Charges for management of the EWR

When the EWR was established through *Our Water Our Future* in 2004, policy was developed regarding appropriate charges for its management, including headworks and delivery charges. This policy recognised that:

- the primary purpose of water supply infrastructure is to supply firm, reliable entitlements for consumptive users
- generally environmental entitlements can be managed with more flexibility than consumptive entitlements and therefore the environment can be provided with different levels of service to irrigators and other consumptive users
- water authorities have a duty to manage water resources in a sustainable manner and minimise adverse environmental impacts of their activities.

The costs of environmental watering actions are substantial. As with any water user there are annual fees attached, including headworks charges and delivery charges (such as costs of using irrigation infrastructure, or the cost of pumping water to a specific location). The current costs of environmental watering are funded in Victoria through the Environmental Contribution Levy. As water recovery programs are realised throughout the Murray-Darling Basin, costs of environmental watering will increase.

#### Action 4.21: Goulburn 80 GL flood release

**Who:** Department of Sustainability and Environment; Goulburn Broken Catchment Management Authority; Goulburn-Murray Water      **Timeframe:** 2011

To maximise the environmental benefit of the 80 GL flows from Lake Eildon, an environmental watering plan will be developed and the entitlement reviewed. The risk of flooding private property will be assessed and mitigated.

### Headworks charges

Water shares have ongoing costs associated with the storage of water, known as ‘headworks charges’. Environmental entitlements that have similar properties to water shares (that is, they provide a share of the available resource, are tradeable, can be held in storage and called out as needed) will also have these ongoing costs. There are two key mechanisms that would produce environmental entitlements of this type: modernisation projects (see page 113) and water purchase (see page 45).

The current policy states that “where the manager of the EWR holds a tradeable entitlement which is the same as a consumptive entitlement, in general, the manager will pay the same headworks costs as other users except where there is significant government investment in recovering water for the environment. In these cases, the headworks charges may be varied to take into account the full range of benefits and costs associated with the investment”<sup>48</sup>.

The application of this policy has depended on the method of water recovery. For example, the environmental manager will not pay headworks charges for the environmental entitlements to be created from NVIRP Stage 1. This is consistent with other water saving projects where environmental water has been recovered through government investment (such as the Wimmera-Mallee Pipeline, Northern Mallee Pipeline, Snowy River, Macalister Irrigation District and the Thomson River). In these cases, existing users have paid the headworks charges and received the benefit of improved water delivery infrastructure and water savings.

In another example, the environmental manager pays the same charges as water share-holders for the environmental entitlements created through the ‘sales deal’. The sales deal was based on a clarification of rights to water, rather than significant investment in water recovery. In return for legal and tradeable low-reliability water shares, water users allowed 20 per cent of sales water to be reallocated to the environment.

Where the State or Commonwealth Governments invest in purchasing water entitlements for the environment, it is appropriate that they pay the associated headworks charges. Those charges are currently being met by individual irrigators (water share-holders) and if the Commonwealth Government did not continue to pay these charges, costs would increase for the remaining users.

### Policy 4.5: Headworks charges for new environmental entitlements

The following principles will apply when the Commonwealth (or any) Government invests in water recovery for the environment:

- a) Where environmental entitlements result from water purchase, the purchaser will pay the associated headworks charges in full.
- b) Where environmental entitlements result from water savings projects, any headworks charges will be consistent with the above policy.

**Delivery access and charges**

Through the ‘unbundling’ of water rights entitlement-holders were provided with delivery shares. These shares effectively allocate a portion of the available delivery capacity in irrigation distribution systems. They help manage competing needs, such as when several users want more water at the same time than a congested system can distribute.

Environmental managers do not currently hold delivery shares. This effectively means they are treated as ‘casual users’. Casual users are generally irrigators who do not own delivery shares and pay a fee to access the distribution system when there is spare capacity. As such, casual users are provided a lower priority than those holding delivery shares. With increasing water scarcity, more active trade and improved system efficiencies, spare channel capacity could well be reduced leaving environmental entitlements at risk of being ‘squeezed out’ of the system. In order to manage this risk and ensure environmental water can be delivered through irrigation distribution systems when it is needed, environmental managers would need to secure delivery shares or have some other mechanism to ensure their needs are prioritised appropriately.

In assessing the priority of access, the environmental manager will need to consider the environmental value of the site and the flexibility in timing of water delivery. Some high-value sites may be suitable for watering at times when demand by irrigators is very low. In these instances, delivery shares would likely be unnecessary. Granting delivery shares to the environment will mean the environmental manager will need to take on the associated operating costs.

There are no explicit delivery shares allocated to manage congestion in natural waterways outside of irrigation distribution systems, but there are implied shares which provide for delivery of an individual’s full entitlement over 100 days. As the CEWH and VEWH hold more environmental entitlements, this could change the traditional delivery pattern, resulting in increased congestion. Access rights will need to be clarified and a process established to ration the available capacity. It is appropriate that where natural waterways are used, the environmental manager is given a reasonable share of capacity at no charge.

Existing policy developed through *Our Water Our Future* provides a basis for determining the access rights and appropriate charges to be paid. The following action aims to build on this policy and to clarify the arrangements and associated costs that would apply.

**Action 4.22: Rights to delivery capacity in irrigation distribution systems**

**Who:** Catchment management authorities; rural water corporations

**Timeframe:** 2011

Environmental managers will advise rural water corporations of environmental sites which may require water delivery via the irrigation distribution system. The environmental manager will need to consider delivery priorities (depending on the degree of flexibility in timing of delivery) and the appropriate access options for each site, including:

- delivery shares for high priority sites where there is little flexibility in timing of delivery (allowing access equal to other delivery share-holders)
- casual use access for medium priority sites (allowing access equal to other casual users)
- ‘interruptible’ access for low priority sites where there is a high level of flexibility in timing of delivery (allowing access after casual users’ needs have been met).

## Policy 4.6: Charges for environmental water delivery in irrigation distribution systems

The following charges will be paid when environmental water is delivered through the irrigation distribution system:

- a) Where the environmental manager holds delivery shares, they will pay the same charges as other delivery share-holders.
- b) Where the environmental manager relies on casual use access, they will pay the same charges as other casual users.
- c) In recognition of the public good benefits of environmental watering and the environmental obligations of the system operator, the environmental manager will be provided with 'interruptible' access (see Action 4.22) and will only pay the out-of-pocket costs, except in natural waterways in distribution systems, where there will be no charge.

## Policy 4.7: Charges for environmental water delivery in natural waterways outside of distribution systems

In natural waterways outside of distribution systems, environmental managers will have access to a reasonable share of capacity at no charge. 'Reasonable' may be defined, at a minimum, as the existing access rights provided by the entitlement, plus access to any spare capacity.

## Action 4.23: Rights to delivery capacity in natural waterways outside of distribution systems

**Who:** Department of Sustainability and Environment

**Timeframe:** 2011

Where the use of environmental water will change the historical delivery pattern and there will be congestion in natural waterways outside of distribution systems, a process will be developed to manage rationing. This process will take account of existing patterns of delivery and the delivery capacity rights provided by the relevant entitlements.



Channel, Irymple

Photographer: Bob Merlin, Mallee Catchment Management Authority

## 4.6 Use of return flows

Another way to maximise the productive or environmental outcomes of entitlements is to allow return flows to be used again downstream or traded by entitlement-holders. Return flows are the portion of an entitlement-holder's allocation that is returned to the bulk supply system. This could be outfalls from urban sewage treatment plants or return flows after environmental watering events. These arrangements do not apply to rules-based entitlements, such as the Barmah-Millewa Environmental Water Allocation.

*"We support this important reform to acknowledge the value of return flows, which provides the appropriate market signals to inform both current operating decisions and future investment decisions."*

– Draft Strategy submission DS076

Victoria's current entitlement framework generally does not include return flows in estimates of the amount of water available to be allocated. In most cases, return flows reduce the amount of water required to operate regulated rivers and provide additional flows in unregulated rivers. Users supplied by the bulk system benefit from this arrangement because it allows additional water to be allocated from the shared resource.

In contrast, entitlement-holders lose ownership of water they return to the waterway. There are currently no opportunities to reuse these flows. Allowing return flows to be reused provides individuals with increased choice and flexibility from which to make improved management and investment decisions. It does this by:

- giving entitlement-holders the option to use the supply system to reuse or supply return flows to a third party downstream (that is, use the river as a pipeline)
- enabling environmental managers to use return flows at multiple sites along a river.

This will facilitate the movement of return flows to their highest value use and therefore is an important

element in supporting regional development and improved environmental benefits, even with reduced water availability. For example, in assessing how to best utilise treated effluent, water corporations may find that transferring it to a willing buyer downstream provides the greatest net benefit for the organisation and local community when compared against other reuse options such as construction of a third pipe scheme. An example of how environmental managers will benefit from this policy is provided on page 140.

The incidental benefits for users supplied by the bulk system will be removed when individual entitlement-holders reuse or trade their return flows. However the nature of the existing entitlement is the principal consideration. Most of Victoria's bulk water entitlements include rights to take or store a gross volume of water from a specified location. This means that entitlement-holders are not obliged to provide return flows and therefore can use all of the water they are entitled to take from the system. Placing an obligation on an entitlement-holder to return flows would be detrimental because it would reduce any incentive to use the water more efficiently.

One way of facilitating the use or trade of return flows is by crediting the volume of returns against the entitlement-holder's water account. Although not suitable in all cases, such as on unregulated systems, a properly managed credit model is the simplest way of allocating returns.

To ensure material third party impacts are mitigated, it is appropriate that return flows are only reused or traded under certain circumstances. If not properly managed and accounted for, there is potential for return flows to be of poor quality and to have a negative impact on the operation of the water system. It is also necessary to ensure return flows are allocated and traded in line with Victoria's trading rules and within the Murray-Darling Basin Cap, which seek to prevent adverse impacts on other water users and the environment.

## Policy 4.8: Reuse of return flows

Entitlement-holders will be allowed to reuse or trade their return flows downstream provided:

- there is adequate rigour in the calculation and/or measurement of return flows
- the return flows meet relevant quality standards\*
- additional losses (if any) are taken into account
- the entitlement-holder of the return flows has obtained agreement from the relevant system operator
- the return flows can be delivered in line with timing requirements of the downstream user, purchaser or environmental site
- the system operator can re-regulate the return flows downstream, with a known and immaterial spill risk, if the entitlement-holder is requesting credits on a regulated system.

\* See page 144 for policy regarding the water quality of environmental return flows.

While it may be possible for private diverters and water share-holders to reuse return flows (that is, irrigation drainage water), this is unlikely to occur because:

- returns from irrigation districts are already collected in water corporation infrastructure and allocated through supplies by agreement (see page 10)
- the poor quality of the return flows, sporadic availability of flows and difficulties in measuring their volumes would mean that individuals would need to treat and meter their returns at a high financial cost.

The Department of Sustainability and Environment will continue to work with water corporations, the Environment Protection Authority Victoria and Department of Human Services to develop appropriate processes to implement the return flows policy.

## Action 4.24: Implementation of reuse of return flows policy

**Who:** Department of Sustainability and Environment; water corporations; Environment Protection Authority Victoria and Department of Human Services

**Timeframe:** 2010

Develop appropriate processes and rules to implement the return flows policy. A pilot project to develop the appropriate allocation, accounting and operational rules for return flows from North East Water's West Wodonga treatment plant will be undertaken.