



Water Rights Arrangements in Australia and Overseas

Annex C *Victoria*

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Abbreviations

ANCID	Australian National Committee for Irrigation and Drainage
ANRA	Australian Natural Resources Audit
CLPA 1994	Catchment and Land Protection Act 1994
CMA	Catchment management authority
CoAG	Council of Australian Governments
CSAC	Customer Service Advisory Committee
DCNR	Department of Conservation and Natural Resources
DSE	Department of Sustainability and Environment
EPA	Environment Protection Authority
ESC	Essential Services Commission
GL	Gigalitre
GMW	Goulburn–Murray Water
GMP	Groundwater management plan
MDBC	Murray–Darling Basin Commission
MUWA	Metropolitan urban water authority
NRE	Department of Natural Resources and Environment
RUWA	Rural urban water authority
RWA	Rural water authority
SFMP	Stream flow management plan
SRWA	Sunraysia Rural Water Authority
VCAT	Victorian Civil and Administrative Tribunal
VCMC	Victorian Catchment Management Council
WA 1989	Water Act 1989

Preface

Water Rights Arrangements in Australia and Overseas is a study that forms part of the Commission's program of benchmarking the performance of economic infrastructure industries. It continues previous work undertaken into the arrangements for setting drinking water quality standards. The study compares the legal, organisational and regulatory arrangements for managing water rights, against accepted best practice principles.

This annex is one of twelve case studies prepared to assist readers understand the complex legal, organisational and management arrangements of the jurisdictions studied. Case studies were prepared for the Murray–Darling Basin, NSW, Victoria, Queensland, South Australia, the ACT, the Colorado River Basin, California, Colorado, Chile, Mexico and South Africa. These case studies should be read in conjunction with the main report.

Research for the study and each of the annexes was undertaken by the Economic Infrastructure Branch, with Dr Neil Byron as mentoring Commissioner.

Many persons and organisations have assisted in the preparation of this case study. The Productivity Commission would like to thank especially the staff of the Victorian Department of Sustainability and Environment. Further feedback from readers would also be welcome.

1 The water sector

Victoria, situated in the south east of Australia, shares borders with NSW to the north and South Australia to the west. Victoria has two major drainage systems — southern and eastern Victoria drain into coastal systems and northern Victoria drains into the Murray–Darling Basin (see figure 1.1).

There are 30 major river catchments in the state (ANRA 2002). Many rivers within Victoria have flows that are controlled by public weirs and reservoirs. Rivers up-stream of control structures are classified as unregulated. Rivers downstream or controlled by weirs or reservoirs are classified as regulated.

In Victoria, the total annual divertible surface water resource is 10 220 GL.¹ This represents approximately 51 per cent of the total streamflow of 20 188 GL. The remaining 49 per cent is water that is not suitable for development, for reasons such as poor quality, high cost, the need to protect environmental values (other than in-stream) and other social factors (ANRA 2002).

The sustainable yield is the maximum volume of surface water that can be diverted after taking account of in-stream environmental water requirements. In Victoria, the estimated sustainable yield is 6862 GL (ANRA 2002). That is, environmental water requirements have been estimated to be about 3 400 GL.

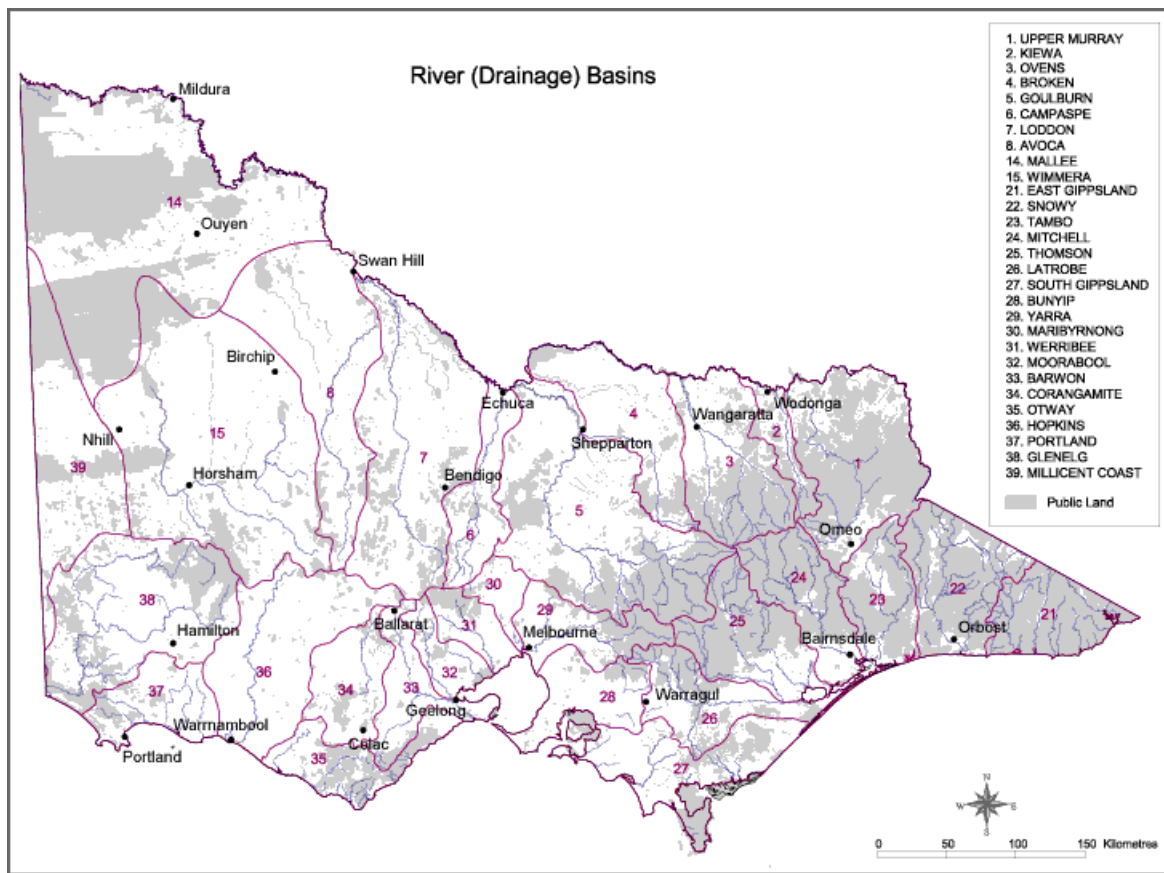
The principal groundwater resources in Victoria are contained in tertiary or younger aged unconsolidated sediments. The most significant groundwater resources are located south of the great dividing range and in the arid west and north west of the state (see figure 1.2) (ANRA 2002).

The groundwater resources in Victoria have been estimated to provide 3660 GL per year on a sustainable basis (ANRA 2002).

The total volume of surface water allocated for use in Victoria is 5469 GL, and 814 GL is allocated for commitments to NSW. The total allocation of Victoria's resources represents 92 per cent of sustainable yield (ANRA 2002).

¹ The total annual divertible surface water resource is the average annual volume of surface water that can be diverted, utilising both existing infrastructure and potential infrastructure under the ultimate level of development.

Figure 1.1 Surface water resources — Victoria, 2003

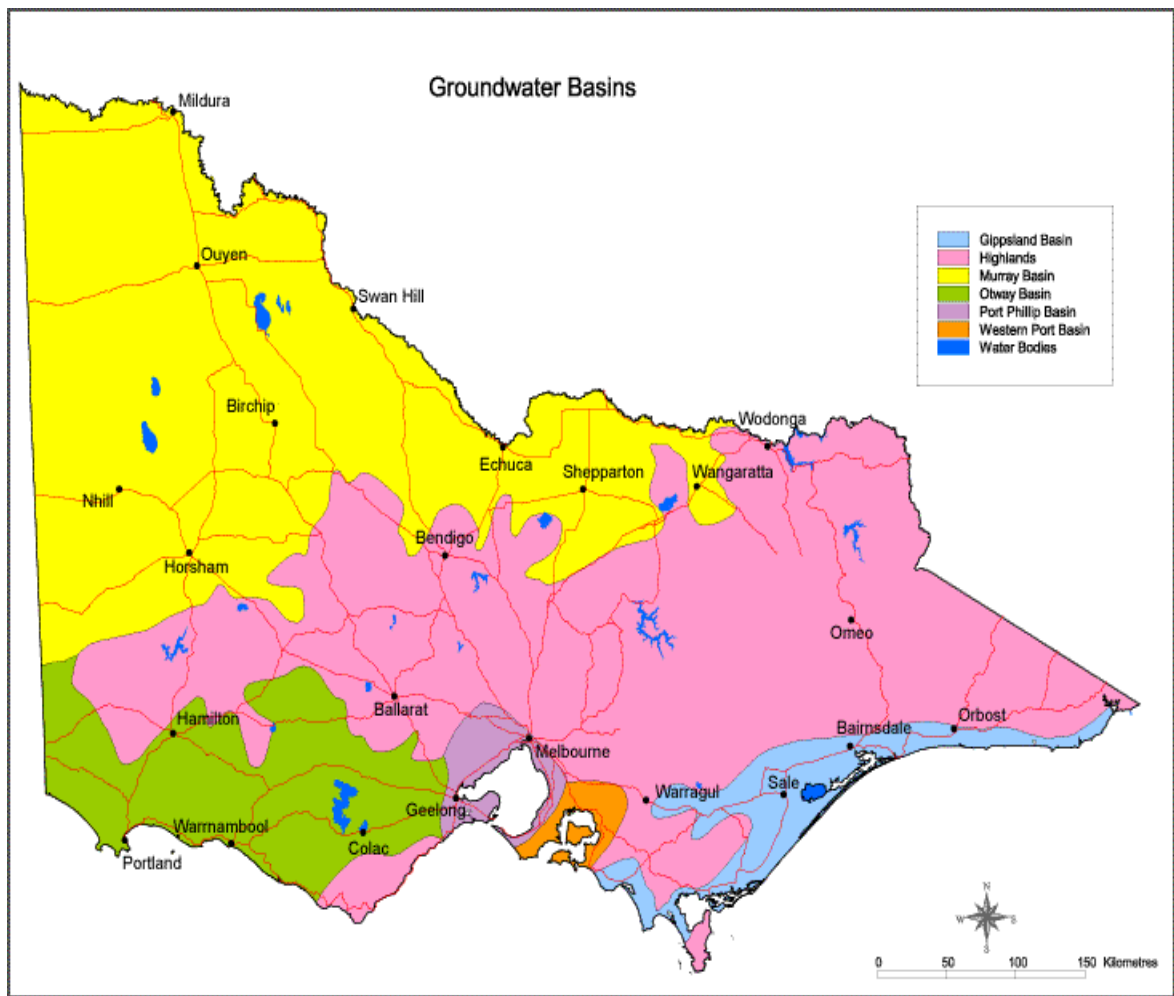


Source: www.nre.vic.gov.au/web/root/Domino/vro/maps.nsf/pages/Vic_RiverBasins?Opendocument

Average annual surface water use in Victoria is around 5166 GL, of which 4019 GL (78 per cent) is used for irrigation, 861 GL (17 per cent) is for urban and industrial use and about 286 GL (5 per cent) is for rural use. The urban use component comprises around 47 per cent domestic use, 34 per cent industrial and commercial use, 6 per cent for other uses such as parks and gardens and 13 per cent losses (ANRA 2002).

The total volume of groundwater allocated for use is 779 GL. Average groundwater use in Victoria is estimated to be 622 GL per year. Of this, 70 per cent is used for irrigation, 20 per cent is used for urban and industrial, and 10 per cent is used for rural (ANRA 2002).

Figure 1.2 Groundwater resources — Victoria, 2003



Source: <http://www.nre.vic.gov.au/web/root/Domino/vro/maps.nsf/pages/Victoria-NaturalResources-Water-Groundwater-grwater-basins?Opendocument>

2 Legal framework

Water law in Victoria was based on the riparian doctrine of English common law. The first legislative controls over water appeared in mining legislation of the 1820s. Legislation controlled the use of water for mining purposes but left general use under the riparian doctrine.

2.1 Evolution of water law

Concerns with the effectiveness of the riparian doctrine within the agriculture community lead to legislative intervention in the late 1870s to expand the use of large-scale irrigation. The *Water Conservation and Distribution Act 1881* provided for the creation of trusts to finance, construct and control local irrigation districts (Institute of Engineers Australia 1999). This Act provided the first legislative declaration of the Crown's right to the use and control of water in any river under the control of a trust.

The *Irrigation Act 1886* (the '1886 Act') laid a new framework for the management of surface waters following the Deakin Royal Commission. The objective of the 1886 Act was to move away from small and local water supply trusts. The 1886 Act provided the basis for the State of Victoria to establish large government-owned works to store and distribute water (DWRV 1989). It did so by vesting in the Crown the right to the use, flow and control of all water in a river, stream, watercourse, lake, lagoon, swamp or marsh. It also conferred certain private rights to the use of water and allowed for the State of Victoria to grant permits or licences for a range of purposes.

The 1886 Act failed to stimulate economic development and as a result the *Water Act 1905* (the '1905 Act') was introduced. The 1905 Act retained many of the features of the earlier Act (such as administratively granted licences) but also provided strong incentives to landowners to either take their full entitlement of water or transfer the land with the administrative water entitlement to someone who would make full use of the entitlement (Babie 1997).

In 1909, the State Rivers and Water Supply Commission (SRWSC) administratively granted water rights for private use. A water right provided a fixed entitlement

based on the column of water that could be delivered to an acre of land. Initially, irrigators did not take up these water rights as they were optional and came with a user fee. However, in the period between 1939 and 1944 drought caused the demand for water rights to increase (Babie 1997).

As water needs changed over time, it became necessary to change water allocations. The *Water Act 1958* (the '1958 Act') provided the Crown with the right to the use, flow and control of water. It declared that the bed and banks of all boundary rivers were to remain the property of the Crown.

The 1958 Act allowed for limited riparian rights for domestic and stock purposes and prohibited the diversion of water except in accordance with the Act. The 1958 Act also allowed the SRWSC to grant:

- Water rights according to a formula based on volumetric water allocation and land size to landholders in irrigation trusts.
- Licences were for the diversion of water from waterways regulated by a storage reservoirs or for an assured natural summer flow. These licences were for 15 year terms but were almost always renewed.
- Twelve month permits for diversions that were off-season, short-term, or from waterways with non-assured flows (Babie 1997).

Irrigation trusts were required to establish a register of lands. These registers specified the details of all lands within the districts and their water requirements. The registers were also employed to determine how water was to be distributed, first for domestic and stock uses and then for fulfilling water rights (Babie 1997). After all water was allocated to water rights within any year, surplus water was allocated to water right-holders on a pro-rata basis. This allocation was known as sales water.

During the 1980s, a major reform process occurred. The *Groundwater Act 1969* provided government with an example of a legislative framework that could help overcome the deficiencies of the 1958 Act.

2.2 Current legislative framework

The principal legislation relating to the allocation and management of water in Victoria is the *Water Act 1989* (WA 1989), with other Acts such as the *Catchment and Land Protection Act 1994* (CLPA 1994), the *Heritage River Act 1992* and the *Environmental Protection Act 1970* are also relevant.

Water Act 1989

The WA 1989 is the primary legislation guiding water allocation and management in Victoria. This Act brought together many previously existing pieces of water related legislation and established a framework for water management.

The Act outlines arrangements for the allocation and management of water resources in Victoria and allows for the creation of statutory water authorities. The Act established:

- a program for the continual assessment of the water resources of Victoria;
- provisions for protecting water supply areas at risk of degradation and over-exploitation — through the development of (stream flow and groundwater) management plans;
- legal entitlements to water and the right for water to be allocated to the environment;
- planning processes to allocate water to both consumptive and non-consumptive uses on the basis of recognised entitlements and declared water supply protection areas;
- processes for allowing entitlements to be issued, revoked, amended, converted to other entitlements and transferred (traded); and
- the establishment of Authorities for holding bulk entitlements.²

The WA 1989 extinguishes riparian rights (WA 1989, s. 8). Instead, the Crown has the right to the use, flow and control of all water in a waterway and all groundwater (WA 1989, s. 8). The Act recognises and confers a number of other entitlements including:

- Bulk entitlements — which are rights granted to authorities, to a share of surface water from a source, for the purpose of supplying water to primary entitlements (WA 1989, s. 9).³
- Statutory rights to use rainwater and other water that flows or occurs on their land which is not in a waterway or bore (WA 1989, s. 8).⁴ This does not include

² An authority is defined to include (but is not limited to) entities empowered to supply water, irrigation services, or persons holding a licence, water and sewerage licence, or the Minister administering the *Conservation, Forests and Lands Act* (1987), or an electricity utility (WA 1989, s. 34)

³ Primary entitlements generally refer to all the lower-level rights defined and supplied by a bulk entitlement, including domestic and stock supplies, urban water authorities with a delivery bulk entitlement, irrigators with water rights or licences, irrigators with sales entitlement and any other supply historically made.

the use of water from a spring or soak or water from a private dam. Other than for stock and domestic purposes, a person must get a licence for the use of this water.

- Statutory rights to take water for stock and domestic use from a waterway, where legal access is available by a public road, public reserve, because the waterway is on the land that a person occupies, because the person occupies the land immediately adjacent to the waterway, or from a bore the person occupies (WA 1989, s. 8).⁵
- Water rights — which are transferable within and between irrigation districts of a RWA. Water rights remain attached to land within an irrigation district (WA 1989, Part 11).
- Take and use licences — which are transferable to any land and are most commonly used by private diverters outside public irrigation schemes (WA 1989, s. 51). These include ‘winter fill licences’ that permit the taking of water during the winter months for the purpose of filling a private dam.
- Registered licences — which are non-transferable licences to use water stored in a private dam (Water Act 1989, s. 51).
- In-stream use licences — which are primarily intended for the in-stream use of water for non-consumptive uses. They permit users to temporarily divert water with the obligation to return the water to the stream (WA 1989, s. 52).

Other legislation

The CLPA 1994 outlines a framework for the creation of catchment management authorities (CMAs) and integrated catchment management, through cooperation between the CMAs and the community. Most importantly, CMAs are responsible for prioritising the list of unregulated rivers to be nominated as water supply protection areas under the WA 1989.

The *Environment Protection Act 1970* provides a framework for setting environmental objectives, goals and regulations throughout the state for industry, commerce and the general public. It establishes the Environment Protection

⁴ A waterway is defined in the Act as a river, creek, stream or watercourse, a natural channel in which water regularly flows, whether or not the flow is continuous, and a channel formed wholly or partly by the alteration or relocation of water from a lake, lagoon, swamp or marsh.

⁵ Domestic and stock use is defined in the Act as use for household purposes, watering of animals kept as pets, watering of cattle and other stock, or irrigation of a kitchen garden. The Act specifically does not include the use of water for dairies, piggeries, feed-lots, poultry or any other intensive or commercial use as stock and domestic water use.

Authority (EPA) and makes provisions for the EPA's powers, duties and functions. Among other things the EPA is responsible for protecting water quality in Victorian waterways against point-source discharges. The *Environmental Protection Policy (Waters of Victoria)* provides a framework for the protection and improvement of water quality.

The *Heritage Rivers Act 1992* makes provision for the protection of Victorian heritage rivers by providing for the protection of public land in certain parts of rivers and river catchment areas in Victoria, which have significant nature conservation, recreation, scenic or cultural heritage attributes.

The *Murray–Darling Basin Act 1993* is the enabling legislation for the Murray–Darling Basin Agreement 1992 — entered into between the Commonwealth, NSW, Victoria and South Australia — on the water, land and other environmental resources of the Murray–Darling Basin. The Act provides for the continuation of the Murray–Darling Ministerial Council and the Murray–Darling Basin Commission (MDBC).

Green paper

In August 2003, the Department of Sustainability and Environment (DSE) released a discussion paper canvassing options for future reforms to Victoria's water resources sector (DSE 2003a).

It was stated in the discussion paper that a major objective was for water to be used for the benefit of all Victorians in ways that do not reduce the choices of future generations (DSE 2003a, p. 13). The paper raised a number of concerns to be addressed, such as the over-allocation in some rivers, the lack of protection against future over-allocation, and the lack of clear protection for environmental allocations (DSE 2003a).

One of proposal raised in the paper includes allocating more water for environmental purposes. This would be achieved by placing an embargo on the issue of new entitlements along unstressed rivers and streams, placing caps on diversions during winter, and establishing environmental reserves. The environmental reserve would be managed by CMAs. Water would be allocated to the reserve by: investing in new and repairing old water infrastructure to obtain water savings, purchasing existing entitlements and re-allocating administratively 'sales water' from irrigators (DSE 2003a).

A second proposal includes reforming urban and rural water prices. This could include setting urban water prices at levels and structured in ways to encourage

more efficient use of water — for example, through the use peak prices, pricing for environmental third-party effects and recovering the capital costs of new investments. It is proposed that the Essential Services Commission would determine pricing guidelines for water service providers (DSE 2003a).

Third, existing entitlements (water rights and take and use licences) are to be unbundled into a water share, a delivery capacity, and a site-use components. Unbundling has the potential to permit more integrated site-use licensing measures, facilitating water trading by separating site-use restrictions, and encouraging more efficient management of network delivery infrastructure (DSE 2003a).

Finally, sustainable water plans would also be developed by water authorities. These plans would primarily serve as an instrument for coordinating long-term planning currently undertaken by water authorities. Such plans could cover waste management, the management of water demand and supply (including drinking water quality), environmental obligations, and asset management (DSE 2003a).

3 Organisations

The Department of Sustainability and Environment (DSE) is responsible for the integrated management of Victoria's natural resources. These responsibilities include developing government water policy and its implementation.

The EPA is responsible for ensuring that the water sector meets the Victorian Government's environmental protection policy. The EPA is responsible for controlling environmental standards for wastewater discharge.

Victoria's nine CMAs are responsible for catchment, waterway and floodplain management. The Victorian Catchment Management Council (VCMC) is an advisory body that reports annually to Parliament on catchment management (VCMC 2001).

Four rural water authorities (RWAs) manage and operate the major water storages; supply water to the irrigation districts and stock and domestic supply systems; administer surface and groundwater rights; and monitor those rights. These RWAs control areas that overlap with fifteen regional urban water authorities (RUWAs) that supply water and wastewater services to rural and regional towns and cities.

In the Melbourne metropolitan area, water and wastewater services are provided by four service providers. Melbourne Water is the wholesaler providing bulk water supply, sewage treatment, drainage and floodplain management services to the three retail service providers.

3.1 Department of Sustainability and Environment

The DSE is responsible for the sustainable management of Victoria's natural resources. The DSE manages and develops policies and provides advice to government on: catchment management; conservation, recreation and public land stewardship; water sector development and services; forests and fire management; sustainability; biodiversity; heritage; parks and crown land, and greenhouse policy issues.

In particular, the roles of the DSE include to:

-
- provide advice, analysis and support to government on environmental issues;
 - manage and protection the state's natural and heritage assets, biodiversity and ecological processes and urban development;
 - develop and implement policy;
 - deliver market, regulatory and institutional reforms;
 - encourage long-term sustainable use and conservation of public and private land;
 - encourage economic, social and environmental outcomes from all government activities;
 - administer government programs; and
 - engage in inter-governmental and international forums and negotiations (DSE 2003b).

The DSE has a number of areas of responsibility, one of which is the state's water resources. As such, the DSE is responsible for coordinating the management of the state's rivers and catchments, resource allocation framework and advising the State Government on the performance of the water sector. The DSE has a number of objectives. The principal objective relating to water is to:

develop innovative water management initiatives, including water conservation and water recycling, to meet the needs of the environment and the Victorian community (DSE 2003b, p. 10).

The DSE's water related functions include:

- collecting, analysing and disseminating information about catchment and water management;
- undertaking a continuous program of assessment of the water resources in the state;
- working cooperatively with landcare groups, community and farmer networks and relevant authorities on community-based and government-endorsed management plans that form the basis for cooperative management of issues such as salinity and river health;
- developing water policy, resource allocation mechanisms and legislation to guide, facilitate and regulate land and water managers and users;
- implementing the conversion of existing authorities rights to water to bulk entitlements and assess new applications for bulk entitlements;
- coordinating the preparation of stream flow management plans (SFMPs) for priority rivers;

-
- developing — in cooperation with relevant rural water authorities — trading rules for water entitlements;
 - coordinating the preparation of groundwater management plans (GMPs);
 - coordinating work relating to the River Health Strategy;
 - managing the Water Trust;
 - reviewing management arrangements; and
 - reviewing pricing arrangements (NRE 2001a).

The implementation of water resource policy, where this involves on ground activities and the regulation of activities, are mostly devolved to rural water authorities (RWAs) and CMAs.

The Division of Parks, Flora and Fauna, within the DSE, is the custodian of Victoria's environmental bulk entitlements for the Barmah–Millewa forest (50 GL per year) and the Murray Wetlands (27.6 GL per year).

The DSE currently is responsible to the Victorian Parliament through the Minister for Environment, the Minister for Water (presently the same Minister) and the Minister for Planning. The Minister for Water is responsible for administering the WA 1989. The DSE is required to report its activities and achievements in meeting its stated objectives in its annual report. In addition, the DSE undertakes a strategic planning process where objectives and strategies to achieve those objectives are assessed.

3.2 Environment Protection Authority

The EPA is a statutory body established under the *Environment Protection Act 1970*. The EPA is legally constituted by a person appointed by the State Government to the position of Chairman. The Chairman is assisted by an executive and EPA staff (EPA undated(a)).

The objective of the EPA is to enforce the *State Environment Protection Policy (Waters of Victoria) 2003* (the 'SEPP 2003'). The SEPP 2003 replaced the policy of 1988. The current policy sets out the key responsibilities of implementing the policy.

The EPA is chiefly responsible for regulating, administering and monitoring and enforcing the discharge of mostly point-source pollutants for environmental protection.

The EPA also supports other government agencies, such as CMAs, regional coastal boards, municipalities, water authorities and the DSE, in ensuring that their relevant strategies, plans, directions or any other instruments issued under any Act are consistent with the policy (SEPP 2003, c. 14). It does so by:

- assisting these bodies to set appropriate goals, priorities and environmental targets for catchment and coastal environments;
- independently auditing environmental outcomes using Victoria's statutory environmental audit system;
- reporting to the Victorian community on progress towards implementing the SEPP;
- providing reliable information to Victorians on waste avoidance and reuse, pollution control, cleaner production and economic efficiency; and
- providing tools for measuring environmental impacts (SEPP 2003, c. 14).

The EPA is responsible to the Victorian Parliament through the Minister for the Environment. The EPA reports its outcomes achieved against its stated objectives each year in its annual report (EPA 2002).

3.3 Catchment management authorities

In 1997, nine CMAs were formed to create a whole-of-catchment approach to natural resource management in the state. CMAs are statutory authorities under the CLPA 1994 and WA 1989.

The objectives of CMAs are to protect and restore land and water resources, ensure the sustainable development of natural resource-based industries, and to conserve the state's natural and cultural heritage. In protecting land and water resources, their objectives are to:

- involve the community in decisions relating to natural resource management within their region;
- maintain and improve the quality of water and condition of rivers;
- prevent and where possible reverse land degradation (including salinity control);
- conserve and protect the diversity and extent of natural ecosystems;
- minimise damage to natural ecosystems and natural resource-based industries caused by pest plants and animals; and
- minimise damage to public and private assets from flooding and erosion.

The Minister for the Environment appoints the board of each CMA. More than 50 per cent members must be persons whose principal occupation is primary production and at least one member must be from the DSE.

Each board is directly responsible for developing strategies for land and water management in its region. The functions of the CMAs are to:

- prepare a regional catchment strategy for the region, and special plans for areas in the region;
- advise the Minister and, if requested, other Ministers on:
 - regional priorities for activities by and resource allocation to bodies involved in the management of land and water resources in the region;
 - guidelines for integrated management of land and water resources in the region;
 - matters relating to catchment management and land protection;
 - the condition of land and water resources in the region; and
 - any matter referred to it by the Minister;
- make recommendations to the Minister about the funding of the implementation of the regional catchment strategy and special area plan, and actions to be taken on Crown land managed by the Secretary of the DSE to prevent land degradation; and
- monitor and implement regional catchment strategies and area plans by promoting cooperation of persons and bodies involved in the management of land and water resources in the region and community awareness of sustainable water and land use, conservation and rehabilitation (CLPA 1994).

The board does not possess any authority to promulgate regulation — although it may advise the DSE.

A board's implementation committees develop detailed work programs and oversee on-ground program delivery for specific issues or sub-catchments. The board and the implementation committees are supported by staff of the CMA.

Under the WA 1989, CMAs also have waterway management functions. They are responsible for co-ordination and management of floodplains, stormwater runoff and pollution, rural drainage (including regional drainage schemes), water quality and nutrient management, water supply catchment protection, wetlands, restoration of degraded waterways and Crown frontages and heritage rivers outside of national parks (NRE 2002a).

Each CMA is required to submit an annual report to the Parliament of Victoria on outcomes achieved against set targets. The statutory requirements of each CMA for annual reporting are governed by the *Financial Management Act 1994*, the WA 1989 and the CLPA 1994.

3.4 Rural water authorities

RWAs are statutory authorities established under the WA 1989. The four RWAs are Sunraysia Rural Water Authority, Wimmera–Mallee Water, Goulburn–Murray Water and Southern Rural Water (see figure 3.1).⁶

Each RWA is an infrastructure manager and as such is responsible for:

- managing and operating the state’s storages that fall under their jurisdiction (except Sunraysia RWA);⁷
- supplying water to water users in irrigation districts, private diverters, and stock and domestic water users;
- administering and operating the infrastructure of irrigation districts;⁸
- supplying water to fulfil delivery and source bulk entitlements; and
- constructing and maintaining delivery and drainage services.

In addition, RWAs are also responsible for administrative, monitoring and enforcement roles including:

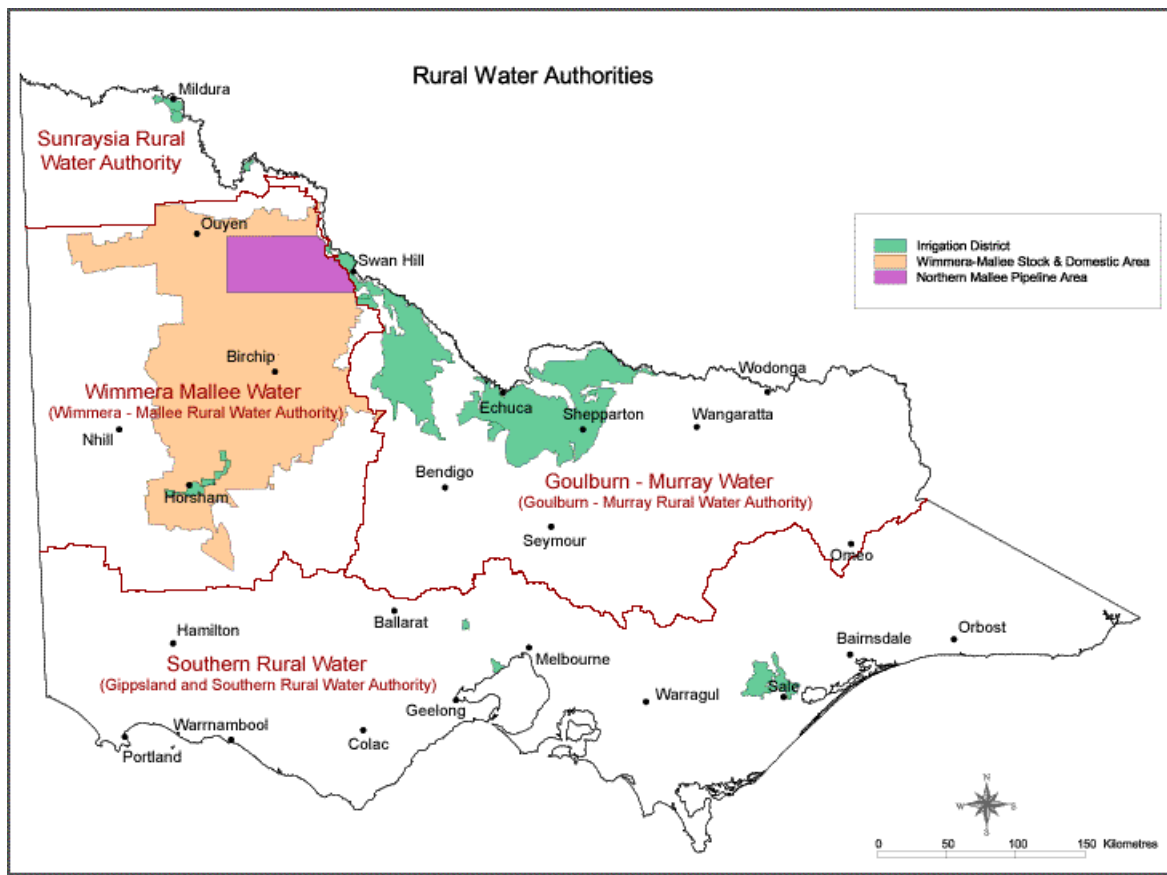
- issuing, modifying (establishment of licence conditions) and transferring licences to take and use surface water, take and use groundwater, and in-stream licences on behalf of the Minister;
- approving the transfer of water rights within and between irrigation districts;
- maintaining registers of landholdings and water rights in irrigation districts, and registers of other licences;
- monitoring and enforcing compliance with licences and water rights; and
- providing advice and help to the CMA.

⁶ First Mildura Irrigation Trust is another authority performing similar functions to a RWA.

⁷ River Murray Water, as a government trading enterprise of the MDBC, is the storage operator for Victoria’s dams in the Murray River system. The dams are physically operated by the State Constructing Authority, which in Victoria’s case is Goulburn–Murray Water.

⁸ Irrigation districts include First Mildura Irrigation Trust, Goulburn–Murray (which includes Murray Valley, Shepparton, Central Goulburn, Rochester, Pyramid–Boort, Torrumbarry, Woorinen and Swan Hill Irrigation Areas), Bacchus Marsh, Macalister, Werribee and Sunraysia.

Figure 3.1 Rural water authorities — Victoria, 2003



Source: www.nre.vic.gov.au/web/root/Domino/vro/maps.nsf/pages/Victoria-NaturalResources-Water-SurfaceWater-rwas?Opendocument

The Minister administering the WA 1989 appoints the board of directors for each of the authorities. Each board has established a number of committees to assist with its duties and to advise and make recommendations to the board.

Each authority is required to prepare an annual report that are tabled in Parliament of Victoria. These reports present achievements against the stated business objectives or guiding principles. These reports, such as those of Goulburn–Murray Water, also contain details on the performance in accounting and distributing water to users (GMW 2002a).

RWAs operate as government business enterprises and as such are expected to earn sufficient revenue to ensure their ongoing commercial viability. Prices are set in accordance with each authority’s corporate plan (Vicwater 2001).

Resource manager

Under the WA 1989, resource managers are appointed to oversight compliance with bulk entitlements. Some RWAs serve as resource managers (WA 1989, s. 43A). Goulburn–Murray Water is the resource manager for nine River Murray bulk entitlements, where its role is to:

- determine water availability and allocations of water to holders of bulk entitlements and primary entitlements;
- call meetings of the River Murray Bulk Entitlement holders, where necessary;
- as required, liaise and work with the MDBC about resource assessment and other water supply matters, on behalf of Victoria, and participate in the MDBC’s water accounting processes;
- manage the distribution system, and prepare Victoria’s River Murray water accounts and account for distribution losses, permanent transfers and conversions of primary or bulk entitlements;
- monitor compliance of River Murray bulk entitlement holders comply with the conditions of their bulk entitlements, and assist River Murray bulk entitlement holders enforce the unauthorised use of River Murray water;
- investigate and mediate disputes between entitlement holders on the River Murray;
- supervise the qualification of any rights to water made by the Minister during periods of a declared water shortage (GMW 2002b).

Goulburn–Murray Water is required every year to publish an annual report on water distribution, including summaries on the availability of water, the water accounts held by the MDBC, distribution losses, and a summary of water trading (GMW 2002b).

3.5 Regional urban water authorities

There are fifteen regional urban water authorities (RUWAs). They are statutory authorities established to supply water to towns and cities across regional Victoria for urban, industrial and commercial use. Each has a defined district within which it provides water services. Their functions and powers are derived under the WA 1989.

Water service agreements negotiated with the Minister identify the services to be provided by RUWAs and their responsibilities and functions. These include operation and maintenance of the urban supply and drainage system, environmental

management, water conservation, dam safety, compliance with drinking water standards, customer service, emergency management and incidents response, effluent management and asset management.

The Minister administering the Act appoints a board of directors to each authority. Each RUWA is required to report its achieved outcomes against its stated objectives, along with financial statements.

As government business enterprises, RUWAs are required to earn sufficient revenue to ensure their ongoing commercial viability. Prices for services provided by RUWAs are set in accordance with the corporate plan of each authority (Vicwater 2001).

3.6 Metropolitan urban water authorities

Water services to residential, commercial and industrial customers within the Melbourne metropolitan area are supplied by four metropolitan urban water authorities (MUWAs). All four businesses are fully corporatised and operate under companies law (Vicwater 2001).

Melbourne Water is a statutory corporation, created by the *Melbourne Water Corporation Act* (1992). Melbourne Water provides bulk water, sewerage treatment, drainage and floodplain management services to the three retail service providers in Melbourne. Melbourne Water owns and operates dams and the main sewerage treatment works and major pipes from those plants and sets rates in accordance with provisions of the *Melbourne Metropolitan Board of Works Act* (1958).

Three water businesses, City West Water, South East Water and Yarra Valley Water, are each responsible for managing the distribution of water and wastewater services to customers in the Melbourne metropolitan area. They also run a number of smaller sewage treatment works. The *Water Industry Act 1994* sets out the powers and functions of the retailers.

Each of the metropolitan water authorities is required to report annually on its achieved outcomes against its stated objectives. In addition, the annual report contains financial information for the financial year.

3.7 Essential Services Commission

The ESC (formerly the Office of Regulator General) is the price and service quality regulator of the three retail metropolitan water authorities. The ESC is responsible for ensuring:

- the maintenance of an efficient and economic water industry;
- the protection of the interests of customers with respect to water industry charges and terms and conditions of water industry services;
- the interests of customers are protected with respect to the reliability and quality of water industry services; and
- the maintenance of a financially viable water industry is facilitated (NRE 2002b).

The Governor-in-Council, on the recommendation of the Minister for Water is responsible for determining the key prices for the metropolitan sector.

From 1 January 2004, the ESC will become the economic regulator of prices, service standards and market conduct with respect to the entire water and wastewater sector. Among other things, the ESC will be responsible for determining the new price controls to apply to each of the regulated water entities that take effect from 1 July 2005.

4 Definition of water rights

There are a variety of entitlements in Victoria that include bulk entitlements, water rights, take and use licences (and their variant, the ‘winter fill’ licence), in-stream use licences, registered licences and stock and domestic rights.

All entitlements are chiefly a right to a volumetric component and a priority (security). They do not provide a right to construct works for the collection, storage, taking, use or distribution of any water or for the obstruction or deflection of the flow of any water. Instead, applicants must apply for a separate licence under the WA 1989.

4.1 Coverage

Universality is achieved when all water sources are covered under a water rights framework. The WA 1989 defines rights to water in a waterway, spring, soak, private dam, groundwater, rainwater and other water that occurs or flows on privately owned land.

A waterway is defined in the Act as a river, creek, stream or watercourse, a natural channel in which water regularly flows, whether or not the flow is continuous, a channel formed wholly or partly by the alteration or relocation of a watercourse, a lake, lagoon, swamp or marsh.

Water rights are granted for surface water diverted in irrigation districts (WA 1989, Part 11). Take and use licences can be applied for water from a waterway, groundwater, spring, soak, dam or works of an authority, water from a private dam spring or soak, and for use of water in a waterway or works of an authority respectively. Registered licences (an alternative to take and use licences) apply to water taken from a private dam for uses other than stock and domestic (WA 1989, s. 51). ‘Winter-fill licences’ are a variant of the take and use licence, that can only be employed in unregulated waterways during the winter months (NRE 2002c). In-stream licences can be applied for water taken from a waterway (WA 1989, s. 52).

As mentioned earlier, stock and domestic rights apply for water sourced from a waterway, private dam or bore for stock and domestic purposes and for which legal

access can be obtained. Statutory rights to harvest rainwater (overland flows) apply to any private land. There is no limit to the purpose or volume of water that can be harvested (WA 1989, s. 8). A take and use licence must be obtained to use water harvested in a private dam — except where the use is for stock and domestic and licence purposes.

4.2 Specification

Bulk entitlements are specified by an order. The bulk entitlement order describes a water authority's right to water in terms of the share of the resource and the associated obligations to:

- supply water to stock and domestic users, other bulk entitlement holders, water right-holders, and take and use licence holders, and to supply sales water;
- manage the storage and delivery infrastructure;
- account and administer for water use and deliveries;
- financial management;
- protect the waterway, aquifer, riverine and riparian environments, as well as passing flow requirements;
- monitor and enforce entitlements and diversions and to report such outcomes; and
- any other conditions that the Minister or Governor-in-Council thinks fit to specify (WA 1989, s. 43).

The bulk entitlement orders specify the nominal volumetric and reliability components of the primary entitlements that water authorities must supply (DCNR 1995).⁹

Most primary entitlements are usually defined in volumetric terms although these volumes are not guaranteed. Instead, each entitlement is rated as high or low security which reflects the priority to which available water is allocated at the beginning of an irrigation season. For example, high security water rights are fulfilled prior to lower security sales water.

⁹ In addition, the volume component of water right attached to an individual landholding in an irrigation district is quantified in the register of the relevant RWA.

Year-to-year

According to provisions of each bulk entitlement order, primary entitlements listed as high security (priority) include delivery bulk entitlements, stock and domestic rights, water rights and take and use licences (NRE 1999a).

According to the Goulburn–Murray Water’s Murray System bulk entitlement order, as at February of every year, water rights, take and use licences and in-stream licences are to be fully met 96 years out of every 100 years, and will not have a minimum allocation of less than 60 per cent (NRE 1999a).

Bulk entitlements assigned for environmental purposes (such as that assigned for the Barmah–Millewa forest) are notionally defined as high security entitlements. In practice however, they are allocated water after other high security entitlements are met and before lower security entitlements are provided (NRE 1999a and 1999b).

Depending on the supply system, water rights and take and use licences can also be provided with additional sales water when storages have sufficient resources. Sales water is surplus water that is offered only once there is enough water to meet the high security entitlements in the current year, and with minimum likely inflows to meet the high security entitlements in the following year.

Sales water is expressed as a proportion of the water right or take and use licence, usually up to 100 per cent of the water right or licence. Take and use licences for industry or domestic and stock purposes attract no sales water and irrigation take and use licences often attract sales water at a lower level than a water right. Sales water is classified as lower security (priority) (NRE 1999a). However, sales water is not explicitly recognised in legislation as a water right (NRE 1999a).

Environmental management

The WA 1989 allows for the amendment of a bulk entitlement. For example, to provide additional flows to the environment. However, no such review has been scheduled.

A bulk entitlement can be amended by an order made by the Minister or Governor-in-Council. In order to amend a bulk entitlement, the Minister must receive an application by the authority holding the bulk entitlement or receive an application by another authority with the support of another Minister (WA 1989, s. 44).

Bulk entitlements, take and use licences, in-stream use licences and registered licences may also be amended if the water resource is a declared water supply

protection area and in accordance with the provisions of the relevant management plan (WA 1989, ss. 8, 59, 64C). The Minister or authority must give at least three months written notice of the amendment to the licensee and must specify in the notice the reasons for the amendment.

An approved management plan may contain a number of conditions including:

- requirements for metering, monitoring and accounting for water to ensure equitable sharing of the resource amongst licensed users;
- requirements for the location, volume and operation of private dams;
- restrictions or prohibitions on issue of licences to take and use water and to construct works;
- restrictions on taking surface water at any location specified in the area to ensure that specified flows are maintained and that the permissible annual volume for the area is not exceeded;
- conditions relating to the protection of the environment;
- conditions to which take and use licences are subject;
- conditions to which works licences are subject;
- conditions on transfers of licences;
- the maximum volume of water that may be retained in private dams; and
- any other matter relevant to the objectives of the SFMP or its implementation (WA 1989, s. 32A).

Enforceability

Enforceability implies that water rights are secure from involuntary seizure or encroachment.

Stock and domestic rights are statutory rights under WA 1989. As such, they can be legally enforced. Bulk entitlements, take and use licences, register licences, in-stream licences and water rights are also enforceable under the WA 1989. Each of these rights is conferred executively by the Minister.

4.3 Record of title

Certainty of ownership is achieved by establishing publicly available registries of the titles to water and any interests to the title.

Copies of the bulk entitlements and the bulk entitlement orders of authorities are held by the DSE. The registry is updated as amendments or transfers of bulk entitlement occur.

Licensing authorities (typically the RWAs and Melbourne Water) hold registries of the bulk entitlements of the authorities in their area. Irrigation areas also possess their own bulk entitlement. They also hold copies of the take and use licences, registered licences, in-stream licences and stock and domestic rights on behalf of the Minister.

Registries of the water rights and stock and domestic rights are maintained in each irrigation district (WA 1989, s. 230). The register must contain the ownership or occupation of lands within each irrigation district and the total volume of water right attached to each parcel of land. In addition, the sales water allocation for the season will be specified in the register. The registries do not provide information of interests vested in the water right or licence, and there is no legal guarantee that the recorded title is correct.

4.4 Duration

A bulk entitlement is issued in perpetuity. A bulk entitlement order may include provisions for its subsequent review, as mentioned earlier. Water rights are also perpetual. However, they are recognised as an obligation to supply under the bulk entitlement order and as such may be affected by an amendment to the bulk entitlement.

Historically, take and use licences varied in duration from one year to perpetuity. The majority of take and use and in-stream licences remain in force for up to 15 years unless revoked or cancelled (WA 1989, s. 56).¹⁰ Both take and use licences and in-stream use licences can be renewed for no longer than 15 years.

Take and use and in-stream licences may also be revoked by the Minister (or authority) if in the opinion of the Minister (or authority) there has been a failure to comply with any condition to which the licence is subject. Three months notice must be given to the licensee (WA 1989, s. 60).

¹⁰ Occasionally a take and use licence will be issued for longer than 15 years and some may exist that have been issued or renewed for an unlimited period of time.

4.5 Exclusivity

Water rights are exclusive if, at the margin, they ensure that the benefits and costs of using water accrue to the right-holder.

Several distinct approaches are employed to address a range of third-party effects. For example, third-party effects can be controlled by placing conditions and obligations on water rights to minimise effects to the environment, clear provisions on what constitutes injury and the compensation due if injury occurs, and clear ownership over return flows.

Environmental flows

In Victoria, there are several approaches to providing environmental flows. These include:

- issuing bulk entitlements (or potentially in-stream licences) for the environment;
- setting conditions on bulk entitlements to provide passing flows — that is, the relevant authority must allow a minimum volume of water to pass their off-take point;
- setting conditions on take and use licences in unregulated rivers to provide minimum passing flows.

These are discussed in more detail in section 7.2.

Return effects

The discharge of contaminated water by point-source polluters is covered by the licensing arrangements of the EPA. Irrigation districts are not subject to pollution licensing controls.

Water rights and take and use licences are defined for a specific use. When rights and licences are traded, approval must be sought with the licensing authority to use that water. The role of site use approvals is discussed in section 6.2.

The WA 1989 allows for the specification of ownership and treatment of return flows. Generally the treatment of return flows will be specified in the relevant bulk entitlement (NRE 1999a and 1999b). In general, the primary entitlement holder has the right to use water until the return flow has reached a drainage ditch. The WA 1989 does allow for entitlement holders to capture runoff and reuse this water. Once

water is in the drainage ditch it belongs to the RWA. Return flows are used to fulfill downstream users' entitlements.

Obligations

A variety of conditions can be placed on bulk entitlements, take and use licences and in-stream licences to minimise effects on the environment. Conditions and obligations are not directly placed on water rights. Instead, they are attached to the relevant bulk entitlement. These conditions are not limited to providing minimum passing flows.

In addition, the WA 1989 provides a range of correlative rights (liabilities) to protect other water users and land holders in several ways. A person who takes water in an unauthorised manner or quantities, uses water in an unauthorised manner or for an unauthorised purpose, or pollutes water (whether or not authorised to do so) or constructs, maintains or operates any unauthorised works, and who injures any person or property or causes a person to suffer economic loss is liable to pay damages in respect of that injury or damage (WA 1989, s. 15).

Liabilities may also arise if:

- there is water flowing over land onto any other land, which is not reasonable, and causes injury; or
- a person interferes with the reasonable flow of water, and that interference causes injury (WA 1989, s. 16).

In these cases, the person who interfered or caused the unreasonable flow is liable to pay damages for the injury (WA 1989, s. 15).

4.6 Detached from land title and use restrictions

As mentioned earlier, primary entitlements in Victoria do not separate the taking of water from the use of that water. Separate approvals are required for the construction of works to extract water (WA 1989, Part 5).

Primary entitlements to water are separated from land and possess their own title. However, in general to own an entitlement one must own or occupy land within the area to which the entitlement applies.

Water for stock and domestic purposes is appurtenant to the landholding and may not be transferred separately from land title.

Transfers of a take and use licence will only be approved if the applicant is the owner or occupier of land within the district to which the application applies. This is intended to prevent arbitrage and hoarding of water rights.

As the take and use licence is not attached to the landholding, a licensee may sell their property without selling the licence and as such it is possible to own a licence without owning land. A licence may only be transferred to an owner or occupier of land.

In order to hold a water right, a person must be the owner or occupier of a landholding within a specified irrigation district.¹¹ While water rights may be transferred between owners or occupiers of land separate from land, they are always attached to a landholding in the register and the register is updated to reflect transfers, moving the water rights from one landholding to another. When a landholding is sold the water rights attached to that landholding also change ownership.

4.7 Divisibility and transferability

The WA 1989 allows for bulk and primary entitlements to be sub-divided.

Bulk entitlements may be transferred to another authority, to the owner or occupier of a landholding in an irrigation district, to the holder of a take and use licence, or to a person outside Victoria (WA 1989, s. 46). A transfer may be in whole or in part and may be temporary or permanent. Temporary transfers cannot take place for more than 12 months (WA 1989, s. 46A).

Take and use and in-stream licences may be transferred temporarily or permanently, and can be within the state or to a person outside the state (WA 1989, s. 62). Water rights transfers may be temporary or permanent, and can be within or to outside the state (WA 1989, ss. 224 to 226AA).

Take and use licences can be transferred into irrigation districts and converted to water rights (WA 1989, s. 226A).

Water rights may only be transferred to land owners or occupiers within an irrigation district. Water rights can be transferred to persons outside an irrigation district provided they are first converted to take and use licences or bulk entitlements.

¹¹ Irrigation district's are specified in Schedule 11 of the WA 1989.

There is no provision for stock and domestic rights to be transferred in whole or in part.

5 Government involvement water allocation

Government involvement in the allocation of water includes how water is to be re-allocated between uses and users, and processes for determining how much water is to be re-allocated to the environment.

5.1 Allocation mechanisms

Trading of primary entitlements between individuals is the principal mechanism by which existing entitlements are re-allocated between water users. As mentioned earlier, the WA 1989 confers to the Minister the power to review allocations, including those defined under bulk entitlements, and to amend these allocations — including to re-allocate water between consumptive water users and the environment.

5.2 Resource planning

The WA 1989 sets out the three processes for government to be involved in the allocation of water resources in Victoria. They include the:

- bulk entitlement conversion process — which convert entitlements established under the 1958 Act to the entitlements defined under WA 1989 for both regulated and unregulated rivers;
- preparation of SFMPs — which are developed under section 30 of the WA 1989 for the sustainable management of water resources of unregulated rivers in a declared water supply protection area; and
- preparation of GMPs — which are developed under section 30 of the WA 1989 for the sustainable management of groundwater resources in a water supply protection area.

As at 2001, the transition from the 1958 Act is well progressed with 127 bulk entitlements complete, covering 76 per cent of diversions in Victoria (NCC 2001) and 20 SFMPs at various stages of preparation (ENRC 2001).

Application

An application can be made to the Minister by an authority to be granted a bulk entitlement (WA 1989, s. 36). The applying authority must submit to the Minister:

- particulars of the maximum volumes of water in any specified period or periods or the timing and level of flow to which the entitlement is being sought;
- particulars of the source from which the water being sought is to come; and
- other relevant matters (WA 1989, s. 36).

An application can be made to the Minister to declare a supply system a water supply protection area, after initial resource assessments have been undertaken (WA 1989, s. 27). Applications can be made by:

- a person authorised to use groundwater or surface water under the Act;
- an authority that holds a bulk entitlement or uses groundwater or supplies water; or
- a body that has responsibilities under any Act relating to the conservation or management of water or of land in the area concerned (WA 1989, s. 27).

Generally, licensing authorities have assumed responsibility for developing SFMPs in consultation with the DSE and CMAs (NRE 2002c).

In the case of unregulated rivers, CMAs are responsible for prioritising catchments, in accordance with the provisions of the River Health Strategy, for declaration as water supply protection areas. CMAs are required to consult with the DSE and RWAs when establishing priorities.

When groundwater resource commitment reaches 70 per cent of the permissible annual volume in an aquifer, the aquifer is declared by the Minister to be a groundwater supply protection area (NRE 2000). A GMP is developed for the area. The purpose of the GMP is to manage the groundwater resources in an equitable and long-term sustainable manner (NRE 2000; WA 1989, s. 30).

Basic GMPs are developed first to monitor aquifer levels and rates of extraction. When more information is available and there is either over-allocation or a risk of over-allocation, advanced management plans may be developed to ensure that extractions are consistent with the permitted annual volume (NRE 2000).

Resource assessment

Assessments of the hydrological resources are undertaken in the development of bulk entitlements, SFMPs and GMPs.

In the case of bulk entitlements, a water authority must, in co-operation with the DSE, assess the catchment's yield and capacity, streamflows passing on stream works, operating arrangements regarding passing flows and environmental flows, resource harvesting and release characteristics for works, security of allocations to irrigation and stock and domestic systems (where appropriate) and annual limits of taking and releasing water (DCNR 1995).

In the case of SFMPs, the RWA must first quantify the reliability of supply for entitlements under both existing and full use situations, and to convert existing water uses in the catchment to take and use licences, registered licences, stock and domestic use and other consumptive uses of water in the area. Hydrological assessments include:

- assessing environmental values and conditions;
- understanding stream hydrology for existing diversion conditions;
- quantifying natural and existing streamflows;
- establishing links between environmental values and the flow regime;
- identifying which components of the flow regime are missing and require re-establishment;
- defining preliminary environmental objectives; and
- identifying the additional investigations needed to determine the environmental flow requirements (NRE 2002c).

In the case of basic GMPs, RWAs are responsible for gathering data on usage and other relevant information (NRE 2000). The RWA must prepare an allocation policy for any unallocated water, as well as arrangements for transferring entitlements, and the tariff arrangements to cover the cost of the implementation of the plan (NRE 2000).

Objectives

The objectives of the bulk entitlement conversion process is to:

- provide authorities with a clearly defined property right to water;
- provide authorities with flexibility to manage within their entitlements;

-
- provide a basis for sharing limited water resources protecting the entitlements of other users and protecting in-stream values;
 - facilitate water trading between user groups to ensure an appropriate redistribution over time of finite water resources; and
 - allow specific entitlements for environmental purpose (DCNR 1995).

The objectives of individual bulk entitlements mirror the overarching objectives of the bulk entitlement conversion process, such as the stated objectives of the Sunraysia Rural Water bulk entitlement (NRE 1999b).

The broad objectives of the SFMP and GMP processes are summarised in legislation. The over-arching objectives of an individual management plan will often reflect other considerations. For example, the over-arching objectives of the Kiewa River SFMP were sourced from:

- the WA 1989;
- the State Environment Protection Policy (Waters of Victoria) 1988;
- North East Catchment Management Strategy 1997;
- the Council of Australian Governments Water Reform Agreement 1994;
- the ARMCANZ–ANZECC National Principles for the Provision of Water to the Environment (1996);
- the Murray–Darling Basin Cap; and
- the *Flora and Fauna Guarantee Act* (1988) and Biodiversity Strategy (Kiewa River SFMP Consultative Committee 2002).

From these broad objectives, specific and measurable objectives are developed under each plan. For example, in the Kiewa River SFMP, the environmental objectives included identifying key fish species for environmental management (Kiewa River SFMP Consultative Committee 2002).

Impact assessment

After an allocation of water to consumptive and non-consumptive uses is proposed, assessments of various impacts are undertaken.

In the case of bulk entitlements, environmental assessments are prepared to determine the current environmental values of the river and to establish baseline conditions (DCNR 1995). These assessments are strongly guided by the policy objective that the bulk entitlement conversion process will recognise and fully convert existing rights.

An environmental assessment is undertaken for each bulk entitlement application to determine the subsequent process of consultation. In cases in which an application (category 1 cases) does not propose to significantly increase infrastructure, reduce environmental flows, affect other users or cause environmental damage, then no further assessment is required in the bulk entitlement conversion process (DCNR 1995).

In contrast, detailed environmental impact assessments must be prepared for category 3 applications. These assessments review the existing and proposed operating arrangements of the supply system and explain why the application, as proposed, is unacceptable. The environmental impact report also outlines a preferred basis for specifying a bulk entitlement. The report includes:

- a description of streamflow hydrology;
- data on natural and expected future streamflow regimes;
- information on the flow requirements of flora and fauna and justification for the category 3 status;
- options for possible system operating rules to improve environmental outcomes;
- modelling results of the options to assess impacts of revised operating rules on flow regimes and on water supply yields and security;
- a preferred option determined using an expert panel approach; and
- justification for the preferred option (DCNR 1995).

In the case of SFMPs, detailed assessments are undertaken of the impacts of various environmental requirements on existing uses and full entitlement reliability of supply. The results of the flow sharing investigations are published. There are also legislative requirements to consider environmental, social and cultural impacts (NRE 2002c).

In the case of GMPs, assessments are undertaken in accordance with the established guidelines. The main assessment undertaken is to establish the sustainable yield of the aquifer and the levels of current and future extraction (NRE 2000). There are no guidelines for assessing the social, economic or environmental impacts for the development of a basic GMP (NRE 2000).

Transparency

Transparent planning processes allow stakeholders to evaluate whether the planning process is rigorous and to accept allocative decisions.

In the case of bulk entitlements, there is no statutory requirement to make available the report of the panel appointed by the Minister or Governor-in-Council to review the submissions tabled on the application of the entitlement (WA 1989, s 39).

Transparency is achieved during the consultative process. There is no statutory requirement for guidelines prepared for the drafting of SFMPs and GMPs to be made public (WA 1989, s. 30). Draft SFMPs and GMPs are required to be made publicly available for comment (WA 1989, s. 31).

There is a statutory requirement for SFMPs and GMPs to be publicly available in the offices of:

- the authority;
- any council whose municipal district is situated in the declared area; and
- the authority responsible for administering the *Planning and Environment Act 1987* (WA 1989, s. 32H).

Similarly, a report describing the monitoring and enforcement against the SFMP must be available for inspection in the offices of the authority (WA 1989, s. 32D).

Consultation

In the absence of market signals to indicate social preferences, consultation allows for the identification of economic, social and environmental values of the community.

In the bulk entitlement conversion process, there are several avenues for consultation. First, there is an informal consultation process prior to the application for any plan. For example, under the bulk entitlement process, informal processes are employed to minimise subsequent formal submissions that may be requested later in the application process. On major river systems, project groups are formed with representation from all stakeholder groups. These groups provide the mechanism to resolve issues and achieve a balance between competing interests.

Second, submissions may be invited on the draft application by the Minister or Governor-in-Council:

- giving public notice of an application in any manner that the Minister or Governor-in-Council thinks fit or requiring that the applicant give public notice; or
- requiring the applicant to provide further information or to participate in an investigation designed to enable the Minister or Governor-in-Council to assess

the likely effects of granting the application and to bear all or part of the cost of that investigation (WA 1989, s. 38).

In addition, the Minister or Governor-in-Council may appoint a panel for the purpose of reviewing submissions, undertaking its own investigations and making recommendations based on those submissions. The panel may regulate its own proceedings (WA 1989, s. 39). The panel must report its finding to the Minister or Governor-in-Council within the period specified and may make any recommendations it thinks fit.

Finally, in the case of a bulk entitlement application for a regulated river, the Minister must forward a copy of the final application for a bulk entitlement to:

- the Minister administering the *Conservation, Forest and Lands Act 1987*;
- the Minister administering the *Planning and Environment Act 1987*, and
- any public statutory body which the Minister considers may be directly affected by the application (WA 1989, s. 36).

Public consultation is undertaken during the declaration of a water supply protection area. RWAs are required to advertise applications for water supply protection areas and notify the community.¹² Comments on the application are accepted for a period of 60 days (WA 1989, s. 27). The Minister may then consider any submissions that are received and has 60 days to decide to declare a water supply protection area by Government Gazette (WA 1989, s. 27).

Public consultation is undertaken in the process of developing SFMPs and GMPs. The Minister may appoint a consultative committee — based on advice from the CMA, RWA and the DSE — to prepare a draft plan for the area. The consultative committee must have:

- members with relevant knowledge and experience;
- at least 50 per cent of its members primary producers;¹³
- representatives from authorities directly affected;
- a reasonable gender balance; and

¹² A notice of the application for a declaration of water supply protection area must be published in a newspaper circulating generally in the area concerned and given by post to the Minister administering the *Conservation, Forest and Lands Act 1987*, the Minister administering the *Planning and Environment Act 1987*, any authority or statutory body possibly affected by the declaration, any council in whose municipal district the area concerned is wholly or partly situated and the responsible authority under the *Planning and Environment Act 1989* in relation to a planning scheme for the area.

¹³ The Victorian Farmers Federation must be consulted regarding these members (NRE 2002b)

-
- represent all relevant interests (WA 1989, s. 29).

The consultative committee has 18 months to prepare a draft SFMP or GMP (WA 1989, s. 31). There is no formal requirement for consultation during the development of a plan (NRE 2002c).

The Minister may proceed to prepare a draft management plan without appointing a Consultative Committee. In this case however, the Minister must make the plan available for comment by interested persons (WA 1989, s. 31).

Decision

The Minister or the Governor-in-Council is responsible for approving:

- an application for a bulk entitlement (Water Act, 1989, ss. 36 and 37); and
- a declared water supply protection area; (WA 1989, s. 27)
- draft SFMPs and GMPs (WA 1989, s. 32A).

The Minister or Governor-in-Council is responsible for approving a bulk entitlement. On receipt of the advisory panel's final report, the Minister or Governor-in-Council must consider a range of factors when granting a bulk entitlement (see box 5.1). Once the application has been approved, the bulk entitlement order is published in the Government Gazette and tabled in Parliament. In addition, the Minister or Governor-in-Council can promulgate a bulk entitlement order.

In the case of a water supply protection area, the Minister must make public the decision by publishing the declaration in a local newspaper. In addition, both houses of Parliament must be notified within five sitting days by the Minister that the declaration has been made (WA 1989, s. 27).

In approving a SFMP or GMP, the Minister must make public the decision to approve a management plan by publishing in a local newspaper. If a plan is refused, the Minister must also give reasons for the refusal (WA 1989, s. 32A).

Review

Bulk entitlements are granted in perpetuity. There is no statutory process by which they must be reviewed. However the Minister or Governor-in-Council may amend a bulk entitlement by an order:

- on application of the authority holding the entitlement; or

-
- by another authority with the support of another Minister (WA 1989, s. 44).

Box 5.1 Matters that must be regarded when considering a bulk entitlement application

In granting a bulk entitlement, the Act specifies that the Minister must have regard to the following matters:

- the report of any appointed panel;
- the existing and projected availability of water in the area;
- the permissible annual volume, if any, for the area;
- the existing and projected quality of water in the area;
- any adverse effect that the allocation or use of water under the entitlement is likely to have on existing authorised uses of water, or a waterway, or an aquifer, or the drainage regime;
- any water to which the applicant is already entitled;
- any volume of water that is allocated for sales water in irrigation districts;
- the need to protect the environment including the riverine and riparian environment;
- the conservation policy of the government;
- government policies concerning the preferred allocation or use of water resources;
- whether the proposed source of water is within a heritage river area or natural catchment area and whether there is any restriction on the use of the area under the Act;
- the proper management of the waterway and its surrounds or of the aquifer;
- the purpose for which the water is to be used;
- the needs of other potential applicants;
- any other matters the Minister or Governor-in-Council thinks fit to have regard for.

Source: WA 1989, s. 40

The Minister may amend a bulk entitlement by order to ensure that the bulk entitlement is consistent with a plan governing a ‘water resource management area’ (WA 1989, s. 64C).

The Minister may issue a notice making a minor amendment to a bulk entitlement if the amendment is necessary because of:

- a mistake in the description of any element of the entitlement; or
- a minor variation arising from practical operations (WA 1989, s. 45).

There is no statutory requirement for management plans to be reviewed. However, guidelines indicate that SFMPs are to be reviewed every five years (or less), and GMPs every three to five years (NRE 2000, 2002c, 2002d). A licensing authority or CMA may recommend that a review should be undertaken of a SFMP (NRE 2002c, 2002d).

The Minister may amend or revoke an approved management plan only if:

- the Minister has issued a notice of the proposed amendment or notification;
- the Minister has considered submissions on the proposed amendment or notification; and
- in the case of a proposed amendment, the Minister has appointed a Consultative Committee (WA 1989, s. 32G). Proposed amendments to such plans require Consultative Committees to prepare the draft amendments, as described above (WA 1989, s. 32G).

The licensing authority must prepare an annual report on the implementation of an SFMP and GMP (NRE 2000, 2002c). Matters to be reported include:

- changes to the level and type of water resource development in the area;
- impact of any new development may have on the security of existing users or on flows in the waterway;
- water use information;
- the effectiveness of the management of the plan, in relation to metering, monitoring and restrictions and rosters; and
- any difficulties associated and progress towards meeting environmental flows specified in the plan (NRE 2002c).

6 Administering water rights

The Minister has the responsibility for administering bulk entitlements. The Minister is also responsible for administering stock and domestic use, take and use licences, and registered licences — although this responsibility has been delegated to the licensing authorities.

6.1 Issuing new entitlements

Applications for new bulk entitlements are described in the previous chapter on government involvement in the allocation of water.

Take and use and in-stream licences

New take and use licences or in-stream use licences are only issued if there is sufficient water. As such, in those catchments where water is fully allocated, such as the northern catchments, new licences are not granted (NRE 2001b).

Applicants for both take and use and in-stream use licences must:

- Give notice of their application (in any manner desired by the Minister) that may be used to invite submissions to the application (WA 1989, s. 49).
- Complete an application form in the manner prescribed by the Minister:
 - In the case of take and use licences, this includes details containing the name and address of applicant, volume of water requested, description of land on which water will be used, details of proposed use, proposed method of diversion, and place of diversion. An application fee normally applies (WA 1989, s. 51).
 - In the case of in-stream licences, this includes particulars of the rate of flow required, the location where the water is required, the times the water is required, and other particulars as required.¹⁴ An application fee normally applies (WA 1989, s. 52).

¹⁴ Applications can only be made by another Minister or a person appointed by another Minister.

In the case of applications to take and use water from a private dam, the Minister must give a copy to the Secretary of the DSE, the relevant CMA, and any other authority holding a bulk entitlement that may be affected by the approval of the application. Within 30 days each must consider the application and may advise on the application to object or approve the application, or to approve the application with conditions (WA 1989, ss. 51B and 51C).

In the case of all applications for a take and use or in-stream use licence, when considering whether to approve an application, the Minister must have regard to:

- any advice or comments received from the Secretary of the DSE, the relevant CMA or any other authority that holds a bulk entitlement that may be affected by the approval;
- the report of the special panel appointed to review applications for licences;
- the same matters considered in granting a bulk entitlement (see box 5.1); and
- any other matter it thinks fit (WA 1989, s. 53).

Take and use or in-stream licences may be issued with any or all of the following conditions:

- the protection of a waterway or an aquifer;
- the purposes for which the water may be used;
- the maximum volume of water which may be taken in particular periods or circumstances;
- payment for the volume of water used;
- the protection of the environment including riverine and riparian environment;
- the conservation policy of the Government;
- the efficient use of water resources;
- the management of the waterway and its surrounds ;
- the drainage regime;
- the manner in which the licensee is to compensate and person whose existing authorised use of water may be adversely and materially affect by the allocation or use of water under the licence;
- the installation and use of measuring devices or pumps;
- notification of a change in ownership of land on which water is taken under a take and use licence;
- payment of a surcharge for each litre of mineral water taken under a take and use licence; and

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- any other purpose that the Minister thinks fit (WA 1989, s. 56).

The Minister may also choose to sell a take and use or in-stream licence. To do so the Minister, after giving approval to the relevant factors described above, may sell a licence at auction or by inviting tenders, or any other manner the Minister sees fit (WA 1989, s. 57).

Water rights

New water rights are generally not available for issue as water resources were largely fully allocated by previous decisions of Government. The bulk entitlement conversion process clarified these rights. However, if available, a RWA can allocate new water as water rights by:

- offering water for apportionment among existing land holders within an irrigation area; or
- selling water rights, whether at auction, by inviting tenders or any other manner the RWA sees fit (WA 1989, s. 229).

When considering whether or not to apportion or sell new water rights, the RWA:

- must have regard to any existing water rights within the district; and
- must consult the Victorian Farmers Federation and any other bodies that the authority considers appropriate (WA 1989, s. 229).

An apportionment or sale of new water rights may be subject to terms and conditions including:

- drainage and salinity criteria;
- the maximum volume of water rights that is required for the reasonable irrigation of land;
- the need to protect the water apportioned to other landholdings within the irrigation district; and
- any other matter it considers relevant (WA 1989, s. 229).

The authority must enter details of the apportionment or sale in the register.

6.2 Transferring entitlements

Bulk entitlements

Authorities have the power to transfer temporarily or permanently bulk entitlements. They may also sell all or part of the entitlement. They can auction and invite tenders, but must publish their intent to transfer the bulk entitlement in the Government Gazette and in a newspaper circulating in the area concerned (WA 1989, ss. 46, 46A, 46B). For example, unused portions of environmental bulk entitlements (such as the Barmah–Millewa entitlement) can be traded temporarily.

Authorities wishing to transfer a bulk entitlement to:

- another authority, must apply to the Minister with the approved form containing the prescribed and required information (WA 1989, s. 46);
- irrigators holding water rights and take and use licences, must apply to the Minister and RWA with the prescribed form and fee (WA 1989, s. 46A); and
- another person outside the state, must apply to the Minister with the prescribed form and information (WA 1989, s. 46B).

Applications for transfers require the approval of the:

- Minister if the transfer is to another authority or to a person outside the state;
- Minister and the RWA if the transfer is permanently to an irrigator within the state; and
- RWA if the transfer is temporarily to an irrigator within the state (WA 1989, ss. 46 and 46A).

To gain approval:

- For transfers to other authorities or to persons outside the state, the Minister considers the matters listed in box 5.1 (WA 1989, ss. 46 and 46B). The Minister must give effect to an approved management plan for any relevant water supply protection area for transfers to other authorities (WA 1989, s. 46).
- For permanent transfers to irrigators within the state, the Minister must be satisfied that the entitlement to be transferred is surplus to the obligations of the authority to supply water (WA 1989, s. 46A).

The Minister must not deal with an application for a transfer in a way that is inconsistent with any provisions in the bulk entitlement order governing the transferability of the bulk entitlement (WA 1989, s. 46B).

Water rights

Applicants seeking to transfer water rights on a permanent basis must provide with their application:

- the signature of the person(s) who own(s) the title of the land to which the water right is attached;
- a copy of the land title (or of the licence);
- a statutory declaration by the seller, identifying each person who has a prescribed interest in the land (or licence) where the water rights are currently;¹⁵
- a copy of an advertisement of the intention to sell that has been placed in a newspaper generally circulating in the area at least four weeks prior to the application; and
- the written consent of all people with prescribed interests in the land (or licence) (WA 1989, s. 226; NRE 2001b).

The fees for permanent transfers of water rights and take and use licences on regulated systems are set in the regulations. The standard fee is \$275, and where a transfer is between districts of different RWAs, \$75 goes to the seller's authority, and \$200 to the buyer's authority (NRE 2001b).

Applications for a temporary transfer of water rights require the approval of the authority and Minister. The authority is responsible for approving the delivery of the water. The Minister may not approve the transfer if:

- the transfer is not made in accordance with the relevant by-laws;
- water is not available under the bulk entitlement to supply the water right; and
- the Minister believes that transfers may result in a serious increase in water use (WA 1989, s. 224).

Applicants for a permanent transfer of a water right require the approval of both the seller's and the buyer's authority (WA 1989, s. 226). In general, the seller's authority will not approve the transfer until it is satisfied that each person whom it knows or ought to know to have a prescribed interest in the landholding has consented to the transfer (WA 1989, s. 226).

By-laws may be made to facilitate approval processes for transferring water rights, including prescribing:

¹⁵Regulations indicate the following have prescribed interests: mortgagee, caveator, share-farmer, lessee, partner, life tenant, annuitant, unpaid vendor or purchaser of the holding.

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- irrigation districts into and from which water rights may be transferred;
 - fees to be paid to the authority for the transfer of water; and
 - minimum and maximum volume of water that may be used on a landholding in the case of approving temporary transfers (WA 1989, ss. 225 and 226).

In the case of approving permanent transfers, considerations also include prescribing:

- Interests in a landholding whose consent is required to a transfer of water rights.
- The maximum volume of water that may be held on a landholding, and setting limits on the volume of water rights that can be traded out of the district. Both sets of constraints are prepared in regard to drainage and salinity criteria, and the need to protect other water rights in the district, and possible environmental impact of transfers (WA 1989, ss. 225, 226).

The by-laws facilitating the approval processes are summarised in boxes 6.1 and 6.2.

Take and use and in-stream use licences

Applicants seeking to transfer a take and use licence or an in-stream use licence may apply to the Minister for approval (WA 1989, s. 62).

Applications must:

- be in a form and manner approved by the Minister;
- contain any information that is prescribed or required by the Minister; and
- be accompanied by any application fee fixed by the Minister (WA 1989, s. 62).

The Minister may also consider any of the following in approving an application to transfer a take and use and in-stream use licence:

- the impact of the use of water;
- the impact of subsidies; and
- any other matter the Minister considers relevant (WA 1989, s. 62).

Box 6.1 **Trading rules**

The legislative provisions guiding the transfer of water rights have given rise to the following trading rules.

Limits on trading

No more than two per cent of a district's water rights may be traded in any given year. This is intended to mitigate possible consequences of structural change and stranding of assets.

Supply issues

Rules governing the physical connection of getting water to the extraction point, implications for supply reliability, include:

- entitlements can move along a regulated river or trunk channel supplied from the same storage subject only to channel capacity constraints;
- entitlements can move from one supply system downstream to another supply system if the two systems are connected;
- trade may be allowed downstream past a channel capacity constraint, or upstream into a high-level system, provided there has been trade the other way first;
- trade is possible between the upper reaches of two rivers that join up, by substitution, that is by the seller's river taking over a down stream supply obligation from the buyer's river; and
- trade may be allowed from a location supplied by two sources, upstream to a location that can only be supplied by one of the two sources, but usually special limits or an exchange rate will apply.

Different supply systems have different supply reliability. These differences must be taken into account in the trading framework so that trade does not have any third-party impacts. Supply reliability exchange rates are calculated and employed to facilitate trade.

Delivery issues

The buyer's authority will always check to ensure that the receiving water authority has the spare capacity to deliver the water to the buyer without affecting the service to other irrigators in the area. In general, a standard is applied to measure capacity. For example, authorities may ensure that 10 per cent of a water right can be delivered in ten days. If there is spare capacity then new rights can be transferred into the area.

Source: NRE (2001b).

Box 6.2 Site use approvals

Statutory planning and other approvals are required for permanent and temporary water right transfers. These include:

- Maximum rates of application of water to land, depending on the salinity sensitivity and drainage methods adopted.
- In the Sunraysia Rural Water area, agricultural land has been zoned into high impact (HIZ) and low impact zone (LIZ) areas. These influence the rate of the levy collected by the State Government to recover the cost of salt interception schemes in Morgan, South Australia.
- Separate approval processes for the establishment of new irrigation schemes. Approval is subject to an environmental checklist, hydrogeological assessments, irrigation and drainage management plans, and local council permit for the clearance of native vegetation.

Irrigation and drainage management plans are farm-level plans intended to address problems arising from salinity and water-logging. They are each required under the Murray–Darling Basin Commission’s *Salinity and Drainage Strategy* (1988). They are required whenever the transfer of a water right results in a new irrigation development. The plan is used for various approvals and includes a description of the proposed development, a topographical survey, soil survey, irrigation design, and contingency drainage system design.

Source: NRE (2001b).

The Minister may consider any of the following in deciding to approve an application to transfer a take and use or in-stream use licence:

- the recommendations of an expert panel;
- the advice and comments of the relevant departmental secretary, CMA, Melbourne Water (if the transfer is within its area), and the holder of the bulk entitlement;
- the projected and existing water availability in the area;
- the projected and existing water quality in the area;
- any adverse effects the allocation or use will have on existing authorised uses, the waterway or aquifer, or drainage of the system;
- any water to which the applicant is already entitled;
- the volume of sales water;
- government policies concerning the preferred allocation or use of water;
- whether the proposed source of water is within a heritage river area or a natural catchment area within the meaning of the *Heritage Rivers Act 1992*;

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- if appropriate, the proper management of the waterway and its surrounds or of the aquifer;
 - the needs of other potential applicants; and
 - any other factors considered relevant by the Minister (WA 1989, ss. 53, 62)

If a SFMP has been completed for the unregulated river, then transfers will be encouraged consistent with the plan.

If a SFMP has not been completed for the river, transfers are assessed in line with basic trading rules that have been set. In catchments that are subject to the Murray–Darling Basin Cap — the basic trading rules for unregulated streams are:

- no new take and use licences may be issued, except where a licence is first traded out of a system;
- no licence is to be traded from a regulated system into an unregulated system;
- transfers must be downstream, where a 20 per cent reduction in volume is applied, unless the licence is to become a ‘winter fill licence’ of a stock and domestic right;
- transfers cannot be made upstream from regulated segments of the river into unregulated segments, unless the licence is to become a ‘winter fill licence’ of a stock and domestic right (NRE 2001b).

Also, trading from unregulated systems into regulated systems is prohibited.

The Minister may approve the application to transfer by amending the conditions attached to the transfers (WA 1989, s. 62).

6.3 Modifying entitlements

The WA 1989 allows for entitlements to be converted into other types of entitlements.

The Act allows for an authority to buy a take and use licence or water right and convert it to a bulk entitlement. Unless the Minister decides otherwise, the authority must not use a take and use licence or water right to fulfil supply obligations until it has been converted to a bulk entitlement.

If an authority intends to buy a take and use licence or water right for the purpose of conversion to bulk entitlement, it must apply to the Minister to set the terms and conditions of conversion. In considering an application of this nature, the Minister

may have regard to those matters outlined in box 6.1, and must give effect to any approved management plan for any relevant water supply protection area.

If a licence is traded into an irrigation district, the new owner may apply to have the licence converted into water right (WA 1989, s. 226A). An application is made to the RWA responsible for delivering the water. An authority may approve or refuse an application. Applications are approved in general.

If water rights are transferred to a land owner or occupier outside of an irrigation district, the water rights are automatically converted to a standard take and use licence.

6.4 Hearing appeals

A person who is affected by a decision made by the Minister (or authority acting on behalf of the Minister), may apply to the Victorian Civil and Administrative Tribunal (VCAT) for review of that decision. Decisions that may be reviewed include a decision to:

- refuse an application for a take and use licence or renewal of a take and use licence;
- approve an application for a take and use licence or renewal of a licence;
- impose any condition on a licence or to amend or delete any of the conditions to which a licence is subject;
- revoke or amend a licence; or
- refuse or approve the transfer of a licence (WA 1989, s. 64).

Similar provisions exist for holders of water rights to appeal the decisions of RWAs, including but limited to:

- determinations on the volume of water to be attached to a landholding;
- the stock and domestic allowance for each landholding;
- refusing a proposal to subdivide a landholding;
- refusing to approve a permanent inter-state transfer of a water right;
- refusing to convert water rights into licences (WA 1989, ss. 226AA, 226A, 230 and 231).

6.5 Registration

The Secretary of the DSE must maintain a register of all bulk entitlements and amend them from time-to-time. The register must be available for inspection during normal office hours at the offices of the DSE to any person free of charge (WA 1989, s. 48).

It is not clear if there are statutory requirements for the registration of take and use licences and of in-stream licences. However, in practice registers of take and use licences are kept by the RWAs.

A RWA must maintain a register for each irrigation district for which it has responsibility. The register must show:

- all lands in the district;
- the owner or occupier of each landholding;
- the total volume of water rights that the authority determines to have been attached to each landholding;
- the stock and domestic allowance that the authority determines to have been attached to each landholding;
- other information as the authority deems necessary (WA 1989 s. 230).

The register must be revised to reflect changes in ownership of landholdings, water rights, and inclusion and exclusion of lands (WA 1989, s. 230)

7 Distribution management

Each year in Victoria, the available water in storage is shared between entitlement holders according to the water sharing rules of the bulk entitlement order, and in the case of unregulated rivers and groundwater, the relevant SFMPs and GMPs.

7.1 Water accounting

Water accounting is the process of keeping an inventory of the volume of water available for supply at any point in time and the volume of water that has been assigned and distributed to uses and users. The functions of this process are:

- determining the volume of water available for distribution and assigning it to uses and users;
- maintaining records of the volume of water assigned to, stored by, carried over and borrowed by, storage losses of, and delivered to water users (managing water accounts);
- accounting for the effects of water right transfers;
- accounting for water losses experienced in transit (conveyancy losses); and
- assigning and re-allocating water during periods of serious water shortage.

Determining availability and assigning water

The provisions governing how much water from the River Murray system is to be made available to Victoria is governed by the Murray–Darling Basin Agreement 1992. These processes outline the share of the available resource to be made available to Victoria and the method by which it is to be provided by the MDBC (PC 2003).

The provisions governing how much water will be available to bulk and primary entitlement holders in Victoria are made by the resource manager and the water authority respectively. In the case of the latter, these are subject to the provisions of the bulk entitlement order (NRE 1999b).

The volume of water available for assignment in any year is given by the volume of water in the dam (less dead storage) plus an estimate of expected inflows, less the estimated system losses.

In regulated rivers, at the beginning of the water year, water is first assigned to meet all high security entitlements for that year. Sufficient water is then reserved to fully meet high security entitlements in the second year.

Any additional water is assigned as sales water in the current year up to a maximum of 100 per cent of the water right and take and use licence. When sufficient water has been allocated to meet these entitlements, any additional resource is carried over for use in the following year. However, take and use licences for irrigation purposes often attract a lower sales water volume than their water right counterparts (NRE 2001b).

The announcements are generally made for those water right and take and use licence holders that also receive sales water (GMW undated(a)). In regulated rivers along the River Murray system, announcements are made in consultation with the resource manager for the River Murray and the MDBC.

Managing water accounts

Water accounts are maintained for each bulk and primary entitlement (including stock and domestic rights and take and use licences in unregulated rivers). However, unlike some other Australian jurisdictions, there are no provisions for individual water users to carry-over water in their own account for the next year. Water that is not called on in the season is forgone at the end of the season.

Urban water authorities have the same rules as RWAs, and cannot carry-over water.

Accounting for transfers

As mentioned earlier, the reliability of a primary entitlement is defined by the reliability of the supply system in which the entitlement currently resides (NRE 2001b). Some primary entitlements can be transferred between supply systems — provided these are hydrologically connected. The reliability of a supply system is determined by the system's hydrology, storage capacities and the volume of water rights on issue (NRE 2001b). Consequently downstream supply systems tend to be more reliable as there are potentially more storages and surface runoff to serve a water entitlement.

When primary entitlements are transferred, the storage operator in the receiving supply system must make adjustments to the transferred entitlement otherwise the reliability of the entitlements of third parties will be affected (NRE 2001b). Supply reliability exchanges rates are calculated and applied.

Accounting for conveyancy losses

In Victoria, water losses are accounted in the bulk entitlement administered by the authority for losses incurred in rivers. Water losses are also assigned to the bulk entitlements of irrigation districts for losses incurred during off-stream reticulation. For example, Sunraysia Rural Water Authority's bulk entitlement for losses in its irrigation areas are a fixed volume and do not vary with trading within the district (NRE 1999b, Schedule 5; NRE 2001b). In other irrigation areas, where water is supplied through open channels, the bulk entitlement provisions for losses vary according to the volume of trade expected to occur in a season (NRE 2001b).

In cases where the actual conveyancy losses of a district are greater than the volume scheduled in the bulk entitlement order, water is obtained from the pooled sales water to make up the short-fall (NRE 1999b). Similarly, where water is 'freed up' because water is traded to an irrigation area experiences fewer losses, the newly acquired water is allocated to the pool of 'sales pool' (NRE 2001b).

Accounting for water shortages

Under the WA 1989, the Minister may declare a water shortage if the volume or quality of water available to satisfy rights in the area or system is or will shortly be inadequate for any reason. If a water shortage is called, the Minister may suspend, reduce, increase or otherwise alter any or all rights (WA 1989, ss. 13, 33).

Primary entitlements are supply obligations in the bulk entitlement granted to a RWA. An authority may reduce, restrict or discontinue water supply to any person and hence alter the right, namely:

- a shortage of water or for any other unavoidable cause, unable to supply the volume of water which would otherwise be supplied to the person; and
- the authority believes that the reduction, restriction or discontinuance is necessary to avoid future water shortages (WA 1989, s. 141).

In Victoria, an authority is not required to consult with water users when declaring a water shortage, except where there is a prospect of curtailing the right of an in-stream water licence (WA 1989, s. 33).

7.2 Water distribution

Water distribution involves distributing water to consumptive and non-consumptive uses. In distributing water, distributors may also be responsible for allocating water to the environment or controlling water flows to meet environmental needs.

Water is released from its storage or source to water users along natural watercourses or irrigation channels and pipes. On unregulated rivers, users are permitted by the distributor to extract water in accordance with their water right.

Managing environmental flows

There are several approaches to providing water for the environment in Victoria, as mentioned earlier. First, bulk entitlements may be issued for the environment. These include the Barmah–Millewa forest (50 GL per year) and the Murray Wetlands (27.6 GL per year). The Barmah–Millewa entitlement is treated as high security, plus a further 25 GL is to be made available once sales water is met (NRE 1999b). The Murray Wetlands bulk entitlement covers the River Murray, Barmah Forest, Gunbower Forest, Kerang Lakes, Hattah Lakes, Cardross Lakes, and the Lindsay–Walpolla Island system.

Second, in-stream licences may be issued for environmental purposes (WA 1989, s. 52). While there are legislative provisions for in-stream licences, no licence has yet been allocated for environmental purposes.

Third, conditions may be placed on a bulk entitlement, which could require the authority to provide minimum passing flows (WA 1989, s. 43). In the case of the Sunraysia Rural Water Bulk Entitlement Conversion Order, maximum pumping rates are set for irrigation districts for the purpose of protecting flows to South Australia (NRE 1999b).

Fourth, environmental flows are provided by placing conditions on take and use licences in unregulated rivers. These include specifying the conditions to provide passing flows, and restricting take and use licences from extracting water during low flow periods (Kiewa River SFMP Consultative Committee 2002).

Managing distributions for consumptive use

In Victoria, to ensure that water is delivered on time, irrigators place orders in advance with their authority (ANCID 2002). The delivery systems operate with:

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- channels, some closed pipes and pumps in First Mildura, Sunraysia Water and the Swan Hill district of Goulburn–Murray Water;
 - closed pipe and gravity fed among many private diverters in the Goulburn–Murray Water area; and
 - open channels and gravity fed throughout the majority of the Goulburn–Murray Water (ANCID 2002).

According to the Australian National Committee on Irrigation and Drainage (ANCID), water can be ordered during an irrigation season from RWAs seven days a week. The arrival time from order to delivery (in days) varies from:

- between 0.1 and 0.5 days in pumped districts; and
- between 3 and 4 days in gravity fed districts and for riparian private diverters (ANCID 2002).

When water is delivered, the proportion of water deliveries that are received on time are:

- between 94 and 100 per cent in pumped districts and private water diverters; and
- between 80 and 97 per cent in gravity fed districts (ANCID 2002).

There are two chief mechanisms by which congestion is managed within natural and artificial channels:

- As mentioned earlier, during the administration process, the authority checks that the infrastructure has the capacity to deliver the water without affecting the service to other irrigators. If there is no spare capacity, water cannot be traded.
- In irrigation areas, water deliveries are rationed so that irrigators typically only receive part of their water right over a period of time — for example, 10 per cent of the right over 12 days (NRE 2001b).

Water rights in Victoria also confer to their holder a right to the delivery capacity of the infrastructure. During periods of congestion, where water rights are rationed on a pro rata basis, water right-holders have an incentive to acquire more water rights (for example, through temporary trades) to gain greater infrastructure capacity and therefore be less subject to congestion (NRE 2001b).

8 Pricing

Victoria has been reforming its water pricing policies in recent years. The Council of Australian Governments' (CoAG) Water Resources Framework of 1994 was adopted to improve the efficiency of water allocation by adopting consumption-based pricing and increasing charges over time to full-cost recovery of infrastructure where appropriate, and by allowing water to be traded to its highest valued use (CoAG 1994).

8.1 Price regulation institutions

The prices of water delivery services for RWAs are currently recommended to the Minister by the RWAs after consultation with their Customer Service Advisory Committee (CSAC) — an advisory board to the board of the RWA (WA 1989, s. 108). The CSAC comprises principally of water users from the authority's area. Similarly, the wholesale prices of water delivery services are recommended to the Minister by Melbourne Water.

The DSE currently reviews the prices recommended by the CSACs and by Melbourne Water. The Minister is responsible for approving the recommended prices. The DSE also reviewed of rural and rural urban water prices, but the reports were not publicly available.

The ESC, an independent pricing regulator, is responsible for setting prices for the three urban retailers in Melbourne. The ESC was made responsible for setting prices from 1 January 2003 for all urban and RWAs. Urban and rural water prices will be progressively reviewed from 2003 as they are due to come under review.

8.2 Pricing water as a scarce resource

In Victoria, the WA 1989 allows water rights to be traded on a temporary or permanent basis, within and between states. However, there are restrictions on the trade of water rights from irrigation districts. Goulburn–Murray Water, Sunraysia RWA and First Mildura Irrigation Trust are each subject to a 2 per cent limit on water that can be permanently traded out of an irrigation district in any given year.

8.3 Pricing water infrastructure services

The National Competition Council, in its review of the progress of each jurisdiction against the goals of the CoAG Water Reform Framework, concluded:

- that all RUWAs earned sufficient revenues to meet operating, maintenance, administration, and interest costs, pay a dividend to government — although in 1999–2000, two authorities did not earn sufficient revenue to be commercially viable; and
- that all metropolitan water businesses exceeded the minimum for commercial viability (NCC 2001).

The ANCID reported that, in 2000–01, the irrigation areas of Victorian RWAs charged water users for:

- operating and maintenance costs associated with water delivery and bulk water charges; and
- renewals charges (ANCID 2002).

No Victorian RWA paid dividends on earnings or charged for the depreciation of water delivery infrastructure (ANCID 2002).

All urban water authorities levied multi-part tariffs — comprising an access charge and a consumption-charge. However in 2000–01 the pricing tariffs for surface water use were based on:

- Consumption — Murray Valley, Shepparton, Central Goulburn, Rochester, Bacchus Marsh, Macalister, and Werribee; and
- Access and consumption — First Mildura, Pyramid–Boort, Torrumbarry, Swan Hill Pumped districts, Sunraysia and the Wimmera–Mallee.

Similarly, among RWAs, the pricing structures for groundwater users in 2000–01 were based on:

- Consumption — Murray Valley, Shepparton, Central Goulburn, Rochester and Woorinen;
- Access and consumption — First Mildura, Pyramid–Boort each contributed; and
- Access, consumption and area of land serviced — Sunraysia, Wimmera–Mallee and Goulburn–Murray Water private diverters (ANCID 2002).

Goulburn–Murray Water intends to introduce a two-part (access and consumption-based tariff) from 2003–04.

8.4 Pricing environmental third-party effects

Two broad categories of environmental charges were levied in Victorian irrigation schemes in 2000–01. A salinity charge is collected on all permanent and temporary water trades that contribute to the formation of new irrigation developments. The charge is calculated on a per megalitre basis and contributes to the partial funding of salt interception works in the Victorian Mallee (SRWA 2002). The rates are based on the level of salinity that is displaced into the River Murray from increased irrigation. The levies are higher in HIZs along the River Murray salinity areas than the LIZs along the River Murray salinity areas.

The WA 1989 provides for a range of environmental objectives, such as preventing riverbank erosion, to be included in the bulk entitlement orders of RWAs (WA 1989, s. 43). The costs of meeting these requirements are passed onto water users through their water delivery charges — although these are not always separately identified. The ANCID reported that environmental charges were collected in all irrigation areas except Bacchus Marsh, Macalister and Werribee (ANCID 2002). Information was not available for Wimmera–Mallee.

9 Monitoring and enforcement

The framework for monitoring Victoria's water resources and the enforcement procedures and penalties are set out in the WA 1989.

9.1 Institutional issues

Accountability and reporting requirements

In Victoria, the resource manager is responsible for monitoring and publicly reporting compliance of the bulk entitlements held by authorities. For the nine bulk entitlements along the River Murray, this is undertaken by Goulburn–Murray Water (GMW 2002b).

RWAs are required to report their compliance with their bulk entitlements to the Minister and in their annual reports (NRE 1999b). For example, Sunraysia Rural Water is required to report on:

- the annual volume of water taken;
- the location of offtake points and any water taken;
- the volume of water returned;
- the annual volume of water supplied via Sunraysia Rural Water's distribution system to the bulk entitlement held by the Minister for Conservation;
- the annual volume of water supplied to primary entitlement holders other than those defined in the bulk entitlement;
- the existence, amendment and implementation of a metering program;
- any temporary or permanent transfer of all or part of this bulk entitlement or of primary entitlements;
- any amendment to this bulk entitlement;
- any new bulk entitlement granted to Sunraysia Rural Water with respect to the River Murray;

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- any failure by Sunraysia Rural Water to comply with any provision of this bulk entitlement; and
 - any difficulties experienced or anticipated by Sunraysia Rural Water in complying with this bulk entitlement and any remedial action taken or proposed (NRE 1999b).

Licensing authorities are responsible for monitoring and enforcing licences and water rights within their jurisdiction. There is no statutory requirement however, for RWAs to publicly report breaches of individual right-holders.

Transparency, compliance and consultation

In Victoria, water authorities are required to report on any failure to comply with their bulk entitlement. The resource manager is required to report to the Minister each year on water use and compliance. There are no specific statutory requirements on RWAs to publicly report compliance outcomes or enforcement procedures associated with the supply of primary entitlements (water rights and licences).

Similarly, there are no statutory requirements for RWAs to employ formal consultation strategies with water users for the purpose of fully informing them of the monitoring and enforcement processes and sanctions they can face. However, RWAs often consult with water users, such as distributing information over the internet and via newsletters informing water users of the obligations under the Act. In addition, CSACs, established under the WA 1989, are responsible for closely liaising between RWAs and their customers.

9.2 Monitoring procedures

The Minister must make sure that a continuous program of assessment of the water resources of the state is undertaken. The water resource assessment program must provide for the collection, collation, analysis and publication of information about the availability of water, the disposal of wastewater, the use and re-use of water resources, floodwaters, drainage and waterway management, water quality, in-stream uses of water, and anything else that the Minister decides is appropriate (WA 1989, s. 22).

As mentioned above, bulk entitlement orders usually require authorities to monitor and report their compliance to the bulk entitlement. Generally, authorities (including RWAs) are responsible for a metering program to assist the resource manager to monitor the compliance of the authority with the bulk entitlement (NRE 1999a and 1999b).

Authorities are provided with a range of powers to monitor water taking, use and return. They include:

- installing and maintaining a meter on any land to measure the volume of water supplied by the authority;
- computing the volume of water supplied based on the volume of water delivered in any previous or subsequent period or periods if a meter is functioning properly; and
- entering private land to investigate and deal with the unauthorised taking of water within the area covered by the bulk entitlement (WA 1989, ss. 133, 142).

Monitoring environmental allocations

There are no mandatory statutory requirements for bulk entitlements, SFMPs and GMPs to include provisions for the monitoring of their environmental flows, though they are usually included — as in the case of the Kiewa River SFMP (Kiewa River SFMP Consultative Committee 2002).

That said, the custodians of environmental bulk entitlements generally do not have regular procedures for monitoring of environmental flows — whether for unregulated river flows and environmental bulk entitlements (such as those of the Barmah–Millewa Forest and the Murray Wetlands). For example, the annual works program of the DSE includes a requirement to develop a simple monitoring program to assist with evaluating environmental flows to a number of wetlands. But this does not appear to be a consistent or coordinated approach for monitoring environmental flows in all water bodies in the Murray wetlands (DSE, Division of Parks, Flora and Fauna, Victoria, pers. comm., 14 March 2003). In those areas where monitoring is undertaken, monitoring results are not publicly reported.

Instead, RWAs monitor storage releases, aggregate streamflows at certain points in the river and diversions by consumptive water users. Depending on the adequacy of such monitoring, environmental flows can be inferred.

Inferences about environmental flows may not result in adequate protection of environmental flows. For example, environmental flows share the same security of entitlement as do consumptive water rights (for urban and rural demands). However, in some rural areas there is evidence that during very dry periods, RWAs have difficulty in meeting minimum passing flow requirements (SRW 2002).

9.3 Enforcement procedures

The Act sets out the activities that constitute an offence, the powers of an authority to take immediate action on discovering breaches, the range of penalties that can be applied, standards of proof and evidentiary guidelines, and the avenues for appeal (WA 1989).

The publicly available enforcement procedures are those identified in the WA 1989. For example, the Act provides a range of activities that constitute an offence by an individual entitlement holder, including the:

- unauthorised taking or use of water from a waterway, bore, spring, soak or dam;
- unauthorised use or diversion of water that is under the control and management of an authority or water that is supplied by an authority for the use of another person;
- unauthorised interference with the flow of water in any waterway, aquifer or works under the control and management of an authority;
- non-compliance with subordinate legislation or by-laws;
- wilful damage or obstruction of works;
- non-compliance with a contravention notice or other notice issued under the Act;
- waste or misuse of water; and
- obstruction, threatening, abusing, insulting or intimidating an officer (WA 1989).

It is also an offence for a take and use licence holder not to comply with the conditions of the licence or for an authority to contravene the conditions of their bulk entitlement (WA 1989, ss. 47A, 64). Although in the latter case, only authorities responsible for generating or transmitting electricity can be held accountable (WA 1989, s. 47A).

The Act does not prescribe how frequently an authority should monitor for, and therefore enforce, compliance. This is at the discretion of the authority. The absence of published compliance strategies or records of enforcement action makes it difficult to determine if a consistent enforcement approach is applied to all right-holders.

Once a contravention of the Act has been detected, the authority may notify, in writing, a person who contravenes the Act, the regulations or the by-laws under this Act, or a requirement made by the authority under the Act, or a condition of a licence issued under the Act, or a prescription of an approved management plan and require that they take any action to remedy the contravention (WA 1989, s. 151);

If the notice of contravention is not complied with, the RWA can carry out any work and take any action it decides is necessary to remedy the contravention, and recover the associated cost from the person. The RWA may also remove or discontinue any service to the property in relation to the contravention. Also, the authority can apply to a court for an injunction restraining the person who has not complied with the contravention notice (WA 1989, s. 151).

The Act also specifies which persons can prosecute an offence, including the:

- police;
- person authorised to do so by the authority; or
- prescribed persons or class of persons (WA 1989, s. 296).

In Victoria, all offences must be heard and determined by a court. This limits the enforcement agency's ability to issue on-the-spot fines for minor offences.

The Act also provides guidance as to the appropriate sanctions — identifying the levels of sanctions to be imposed on various offences (see for example, WA 1989, s. 294). Penalty options include:

- revocation of licence issued under sections 51 and 52 of the Act;
- imposition of a financial penalty — 20 penalty units for first offence, 40 units for subsequent offence; and
- imprisonment — three months for a first offence and six months for subsequent offences (WA 1989).

Civil remedies to other water users are not affected by the decision of an authority to prosecute for an offence (WA 1989, s. 299).

In the Goulburn–Murray region of Victoria, local newspapers regularly report the identity of those prosecuted (Goulburn–Murray Water, Victoria, pers. comm., 16 May 2003).

In most of the jurisdictions studied, legislation allows an entitlement holder to appeal the decisions of an enforcement agency if imposed sanctions — such as revoking a licence for failing to comply with its conditions — are considered unreasonable (WA 1989, s. 64). Appeals may be heard by the VCAT.

Finally, data on the specific cost of enforcement is generally not reported in Victoria, because enforcement activity is subsumed within an agency which has multiple responsibilities. Anecdotal observations suggest that the resources allocated to this activity are relatively small.

References

- ANCID (Australian National Committee for Irrigation and Drainage) 2002, *Australian Irrigation Water Provider Benchmarking Report for 2000–01*, Australian National Committee for Irrigation and Drainage, Goulburn–Murray Water.
- ANRA (Australian Natural Resources Audit) 2002, *Surface and Groundwater Management, Availability, Allocation and Efficiency of Use: State of Victoria Water Resources — Overview*, http://audit.ea.gov.au/anra/water/docs/state_overview/VIC_ovpage.html (accessed 13 May 2002).
- Babie, P. 1997, *The Implementation and Operation of Transferable Water Entitlement system in Victoria and Alberta*, Department of Natural Resources and Environment Victoria, Victoria.
- CoAG (Council of Australian Governments) 1994, *Water Resource Policy*, Commonwealth of Australia, February.
- DCNR (Department of Conservation and Natural Resources Victoria) 1995, *The Bulk Entitlement Conversion Process*, Department of Conservation and Natural Resources, Victoria.
- DSE (Department of Sustainability and Environment) 2003a, *Securing Our Water Future: Green Paper for Discussion*, Department of Sustainability and Environment, Melbourne, August.
- 2003b, *Corporate Plan Summary 2003–2006*, Department of Sustainability and Environment, Melbourne.
- DWRV (Department of Water Resources Victoria) 1989, *Water Victoria: A Resource Handbook*, VGPO, Victoria.
- ENRC (Environment and Natural Resources Committee) 2001, *Inquiry into the Allocation of Water Resources – Report*, Government Printer, Victoria.
- EPA (Environment Protection Authority) 2002, *Annual Report 2001–2002: Achieving Sustainability Through Teamwork*, Environment Protection Authority, Victoria.
- GMW (Goulburn–Murray Water) 2002a, *Annual Report 2001–2002*, Goulburn–Murray Water.

-
- 2002b, *Murray Basin Water Accounts and Resource Manager's Report, 1999–2000: Prepared for the Department of Natural Resources and Environment, Goulburn–Murray Water (as Murray Resource Manager)*, April.
- undated(a), *News and System Reports*, unpublished, www.g-mw.com.au, (accessed 17 March 2003).
- Kiewa River SFMP Consultative Committee (Kiewa River SFMP Consultative Committee), 2002, *Kiewa River Stream Flow Management Plan Report*, Goulburn–Murray Water, Draft, February.
- Institute of Engineers Australia 1999, *A Century of Water Resources Development in Australia, 1990–1999*, Pirie Printers Pty Ltd., ACT.
- NCC (National Competition Council) 2001, *Assessment of Government's Progress in Implementing the National Competition Policy and Related Reforms: Victoria — Water Reform*, National Competition Council, Melbourne.
- NRE (Department of Natural Resources and Environment) 1999a, *Entitlements to the Murray: Outcomes of Work to Define How Victoria's River Murray Water is to be Shared*, Department of Natural Resources and Environment, Victoria, August.
- 1999b, *Bulk Entitlement (River Murray — Sunraysia Rural Water) Conversion Order*, Department of Natural Resources and Environment, Victoria, July.
- 2000, *Groundwater Management Plans: Groundwater Planning Guidelines*, Department of Natural Resources and Environment, January.
- 2001a, *Catchment and Water Division Strategic Plan 2001–2004*, Victoria.
- 2001b, *The Value of Water: A Guide to Water Trading in Victoria*, Department of Natural Resources and Environment, December.
- 2002a, *Corporate: Catchment and Water Division*, <http://www.nre.vic.gov.au> (accessed 13 May 2002)
- 2002b, *Establishing the Essential Services Commission as the Economic Regulator of the Victorian Water Industry*, Victoria.
- 2002c, *Stream Flow Management Plan Framework: Final Draft*, Department of Natural Resources and Environment, May.
- 2002d, *Healthy Rivers, Health Communities and Regional Growth: Victorian River health Strategy*, Draft, Department of Natural Resources and Environment, February.
- PC (Productivity Commission) 2003, *Water Rights Arrangements in Australia and Overseas: Annex A, the Murray–Darling Basin*, Commission Research Paper, Productivity Commission, Melbourne.

SRW (Southern Rural Water) 2002, *Annual Report 2001–2002*, September.

SRWA (Sunraysia Rural Water Authority), 2002, *Refinement of the River Salinity Zoning System: Information for Irrigators*, unpublished, <http://www.srwa.org.au> (accessed 3 February 2003).

VCMC (Victorian Catchment Management Council) 2001, *Annual Report 2000–2001*, Victoria.

Vicwater (Victorian Water Industry Association) 2001, *Submission to the Senate Inquiry on the Management of Australia's Fresh Water Resources*, July 2001.