

Chapter 9

The Evolution of Water Legislation in Australia

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Abstract As water at its core still remains fleeting and its supply independent, water rights and the associated trade in such rights depend on a set of institutional and legislative frameworks. In this light, it is important to appreciate the history of water legislation. This chapter, in complementing Chap. 10, gives a short history of water legislation in Australia – from its place in the colonization of the country to modern multiagency management of the Murray Darling Basin. As the demand for water moves from an immature phase of abundance to a mature phase of scarcity and degradation, water law must also evolve. There has been a raft of progressive legislation in the development of water management in Australia. This chapter will touch on those key pieces which molded the formation of water law in the eastern states of Australia.

Keywords Water management • Australian water law • Environmental water • Deakin • Environment law

9.1 Introduction

Water entitlement regimes in Australia were developed in the late nineteenth and early twentieth centuries and replaced the English riparian doctrines initially established in the colonies. Those responsible for developing water entitlement regimes in Australia, such as Alfred Deakin, benefited from observing the prior appropriation and riparian doctrines in use in the U.S.A, and developed the non-priority permit

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doctrine as the preferred institution for Australia.¹ The non-priority permit system in Australia operates on the allocation of entitlements granted at the discretion of the government, rather than an individual right of ownership to water. The resource itself is nationalized by vesting the control of it with state government water authorities. Entitlements are defined in standard units, usually megaliters, and the volume available to a user is subject to availability of supply. The tenure of entitlements is not permanent, as it is with property rights to land or chattels.² Establishing permits to use, rather than rights of ownership, and vesting greater regulatory power in state governments provided important distinctions between the Australian legal doctrine on the one hand, and those of England and the western United States on the other. In essence, those formulating the 'Australian' doctrine rejected the riparian and prior appropriation doctrines, and gave the water authority a greater degree of control over water property rights than these traditional water doctrines, in order to avoid the legal disputes which have occurred in other countries (Davis 1968).

9.2 Defining the Use of Water in Australia

The use of water resources in Australia began, as it did in England, under riparian common law.³ Under riparian law, landholders abutting rivers and streams can utilize the water provided that sufficient instream water remains in the streams to meet the demands of other riparian landholders. Such an informal system of water allocation works well provided there is an abundance of water available; however, it was soon realized that water is a scarce resource in Australia's dry environment.⁴ The informal system of water allocation led to many conflicts and water allocation became a critical issue for Australia's development. As well, the riparian philosophy was found wanting because it excluded non-riparian water use throughout the nineteenth century, including the gold mining ventures of 1850s.

The Victorian colonial government established a Royal Commission in 1884 to examine alternative water doctrines (Clark 1970, 1982). Alfred Deakin, a

¹Davis (1968) provides a (somewhat dated) comparison of American and Australian water doctrines.

²There are a number of different forms of water permits of varying duration. The majority of water entitlements for irrigation are usually issued for 10–15 years.

³Instream water that flows through more than one person's land could be deemed as common property and consequently subject to common law of ownership. States have legislated that the right to use and control surface water be vested with specific government agencies.

⁴The vast majority of Australia is defined by Davidson (1969) as arid or semi-arid with variable precipitation. The population is concentrated along the coastlines, with over 70 % living in urban centers scattered along the eastern coastline. The more arid inland regions have tended to be dominated by rural communities (including irrigation) which consume 82 % of total water used in Australia and depend upon less reliable inland streams.

strong advocate of irrigation and later Prime Minister of Australia, was appointed chairman. As part of his responsibility, Deakin traveled overseas extensively.⁵ Deakin observed that water rights policies in Colorado were causing conflicts between holders of riparian and prior appropriation rights, and leading to costly and time-consuming disputes and legal battles. California at that time was divided into warring factions resulting in messy confrontations (Davis 1968). To avoid conflicts over ownership and priority of use of the water resources of Victoria, the Deakin committee (Deakin 1881) recommended that:

- (a) the riparian rights system in Victoria should be abolished and the State Government be given supreme control over all water resources of the State;
- (b) riparian users be issued with a license to divert water for domestic and stock use,
- (c) a standard unit of measure be adopted for water consumption,
- (d) a formal system of licensing be established, and
- (e) non-riparian users be given a statutory right of easement to the rivers and streams.

The ideas developed by the Deakin Commission culminated in the Irrigation Act 1886 (Vic.). It nationalized the right to use water, gave easement of aqueduct to non-riparian farmers and formalized a licensing system. The idea of nationalization of water resources was not new. It had been preceded by the Spanish Law of Water (1866) and Northern India Canal and Drainage Act (1873) (Davis 1968). The Victorian Act however represented a radical departure from existing common law notions of riparian rights which existed in Australia at that time. The Act effectively abolished any new riparian rights, and replaced existing rights with statutory rights in order to assert State authority. These rights were later to become known as statutory riparian rights. The government reserved public lands abutting watercourses, thereby ensuring that no new riparian rights could be established. Deakin believed that all river banks in Victoria should be owned by the State and that all riparian rights should be abolished (Deakin 1881, pp. 440–441). In fact, very few riparian rights existed in Victoria prior to the Irrigation Act 1886 (Vic.). The government gained control over riparian land by making purchases whenever this land was offered for sale. Vesting the right of control of the water resources and riparian land with the State was criticized by some as socialism in action (Davis 1968).

The right to the “use and flow and to the control” of all water in watercourses was vested with the government. “The purpose of the ‘vesting provision’ was to establish the legislative basis for the State to act as the grantor of rights and thereby ensure that water could be allocated fairly between all users” (Department of Water Resources, Victoria (DWRV) 1986, p. 21).

⁵Many of the basic elements of Australian water allocation law stem from Deakin’s assessment of irrigation systems in the western United States, particularly California and Colorado, and in India, Egypt and Italy.

A similar Royal Commission to that held in Victoria was appointed in New South Wales. Known as the ‘Lyne’ Royal Commission 1884–1887, it came to the same conclusions as Deakin: nationalize the water resource by vesting the ownership of the water resources of the State with the government so as to avoid the conflicts that were resulting from individual rights of ownership in California.

Following the recommendations of these two Royal Commissions, state legislation was enacted throughout Australia that vested the ownership of water resources with respective state governments. The acts were seen as a “landmark for Australian water legislation” as they “avoided a number of complex problems of riparian use encountered overseas and greatly facilitated planning and development procedures and policies related to allocation of the resource” (Scheegen and Donohue 1983, p. 927). In Australia there was no longer an individual right to water, but rather an entitlement granted at the discretion of the government. The philosophies of a non-priority permit doctrine of entitlements, rather than rights of ownership, had been established.

Other states soon followed the lead of Victoria and New South Wales with their own legislation. In Queensland (Qld) the Rights in Water Conservation and Utilization Act, 1910 (Qld)⁶ vested the control of all natural waters with the Queensland Government. The ownership of the beds and banks of watercourses was vested with the Government that removed, theoretically, riparian rights in regulated river basins. One major problem with the 1910 Act was that it did not give the Government any administrative infrastructure to regulate water allocation, and hence did not produce any dramatic changes in the use of the resource.

In 1926 the Water Act 1926 (Qld) was proclaimed, giving the Government powers over the allocation of the State’s surface water resources. It went further by providing aid for landholders to establish water facilities, and by conferring control over sub-artesian water. In addition, the Act (sub-section 11(a)) introduced rights for non-riparian owners of land to obtain licenses, and broke the nexus between water and its riparian use. Section 4(1) of the Water Act 1926 (Qld) gave the Government agency⁷ “the right to the use and flow and the control of the water at any time in . . . all watercourses which flow through the land of two or more occupiers and all lakes and springs that are situated within the land of two or more occupiers.”

The ownership of riverbanks and the effect on the rights of riparian landowners was not seriously contested in Queensland until 1983. In the case *Nalder v Commissioner for Railways* [1983] Queensland Law Report (1) 620 it was held that the Water Act 1926 (Qld) did not remove the riparian common law right of supply.⁸ It was further held that vesting the control and allocation of water with

⁶Water legislation commenced in Queensland with *The Water Authorities Act 1891* and *The Irrigation Act 1891*, both of which provided for the construction and maintenance of dams and weirs.

⁷Other examples of the Governments’ control over surface water include the *Water Act 1912* (NSW), Sect. 4A (1); *Water Resources Act 1976* (S.A.), s.6; *Water Act 1958* (Vic), s. 4.

⁸These issues are discussed further in *Travis v Vanderloos* (1984) 54 L.G.R.A. 268; and *Reid v Chapman* (1984) 37 S.A.S.R. 117.

the Queensland Government did not confer or imply ownership by the Government under the Water Act 1926–1987 (Qld). This distinguished Queensland legislation from that in Victoria and New South Wales.

The Queensland legislation that has followed the 1926 Act has been developed on a needs basis without any apparent overall direction. As a result, numerous amendment Acts have appeared, as well as a number of issue-specific Acts.⁹ The result was that Queensland's water resources management had become unwieldy and in need of rationalization.

This historical background sets the scene for understanding the institutional changes to water management which have occurred in Australia in recent times. While each State developed its own legislation, the demands for institutional change were common to all as there were problems associated with the very nature of Australia's water economy.

The legislation formalizing the transfer of water entitlements was introduced in New South Wales in 1987 and in 1989 in Queensland and Victoria.

9.2.1 Water Markets in New South Wales

In the 1983/1984 water year a trial water transfer scheme was introduced in New South Wales under an amendment to the Water Act 1912 (NSW). At its inception these annual transfers were restricted to supplementing short-term water shortages, rather than encouraging long-term efficiency, and were small in number relative to the size of the potential market.

In December, 1986, NSW introduced permanent transfer arrangements. The Water Act 1912 (NSW) was amended in 1987. Division 4C of Sect. 20AH, of the amended 1912 Act allowed that the holder of an entitlement (transferor) may, with the approval of the Ministerial Corporation, transfer the whole or part of the water allocation for the entitlement to the holder of another entitlement (transferee). The transfer could be for a limited period of time or permanent (s.20AH(2)). There was also the possibility for transfer between different private schemes (s.20AH(3)) and long-term intersectoral transfers. Recognizing the potential problems, permanent transfers are subject to environmental assessment and public enquires, and the conditions of the transferring license are subject to change by the water authority. The possibility of permanent transfers opened the way for long-term adjustments to promote economic growth while considering both the social and economic consequences of the trade (Water Act 1912 (NSW), s. 20AI (6)).

⁹The most significant of these are the *Water Resources Administration Act 1978–1984*; the *Water Act 1926–1987*; the *River Improvement Trust Act 1940–1985*; the *Farm Water Supplies Assistance Act 1958–1984*; the *Irrigation Areas (Land Settlement) Act 1962–1972*; and the *New South Wales-Queensland Border Rivers Agreement Act 1946–1968* (QWRC 1987).

Therefore the effects upon regional economies and the equity of distribution could come into consideration in New South Wales but is still subject to testing in the Courts.

9.2.2 Water Markets in Queensland

To meet demands for institutional change, the Water Act 1989 (Qld) introduced transferable water entitlements and highlighted a need for the environmental requirements of rivers and streams. After a period of testing the concept of transferable water entitlements in the Border Rivers region, the then Queensland Water Resources Commission (QWRC) introduced transferability across the State in 1989 with the Water Resources Act 1989 (Qld). Under Sect. 10.17 of the Act an irrigator could transfer all or part of his or her allocated water to another irrigator within the same water area. (Water Resources Act 1989 (Qld), s.10.17(1)).

The legislation specified conditions for the transfer in terms of approval by the Commissioner, ownership of the license, duration of the transfer, and burden of the administrative costs associated with the transfer. The Act did not provide for intersectoral transfers and was unclear as to the rights of third parties affected by transfers. The rationale for prohibiting intersectoral transfers was to test the concept of transferability first within the irrigation sector. "Intersectoral transfers are unlikely to become a reality until well into the future" (Fenwick 1990, p. 221). The transfer of water was not even available within the agricultural sector. Transfers were restricted to water entitlement holders only. Such limited reforms seem unjustified provided the water authority had the power to intervene in transfers which have third party affects, or are not promoting efficiency or social equitable, but typified the cautious approach to water trading taken by most states at that time. All transfers were subject to the approval of the Commission (Water Resources Act 1989 (Qld), s. 10.17(5)).

9.2.3 Water Markets in Victoria

The Government of Victoria viewed transferability as removing the nexus between land and water. The major benefit was that irrigators could obtain more water through the market without having to purchase more land. The Rural Water Commission of Victoria (RWCV)¹⁰ regarded the introduction as a logical extension of the current system where irrigators could transfer an entitlement between parcels

¹⁰The Rural Water Corporation was previously the Rural Water Commission. There was limited change to the role of the water authority as a result of the name change.

of land under common ownership¹¹; under transferability, the requirement for common ownership was removed. Transfers prior to 1986 were restricted to seasonal transfers, up to irrigators' licensed quantity, and subject to channel capacity, no detriment to other irrigators, and no adverse drainage and salinity consequences (RWCV 1986). The quantity for saleable transfer had been restricted to maintain a minimum of 30 % of the total water right or original allocation. The acquired quantity, nonetheless, was subject to the discretion of the Rural Water Commission of Victoria (RWCV 1986).

Following a trial period and the introduction of new legislation, the transfer of licenses could be permanent or temporary (Sect. 62(3)). In considering a transfer, the Minister had regard to matters in Sect. 53, which made reference to the initial conditions for issuing a license, and Sect. 56(1) which outlined the conditions of licenses. Section 53 also made reference to Sect. 40; this means that applications for transfer were effectively subject to the same hydrological and environmental conditions that were applied to a new license application.

Bulk allocations could be transferred on either a permanent or temporary basis to another government authority. This could result in substantial changes in the distribution of income derived from the resource throughout society. The transfer of bulk allocations, like any other transfer, is subject to objection and public hearings under Sect. 40 of the Act. There was pressure to divert water away from agricultural use to urban and industrial use (IC 1992) as was by this time common in the U.S.. Yet it was not clear how Sect. 40(j) was to be interpreted in response to an application for transfer across sectors of the economy, i.e. between agricultural, urban and industrial uses.

In concert with the development of water markets was recognition that riverine ecosystems were in decline. Further blue-green algal outbreaks and the associated media coverage place pressure on governments. Regulation of flows had implications for the emerging water markets.

9.3 Environmental Consideration

Concern for the preservation of riverine ecosystems was becoming an important component of water management in Australia as in other parts of the world (Thompson 1991, p. 155).¹² During the 1980s, community concern for the environment in Australia came to the fore at the same time that water markets were emerging and the links between trade and environment were being explored.

Society was now concerned with environmental allocations as well as promoting an efficient use of the water in extractive enterprises. It was hoped that as the

¹¹Common ownership in this context is ownership by deed. In other words, the same person or pastoral company can transfer quota between their properties.

¹²For example, in Canada, the "most serious water problems are not related to inadequate supply at all, but to degraded water quality and to disrupted flow regimes" (Pearce et al. 1985, p. 48).

process of reform developed, a new social contract for the care and use of water resources had been or would soon be embraced by water authorities in Australia. Milner and Knights (1986), among others, argued that for such an ethic to develop, policy makers needed to recognize allocating water for environmental purposes as important. They argued that unless provisions for the water requirements of the riverine ecosystem were placed in the context of overall water allocation; it would continue to be regarded as a residual use of water.

Any allocation or allowance for the riverine and riparian ecosystem was seen as ineffective without a systematic framework for environmental decision making and a formal recognition of water allocations for environmental use. Unless environmental allocations were recognized, any decision would lack standing and certainty of supply for the riverine ecosystem (DWRV 1986, p. 19). Water managers' approaches to meeting environmental water requirements were a mixture of restrictions by command on trade that affect the flow of rivers and streams and the levels of water tables, as well as direct allocation to the environment by licensing. Each State has developed its own legislation and approached the issue of the environment differently.

9.3.1 Water Legislation for the Environment in Queensland

The Water Act 1989 (Qld) failed to provide explicitly for environmental flows. The role of the DPIWR was to co-ordinate plans for the conservation of the waters of Queensland (Sect. 3.11(g)(ii)), yet how these plans were to be implemented was not clear. In considering an application for a license to extract water, for example, the Commission could inquire into availability and sufficiency of water to supply the requirements of riparian owners, licensees, permittees, the applicant and the water requirements of other government authorities. No direct consideration was given for environmental requirements. Section 4.18 outlined the procedure of inquiry by the Commissioner to grant or refuse an application for a license. Section 4.18(1)(a)(e) made reference to persons specified in Sect. 2.2(a). Section 2.2(a) referred to restrictions on the rights in water vested with the Crown in terms of the rights of other authorities conferred by the Water Act 1989 (Qld) or any other Act. Unless environmental considerations were specific in the procedural implementation of the Act, then environmental requirements could only be met if they happen to coincide with extractive objectives.

9.3.2 Water Legislation for the Environment in New South Wales

The two main pieces of water legislation in New South Wales were the Water Administration Act 1986 (NSW) and the Water Act 1912 (NSW). The Water Administration Act 1986, Sect. 4, established the objectives of the Department of

Water Resources, which were to promote the commercial benefits of development consistent with environmental requirements. The only other specific references to the environment in the Water Administration Act 1986 (NSW) were made in relation to the functions of the Water Administration Ministerial Corporation. Section 4(j) allowed the Corporation to “integrate the management of water resources with the management of other natural resources” and Sect. 12(3)(i) provides for such measures as the Ministerial Corporation thinks fit for environmental protection. The Water Administration Act 1986 (NSW) allowed regulations to be developed to make allocations for environment explicit. For example, the NSW Government had made an annual allocation of 50,000 ML of water from regulated flows for the conservation of wildlife in the Macquarie Marshes.

The Water Act 1912 (NSW) also explicitly allowed for restrictions to be imposed upon licenses to protect environmental flows and associated riverine ecosystems. The Ministerial Corporation also had the right to enter the market and purchase entitlements for any public purpose (Water Act 1912 (NSW), Division 4C, s. 20AL), which could include water for environmental flows. This opened the debate on the role of state and federal agencies as custodians of water for the environment and was arguably the forerunner to the Federal environmental water holder that now exists and can trade water in the Murray Darling basin.

9.3.3 Water Legislation for the Environment in Victoria

Legislation in Victoria led the way in explicitly recognizing the environment as a legitimate user of water resources (which would be a necessary prerequisite for formal environmental water holdings), with direct water allocation being made for the environment under the Water Act 1989 (Vic.). “Environmental problems attributable to rising water tables and consequential salinity are particularly acute across northern Victoria” (IC 1992, p. 171). Division 2 of the Water Act 1989 (Vic.) established the Water Resource Assessment program to monitor the condition of Victoria’s water resource.¹³ The program gave the Minister the power to do anything necessary to conduct monitoring work (Sect. 23(1)). Section 20 of the Act gave guidelines as to matters to be taken into consideration in determining whether a flow is reasonable. The guidelines included matters to determine whether or not the flow is likely to damage any waterway, wetland or aquifer (Sect. 20(i)), and whether or not a development takes account of the likely impact of works and activities,¹⁴ given the availability of data at the time the work is established.

¹³The collection, collation, analysis and publication of water data has been formalized in the *Water Resources Assessment Program* which was established under Division 2 of the Act.

¹⁴“Works and activities” in this context is any development activity related directed to taking water from the river. This could include, for example, the development of pumping systems.

The Water Act 1989 (Vic.) also provided a formal means of protection and enhancement of the environmental qualities of waterways and instream uses.¹⁵ Under this Act water allocations could be made to a number of instream water uses, such as maintenance of aquatic, riparian, floodplain and wetland ecosystems; maintenance of aesthetic, scientific and cultural values; water-based recreation; commercial fishing; water quality and navigation.¹⁶ Water could be allocated to the environment as a bulk entitlement, known as an order granting entitlement, or as an instream license.

The order granting entitlement was a means of quantifying the amount of water, specified in terms of volume or the level of flow past a given point or by reference to a shared flow or capacity storage (Sects. 43(a) and 43(b)). These entitlements could be transferable and are used for the protection of the environment, the conservation policy of the government and the water returning to the discretion of the water authority (Sect. 43(i)).

A license for the instream use of water under Sect. 52 was defined in a similar fashion to order granting entitlements; that is, it was defined in terms of the location and rate or level of flow at specified times (Sect. 52(2)(b)). An application for an instream license was subject to the same assessment as for extractive use licenses, and such inquires as may arise under Sect. 40 (b to m).

All future water resource developments are subject to environmental consideration. When bulk allocation and individual licenses are granted for extractive use, conditions can be attached to the allocation to protect the environment (Sects. 43 and 56 respectively). In considering an application for bulk entitlements and licenses, the Minister must consider the impact of the allocation on the waterways, riverine and riparian environment, as well as water quality.

The Minister also has the discretion to attach any conditions to an entitlement or bulk allocation deemed necessary to protect the waterway environment. The Act allows any water authority, the Minister for conservation and environment and the Minister for planning and urban growth to request the Minister for water resources to declare an environmental or recreational area if the area is owned by a government authority. The Department of Conservation and Environment has guidelines for incorporating environmental water requirements which need to be followed in the planning of a new water project. Sections 46 and 62 of the Act allow the transfer of bulk entitlements and individual licenses between different users, including transfers to and from the environment according to need. Where bulk entitlements already exist, licenses may be issued to ensure a bulk entitlement is maintained at a specific level for a specific purpose.

Under Sects. 36 and 52 of the Water Act 1989 (Vic.), a government authority may apply to the Minister for an instream water entitlement or license. The

¹⁵While other Acts also covered environmental issues, such as the *Environmental Protection Act 1987*, the legislation did not overlap nor cause fragmentation of responsibilities, so that in most cases the water authority needed to only consult one Act.

¹⁶This interpretation was taken from the definition of “instream” in the Act.

Department of Conservation and Environment has taken the role of custodian of water allocations for the environment. Water can be allocated for extractive use as a bulk entitlement or an individual license (Water Act 1989 (Vic.), Sects. 36 and 52). Bulk allocations can take the form of a volume, a level of flow or a share of flow or storage (Sect. 43). Capacity sharing¹⁷ gives management the flexibility to use storage capacity and planning beyond a water year. Surface licenses may be allocated to ensure that, for example, a storage's capacity is managed to maintain the volume and timing of flow required for downstream environmental purposes such as wetland management (Dept. of Conservation and Environment 1990).

Formally defined water allocations for the environment can be established by the issuing of new allocations or the purchase or recoupment of existing allocations. While the legislation exists to allocate water for the environment, no water allocations were made, primarily because there was little unallocated water available for many years. During that time unallocated water became part of the environmental flow by default. Environmental allocations are subject to the same conditions under the Act as any other application for an entitlement. One of the conditions is an assurance that the certainty of tenure of existing licensees is protected. The issuance of a new allocation in most river systems in Victoria at that time would, depending upon its size, seriously reduce the availability of water for existing extractive uses. In fact, for many years no new licenses were issued once the 1989 Act was proclaimed. If an allocation was made to the environment, the existing extractive users would have to be compensated (Sect. 56(1)(a)(x)). Such compensation and protection of existing entitlements may suggest that the above provisions for the environment are little more than good intent.

Alternatives to directly allocating water for the environment include managing the market to produce a flow regime more akin to the needs of the riverine ecosystem. In approving a transfer of a license under Sect. 62(6)(b) the Minister may amend the conditions of the license in accordance with Sect. 56(1), which specifies the conditions of a license when it is originally issued. The means that the Minister could limit trade to those transactions which favor conservation of the riverine ecosystem.

Other alternatives include the purchase of existing extractive allocations for environmental purposes in the market. Such an option would have to be financed. Ryan (1991) suggested imposing a tax upon market transfers, the revenue generated from which could be used to fund the purchase of entitlements. An alternative option is to recoup a proportion of water traded at the time of transfer for environmental flows. Eventually, a federally funded buyback scheme formed the basis of water for environmental use.

¹⁷ *Capacity Sharing* involves property rights to water defined in terms of a share of the capacity of river storages and their inflows rather than their contents (Dudley and Musgrave 1988, p. 649). This form of property right has been introduced in Victoria. Modeling trade of capacity sharing rights is beyond the scope of this study, but is recognized as an area for further research and application of the approach used in this study.

While water entitlements for environmental use were being established and restrictions to trade could be made on the basis of environmental damage, full integration of extractive and instream demand for water in the emerging market environment was yet to be fully realized.

9.3.4 Improvements to State Water Legislation

It would appear that, of the State water legislation considered, the reforms in Victoria provided the clearest direction for the water authority in terms of transferability and the allocation of water for environmental use. Even then, the Water Act 1989 (Vic.) appeared to contain limited reform of intersectoral water transfers. While bulk allocations could be moved between sectors of the economy, there are still potential benefits which could be derived from the retail trade of individual water entitlements between sectors of the economy. Efficiency and social equity are not mentioned explicitly in the legislation governing intersectoral transfers. Section 40 of the Water Act 1989 (Vic.) needs to be modified to give greater power to the water authority to prevent trade which does not promote efficiency or social equity.

The Water Act 1989 (Qld) could be improved by more clearly defining the role of the water authority as a social policy maker. It is evident from Court proceedings that this Act did not give clear guidance on the social role of the water authority. Section 3.11 needs to define what is meant by “the best advantage of the public interest” because this could potentially be interpreted as encompassing social policy or more narrowly as solely hydrological issues. In considering an application for transfer the legislation gives the water authority the broadest brief possible, including as it does any “other matters” the Commissioner considers important. This broad nature could, however be the downfall of the legislation as undefined bounds are vague and open to dispute. Section 10.17(5) could be rewritten to define more precisely the protection of and process for assessing, third party and environmental effects of trade. Furthermore, there appears no rational reason to inhibit intersectoral trade. If the public interests were well defined and protected, Sect. 10.17 could be expanded to include the transfer of water to industrial, urban and environmental uses.

The water acts of all States collectively could be improved by clearly defining the meaning of an “equitable distribution” and a “beneficial distribution” of water, particularly between current and future users. The judiciary in New South Wales has interpreted equity in terms of a utilitarian viewpoint. This may be the view the government wishes to take. If not, it would be advisable to define equity more clearly under the Act. Like the Queensland Act, the Water Act 1912 (NSW) gives the water authority, in this case the Ministerial Corporation, an open slate to consider such matters as it thinks fit. Such a broad brief is, however, likely to lead to dispute, and it may be advisable for the legislation to define more clearly the parameters for consideration. In terms of trade, markets were fragmented throughout the landscape and as a result thin. Coordination of trade across the landscape and associated state boundaries became the responsibility of the federal government.

9.4 National Initiatives

National approaches to the issue of water management in Australia and water trading in particular have focused on the Murray Darling Basin. The Basin spans the east coast of Australia from south east Queensland to its mouth in South Australia, over 1,000 km in length and across five states and territories. Management of the basin has a long history. The first management agreement, the River Murray Water Agreement, was implemented in 1915 and stayed in place until the Murray Darling Basin agreement in 1993 which came into effect under the Murray-Darling Basin Act, 1993.

The Murray Darling Basin agreement set in place the notions of coordination with specific management targets. As with catchments throughout Australia, water management across the catchment evolved from the expansionary phase where water was seen as a limitless resource available for economic development of rural communities, to the mature phase where water was fully (and in some cases over) allocated and environmental decline was becoming evident with blue green algal outbreaks. Realizing the impact of over allocation on both extractive users and the environmental condition of the catchment a number of initiatives were activated which had potential flow on effects on water markets.

9.5 Basin Wide Water Initiatives

Given state jurisdictions and an associated raft of different water extraction entitlements reducing the level of basin wide extraction was difficult without the support of the States. The main body for State, Territory and Federal discussion is the Council of Australian Governments (COAG). COAG consists of the state and territories Premiers and Chief Ministers (similar to U.S. State Governors) and the Prime Minister. The Council of Australian Governments, realizing the extent of over allocation of water in the basin have imposed a number of supply constraints initiatives and developed basin wide water markets.

The Water Act 2007 (Cwlth) changed the nature of water management in the basin. It effectively established the Murray Darling Basin Authority with the power to develop and then enforce a plan for the basin. In terms of water trading, the Act provides for conversion of water entitlements into a single tradable water access right, the establishment of a national water market and an environmental water holder who could trade environmental water entitlements – the building blocks of a national water market.

The Act established the notion of a basin wide market for trading water, subject to hydrological and environmental constraints. The objectives in terms of trading arrangements for the Murray-Darling Basin are to facilitate efficient water markets within the basin, minimize transaction costs, create a suit of tradable water products, recognize the needs of the environment; and protect third party interests (Water Act 2007, S.3(3)).

The Act also provided a platform for the development of an overall basin plan. In 2011 a Murray Darling Basin plan was developed under amendments to the Water Act 2007 (Cwlth), subparagraph 44(2)(c)(ii). The plan focuses specifically on reducing extraction levels to restore environmental flows in the system to sustainable levels, effectively reducing the aggregate levels of extraction to 10,873 GL/year (historic extraction is approximately 26,000 GL per year on average). Reducing aggregate extraction was seen as achievable through sustainable diversion limits. Water trading under the plan allows free trade in surface water and groundwater access entitlements subject to physical or environmental reasons. Such restrictions include channel capacity and transmission losses in the case of surface water or hydraulic connectivity in the case of groundwater. In both cases potential impacts on third parties are explicitly considered. Finally, the impact on the needs of the environment is also explicitly included.

A cornerstone of the plan is to buyback water for environmental use. A new form of market is emerging in which industry (irrigators, rural town and water using industry) are now effectively competing with a federally funded tender market for water supply. Sections of the catchment have specific buyback targets. The impact of these buybacks will be to reduce supply to both the permanent and temporary water markets in the basin. The exact impact will be realized over the coming decade.

The plan establishes and operationalizes a formal environmental water holder. Over time the Commonwealth entered into buy back arrangements with irrigators at the point that “[a]s at 30 April 2013, the Commonwealth environmental water holdings totaled 1,582,826 ML of registered entitlements” (<http://www.environment.gov.au/ewater/about/index.html>). The use of the environmental water is aimed at restoring flow regimes to 1992 levels as defined in the Murray-Darling Basin Plan. The buyback scheme comes in direct competition with the permanent and to some degree the temporary water markets in the basin. Commonwealth environmental water holdings are tradable water rights and managed under the same trading and carryover rules, and charged the same fees, as equivalent entitlements.

The impact of having an environmental water holder in the market is yet to be fully realized. The buyback schemes to acquire water for environmental use has effectively reduced supply to water markets. In the future when water is plentiful it is possible that the environmental water holder will increase supply and conversely become a major buyer in drier period. The impact of a large seasonally dependent trader in the market is likely to make prices more volatile and subject to the requirements of the water holder.

9.6 Conclusion

Water management in Australia has developed from riparian rights to entitlements shares of the available water resource. Water emerged into a mature phase with high and conflicting demands for the available resource and with it changes in water law. Trade in the earlier years was the informal outcome of land transfer. Legislation was

required to break the nexus between land and water and breaking that nexus opened the way for water to be viewed as a chattel which could be traded.

Trade began with poorly defined entitlements and was spatially explicit. Regions developed informal markets of bilateral trade. Over time more formal markets emerged, the most successful being the Goulburn Murray Water exchange. Through an evolution of water laws and government agreements institutional barriers to trade have been removed. The array of state and local water entitlement schemes have been rationalized so that trade can occur in a common currency.

Trade emerged in concert with issues of hydrological uncertainties, the over allocation of available water supplies and a declining riverine environment. The interrelated nature of these issues meant that as various government agencies and legislators grappled with supply and environmental issues, they directly impacted on the evolution of water markets. Placing a cap on aggregate water extraction increased the water demand for water allocations. The rationalization of entitlements in the Murray Darling Basin led to a more tractable and tradable water right which in principle extended the opportunity for water trading throughout the basin.

Finally recognition of environmental needs in legalization ensures to some degree that sustainable take limits conforms to notions of sustainable development. As demand for water continues to increase in a world of climate change and the maturity of water management evolves further, so the legislation underpinning the use of water will also need to evolve.

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