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Andrew K. Dragun

Victor Gleeson

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ANDREW K. DRAGUN* and VICTOR GLEESON**

From Water Law to Transferability in New South Wales***

ABSTRACT

Water management in Australia is at the crossroads. The largest share of the nation's regulated water supply is used in low value irrigation while large new demands in industry and the cities cannot be fulfilled as a consequence of government funding restrictions.

Despite a good deal of discussion and evidence on the merits of water markets, particularly in terms of achieving an efficient reallocation of water from irrigation to higher valued uses, the fact is that institutional developments have been minor.

The principal legislation in New South Wales, together with a series of significant cases, are outlined to illustrate the complexities of the contemporary system of water administration in Australia. The difficulties of institutionalizing an operational water market are then highlighted together with feasible alternatives and impacts to the direct water market.

INTRODUCTION

The Pressure for Markets in Water

A great deal has been written on the advantages of water markets in both Australia and the United States. Much of the discussion—particularly in Australia—has focused on the obstreperousness of the prevailing administrative regulation of water use—and the contrasting great benefits of a market approach to water management, emphasizing transferability.¹ Currently there is much interest in rationalizing the water industry in the

*Senior Lecturer in Law and Economics, Department of Legal Studies, La Trobe University, Bundoora, Victoria, Australia 3083.

**Senior Lecturer in Law, Department of Administrative Studies, Canberra College of Advanced Education, Belconnen, ACT, Australia 2617.

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1. Randall, *Property Entitlements and Pricing Policies for a Maturing Water Economy*, 25 Austl. J. Agric. Econ., February, 1981, at 195; Meyers & Posner, *Market Transfers of Water Rights: Towards an Improved Market in Water Resources*, (National Water Commission), Legal Study No. 4, 1971; MacPherson, *Can Water Be Allocated by Competitive Prices?*, 1955 J. Farm Econ. 875; B. Davidson, *Australia Wet or Dry* (1969); L. Hartman & D. Seastone, *Water Transfers: Economic Efficiency and Alternative Institutions* (1970); J. Hirshleifer, J. De Haven & J. Milliman, *Water Supply: Economics, Technology and Policy* (1960). Trelease, *Water Law and Economic Transfers of Water*, 1961 J. Farm Econ. 1147.

urban sector of Australia. The cities of Perth and Newcastle have introduced wide ranging pricing reforms, with further innovation portended in Sydney, South Australia and Victoria.² However, the largest portion (70 percent), of the nation's regulated water supplies are still to be found in irrigation where active reform does not appear to have permeated.³

It is well established that the large volumes of water committed to irrigation generate little if any financial or social benefit, whereas reform which enabled the transfer of water to urban and industrial users could eliminate significant public subsidies and provide real social benefits, as well as eliminate the widespread environmental problems associated with irrigation.⁴ The ultimate threat is that if the current urban sector water reforms—particularly in the area of pricing—are applied directly to the irrigation sector, then farmers will suffer a good deal of hardship and dislocation.

Recognizing this possibility, much attention has been given to the prospect for achieving efficiency in the Australian water industry through the agency of water markets.⁵ The consequence of this discussion, which has continued for decades, has not been felt at the policy level where only limited transfer arrangements are found in New South Wales (NSW) and South Australia, and then only for irrigation.

With few exceptions,⁶ there has been no concerted analysis of the existing circumstances and conditions of water allocation and management in Australia, particularly in connection with the economic principles of transferability and markets for water. Analysis of the water industry can provide insights into the institutional evolution of this industry, since the existing legislative structure has not been immune from the political maneuvering of a strong and vociferous irrigation lobby over the years. The analysis also provides a springboard for considering reform in the industry.

This paper focuses on the water legislation of NSW—but recognizes the comparability and constraints in the other states.

THE QUESTION OF PROPERTY RIGHTS IN WATER

If there had ever been rights in water that could be considered as analogous to those of ownership of chattels or perhaps real property, this

2. Perth Metropolitan Water Supply and Drainage Board, *Metropolitan Water Board Development Plan 1982-1987* (1982); Broad, *Water Pricing, The Hunter Experience*, in Hunter District Water Board (1984).

3. Australia Department of Resources and Energy, *Water 2000: Agricultural Water Demand and Issues* (Consultants Report No. 5, 1983).

4. Dragoon, Musgrave & Gleeson, *The Economics of Water Use in the Hunter Region* (1986); B. Davidson, *supra* note 1; Randall, *supra* note 1.

5. Randall, *supra* note 1; B. Davidson, *supra* note 1.

6. Davis, *Australian and American Water Allocation Systems Compared*, 9 B. C. Indus. & Com. L. Rev. 647 (1968); S. Clark & I. Renard, *The Law of Allocation of Water for Private Use* (1972).

study would be greatly simplified. The rights to water recognized at common law in Australia, were mainly restricted to those relating to riparians. Ownership of water was not recognized even for the riparian, and instead the common law wrestled with notions that made water available to riparians (and possibly others) without granting title as such. The closest concept to effective ownership of water was to be found in the common law attitude to a landholder's control of groundwater in undefined channels. However, even here the opportunity to use water in a full ownership manner remained only while the groundwater was within the confines of the land in question.

Indeed, at various times the property rights "structure" of water has been described as *res communes* or property held in common; *res nullius* or unowned property; *bonum vacans* and *publici juris*. Blackstone's observation that "water is a moveable wandering thing, and must of necessity continue common by the law of nature,"⁷ although written in the eighteenth century, remains the dominating principle for excluding private ownership of water. Thus, if water is not owned in common, it would be considered to be a resource in vacant possession or without ownership, but never would it be conceived of as privately owned.

Towards the end of the nineteenth century, legislative innovation throughout Australia initiated dramatic changes in the control of water. The debates occurring at this time placed considerable emphasis on the point that the law had never recognized ownership in water, thus responding to the alternative suggestion that control of water should henceforth be vested in the Crown in the form of the respective states.

While private ownership of water has never been an accepted notion in Australia, there was nonetheless a recognition that riparians had certain entitlements of water use which were distinguished from traditional rights—associated with ownership of chattels—by identifying such entitlements as usufructuary rights. Within this expression is concealed the many dilemmas of determining a right to use water in but a passing fashion, with the obligation to allow the water to proceed to other riparians who also shared this right.

The nineteenth century pronouncements of riparian rights accepted that ordinary use (traditional domestic activities) was acceptable, but other extraordinary uses should only be permissible if no sensible diminution of quantity or quality of water arose. If that should occur lower riparians could well have an action against such use if damage could be identified.

The flexibility inherent in such a formula for rights has much to recommend it. It was however, a flexibility that required clarification if the formula was to survive. The decisive issues were to determine what was ordinary use and what constituted a sensible diminution of quantity or

7. W. Blackstone, *Commentaries on the Laws of England* (T. Cooley, 4th ed., 1884).

quality. With ordinary use the consumption of the entire flow could be permitted and hence any tendency to expand the scope of this notion could have a most adverse effect on the theoretical rights of lower riparians. Such an expansion is reflected in the manner in which ordinary use became reasonable use in the American adaptation of the common law, with a dramatic impact on the distribution of rights between riparians. In a similar vein, any generosity by the courts in their perspective of what constituted a sensible diminution of flow had the effect of expanding the scope of extraordinary uses of water. Despite these tensions, industrial development in England led to litigation on quality aspects where quantity issues seemed to provide few difficulties. Thus, in areas where the quantity of water was of importance, there was a need for greater specificity in the law.

Aside from the vagueness in the definition of riparian rights, a major problem from the viewpoint of equitable and/or efficient distribution of water was that, by definition, the rights were restricted to riparians. Water use by riparians was not related to size of land holding nor to length of the river holding, leading to a range of anomalies. Alternatively, non-riparians had no rights at all and while supplies were often negotiated with riparians, any use was associated with a degree of uncertainty due to the ordinary/extraordinary use limitations which could be applied, as well the fact that such a user could not take direct action against any upper riparian whose activities were deleterious to the quantity or quality of water.

At common law, the rules relating to groundwater in undefined channels contrasted significantly with those relating to a riparian. A land holder was permitted unlimited use of groundwater, even to the extent of exhausting it. The only restriction on use was related to interference with quality, where an activity which led to a diminution of groundwater quality under another's land could be the basis of a right of action. Hydrological realities are ignored by these distinctions.

Substantial modification to the common law has been undertaken in Australia as a consequence of the interest in regulating water flow. Legislation and civil law interpretation have placed the use of water in the public domain so that the government of the day, through its relevant agencies and departments, is responsible for and has jurisdiction over the use of water. Subsequently, the rights or entitlements of individuals to use water are specifically determined and controlled according to particular provisions of legislation or certain administrative processes.

That water use was under the jurisdiction and control of government through its public authorities was recognized by Mr Justice Fullagar in the High Court who opined in connection with the Water Act 1912 (NSW) that:

the real object of (the legislation) was to enable the Crown, in a country in which water is a comparatively scarce and important commodity, to exercise full dominion over the water of rivers and lakes and to undertake generally the conservation and distribution of water. For the attainment of that object it was not necessary to destroy anybody's rights, but it was necessary to give the Crown, or to some statutory authority, overriding rights to which private rights must, if need arise, give way.

LEGISLATIVE INITIATIVE

Throughout Australia, the common law rights to water use enjoyed by land holders were subjected to legislative modification which in many ways amounted to the obliteration of individual rights.

For most of Australia, a denial of traditional riparian rights was of little impact since the granting of title to land adjoining watercourses had excluded the actual bank, thus denying a land holder the ripa (bank) from which riparian rights devolved. Even where riparian rights had already arisen, virtually by inadvertence in NSW, the impact of legislation was to modify the common law rights of a riparian by vesting in the Crown general control of water, with limited but quite specifically defined rights granted to riparians. These rights have some approximation to the ordinary use category recognized at common law. Thus, specific entitlements are given to landowners on a stream to use water for domestic and stock purposes and also for very limited irrigation. These entitlements are more specific and tend to be more restricted than those which would be available to a riparian at common law under the category of ordinary use.

THE NSW WATER ACT, 1912

The *Water Act*, 1912 of NSW, has a framework similar to acts in operation elsewhere in Australia—and consideration of this act in detail provides a useful foundation for the analysis of water use in Australia. This act has now been brought into the twentieth century with a plain English rewrite in 1987.

The opening thrust of this act is to place control of water in the hands of the Crown by stating:

The right to the use and flow and to the control of the water in all rivers and lakes which flow through, or past, or are situated within or are adjoining the land of two or more occupiers, and the water contained in or conserved by any works shall, subject only to the instructions hereinafter mentioned, vest and be deemed to have vested in the (Water Resources) Commission for the benefit of the Crown. (section 4A[1]).

The restrictions referred to emerge in relation to the various rights granted by other acts such as those to specified Water Boards and also the sundry rights given to local government bodies.

Section 7 of the act defines the rights that an occupier of land, where the land forms the bank of a river or a lake, has to water in quite specific terms with no need to seek permission from the Commission by the way of a license. As previously mentioned, these rights relate somewhat, albeit in a restrictive fashion, to the rights once recognized at common law for ordinary use by a riparian. The uses are restricted to domestic purposes; the watering of stock; irrigating gardens of less than 2 hectares for private use only; and irrigating land for growing fodder crops for animals kept solely in connection with the use of the dwelling-house, again with the limit being 2 hectares (section 7[1]). A further significant restriction on the common law approach to a riparian's ordinary use, is that the commission can—following issue of appropriate notice—suspend or modify rights to such water use if the commission is satisfied that the water is being wasted or that there is an actual or threatened shortage of water in the river or lake (section 7[2]).

Reference is still frequently made in the act to riparians and riparian uses. The limits placed by section 7 on water use by landholders on the banks of streams, means that the modern equivalent to the common law ordinary use of water permitted to riparians is restricted to specific tasks and may be suspended altogether in some circumstances. The extraordinary use that was permitted at common law to riparians has no equivalent in the Water Act in that such uses are not permitted as of right. Instead the user needs to apply to the Water Resources Commission (sections 10, 12), and/or the Land and Environment Court needs to be satisfied before a license to remove water is granted (section 11). Such licenses are permitted for a limited time and where they expire, a similar process of application and consideration must be followed in order to gain renewal (section 14).

During the currency of a license, it is possible for the commission, after serving due notice, to revoke, suspend or modify the license if excess water has been taken, or if water is being used in an unauthorized fashion or is being wasted (section 17A [1]). Further, the commission has power to suspend or modify a license or reduce the quantity of water that may be taken "if in the opinion of the Commission there are circumstances which render it necessary or expedient" (section 17A [2]). With licenses being subject to such controls by the legislation, they are more appropriately characterized as privileges than rights. Although neither the legislation itself nor recent developments in administrative law would permit licenses to be taken away merely on the whim of an ad-

ministrator, licenses have nothing of the proprietorial permanence of riparian rights at common law.

A major impediment to sensible distribution of surface water under the common law rules was that riparians alone had rights to water. By contrast, it is not a requirement of the act that applicants for licenses be occupants of a stream bank. In fact, the act makes it possible for a person who requires occupation of land in order to construct supply works to apply for an order from the commission permitting the construction and use of such works (section 13A). Disaffected parties to proposed activities of this type have resorted to the Land and Environment Court.

The legislation thus brings about major changes from the common law position. Riparians and non-riparians are placed on a similar footing. Other than the limited use now available to riparian uses under section 7, there are no unimpeachable rights available to anyone. The act requires applicants for licenses to provide details to the Commission on the proposed means of taking water, estimations of quantity of water to be used and the rate at which it is to be taken, along with particulars on how the water is to be used.

In determining when licenses are to be granted, there are no specific criteria applied by the commission. However, there are procedural steps that must be followed by the commission. For example, there is a need to publicize in a specific way that an application for a license has been made. Any person whose interests are affected by an application may lodge an objection with the commission. If an objection is upheld by the commission resulting in a refusal to grant an application for a license, the applicant is enabled the discretion to appeal to the Land and Environmental Court. Where an objector is dissatisfied with the commission's decision to grant a license, or when an applicant is dissatisfied with the conditions set in a license, an inquiry may be held either by the local Land Board or by a stipendiary magistrate. An appeal to the Land and Environment Court may follow this procedure also.

It is noteworthy that if these appeal mechanisms are invoked, there is a lack of specific criteria by which these bodies determine whether a license should or should not be granted, or should be granted subject to limitations. Section 13A, which relates to a person requiring occupation of another's land, contains a provision that the interests of riparian occupiers will not be unreasonably affected by granting the application. While this may relate more to the land than the water use of riparian occupiers, this provision highlights the lack of similar provisions elsewhere and also focuses on whether a license is granted merely to *use* water. Policies adopted by the commission on criteria to be satisfied before licenses are issued are presumably subject to change according to water

availability and perceptions of efficiency and equity. These policies may well be put by the commission to the local land boards, or to the stipendiary magistrate if a hearing is required. The absence of guidelines throws the courts into a creative role, which warrants some examination.

DISPUTED APPLICATIONS

The main provisions of the Water Act, involving the granting of licenses to permit construction of works on streams as well as the removal of water, have remained unamended since the inception of the act in 1912. Procedures for objecting to the granting of licenses, the water use conditions specified in a license, or for a disappointed applicant to appeal against the refusal to grant a license, have remained unaltered although there have been some changes in the bodies responsible for various functions. The judicial body responsible for resolving appeals has been the Supreme Court from time to time, although the Land and Environment Court deals with most appeals.

Various decisions have noted that section 11 of the act—the principal provision relating to licenses to construct works and remove water from streams—does not specify the principles to be applied. In this regard, Mr. Justice Hardie in *Robson v. Water Conservation and Irrigation Commission* *Robson v. Water Conservation & Irrigation Comm'n* said:

there are indications in the Act that the main question for determination is what is necessary or desirable in the public interest; the problem is frequently one of balancing a known advantage or benefit to one riparian holder, or to a group of riparian holders, against an apprehended or possible disadvantage or prejudice to other riparian holders.⁸

In establishing the balance, the rights conferred under section 7 for domestic and stock watering purposes are initially given great weight. Thus, in *Robson v. Water Conservation and Irrigation*, Justice Hardie was concerned that the granting of a license under section 11 did not prejudice the enjoyment of persons downstream from the applicant when those persons (as objectors) had “higher rights under Section 7.” Similarly, in *Bathurst Pastures Protection Board v. Kyalla Investment Co., Ltd.*,⁹ an application to construct two dams was permitted because there seem to be no appreciable prejudice to lower riparians and the proposal would have less impact than use permitted under section 7. Here the proposed use of the water in the dams was for stock watering, domestic purposes, and a small amount of irrigation. Thus, the proposal resulted

8. *Robson v. Water Conservation & Irrigation Comm'n*, 36 N.S.W. L.V.R. 57, 60 (1957).

9. *Bathurst Pastures Protection Bd v. Kyalla Inv. Co.*, 21 N.S.W. L.V.R. 8 (1942).

in water conservation which the court considered should be encouraged.

It has frequently been stated that apportioning the water between competing users is to be done in an equitable fashion. In the absence of any guidelines on what determines an equitable distribution, various approaches have been taken. In *Trustees of the Estate of Late Smith Pollock and Others v. Considine*,¹⁰ there had been changes in water flows over the years through creation of artificial works. An equitable distribution in this case was established to be one based on what the parties had received under natural conditions in past years.

However, to resort to natural conditions in the past would not necessarily resolve matters and could often lead to a begging of the question. In the *Smith Pollock Estate* case, unauthorized activities of the parties in the past had so muddled issues that restoration of natural conditions was attractive as being less value-laden than bringing back some intermediate situation.

In other cases, the matter of an equitable arrangement generally involved placing limits on the use of water during times when it was in short supply. Thus, conditions are often set so that only a limited amount of water is retained. This can be done by setting dam water levels and limiting pumping rates or by ensuring that a minimum flow rate is maintained. This often involved obliging a licensee to maintain a flow that would not result in a downstream user from being completely deprived.

In *Gibraltar Pty. Ltd. v. Fairymead Sugar Co. Ltd.*,¹¹ various suggestions were made on how a licensee should maintain a flow. The conclusion Justice Hardie reached attempted to avoid the wasting water and burdensome monitoring while ensuring a continuous supply of water to downstream users. This involved placing conditions on the license which specified a minimum quantity of water to be maintained, which the Water Resources Commission could order to be released when it was of the view that downstream riparians or the public interest justified it.

Safeguards ensuring a minimum flow are not enough in themselves to guarantee supply to a downstream licensee and the focus turned to whether a proposed use was not reasonable, given the number of other potential users. An argument put forward in the case of *Water Conservation and Irrigation Comm'n v. New South Wales Pastoral Co. Ltd.*,¹² against the use of water for commercial fodder growing, was rejected by Justice Roper. He expressed the view that conservation of fodder for use in times of scarcity is a beneficial activity of the greatest importance in the rural economy of the state. It remained so whether the fodder is conserved for

10. *Trustees of the Estate of Late Smith Pollock v. Considine*, 20 N.S.W. L.V.R. 8 (1941).

11. *Gibraltar Pty. Ltd. v. Fairymead Sugar Co.*, 36 N.S.W. L.V.R. 32 (1957).

12. *Water Conservation & Irrigation Comm'n v. New South Wales Pastoral Co.*, 24 N.S.W. L.V.R. 54 (1945).

use by the grower himself, or for the use of others without. However, Justice Roper stated that it was appropriate to consider whether an applicant for a license would obtain a disproportionately large supply of water, when the available supply and demand upon it are properly considered. Although he thought that this principle had not been established and thus the license should be granted, Justice Roper referred to the commission's role in the following terms:

The Commission, as the guardian of the public interest has the responsibility of ensuring an equitable apportionment of the water available. It is concerned to meet the reasonable requirements of as many people as possible and to adjust the claims upon the available supply as fairly as possible to each of the claimants. Its objection that an applicant would, if his application were granted, get more than his share of the limited supply must be given effect too in my opinion if it is made out, and the opinion of the officers on the matter must be given very great weight.¹³

Reflections on public interest considerations are found in *Braithwaite v. Shoalhaven Shire Council*.¹⁴ In this case, the competing interests arose between the Shire Council, which had applied for a license to construct a dam to supplement the shire's water supply, as against the objectors' interest in having the water remain available for potential use in mining operations which they hoped to re-establish. Justice Hardy concluded that the public interest in safeguarding and securing the shire's water supply was clearly paramount to the speculative public interest in re-establishing a mining operation which had been inactive for over 60 years and which might not materialize.

Much of the argument in Braithwaite's case focused on whether reasonable alternative supply sources of water for the shire existed. Additionally, the growth in demand for water within the shire was weighed against the likelihood of mining operations recommencing. Thus, the Court was not called on to make a decision on the possible "public interest" aspects of supply of water for urban use against a mining use. This issue is largely academic because of the various legislative provisions (in particular section 4A(2)(b) of the Water Act) and the political considerations that place the requirements of bodies responsible for supplying water for urban purposes above those of other users. Nonetheless, it is the only known case where the issue has been litigated and is of interest on this basis.

Public interest considerations are also to be found in *F.W. Hughes Pty.*

13. *Id.*

14. *Braithwaite v. Shoalhaven Shire Council*, 44 N.S.W. L.V.R. 5 (1965).

*Ltd. v. Water Conservation and Irrigation Comm'n.*¹⁵ Whereas most litigation has focused on clearly discernible interest groups opposing an applicant, the principal concern of this case was the potentially deleterious effects on the environment through the applicant's proposal. The commission claimed that the growth of cumbungi in the catchment area could impair the capacity of the creek to carry drainage water. Evidence was given that this could upset future schemes for the use of the water. Mr. Acting Justice Roper (as he then was) regarded circumstances which would arise in the immediate future to be material matters and decided against the applicant. Thus, objections from those with a direct interest at the time were not the sole matters of concern.

Similarly, in a later case, Justice Else-Mitchell in *The Grove (Cootumundra) Pty. Ltd. v. Landgrove Pty. Ltd.*,¹⁶ regarded soil erosion control as a possible aspect of water conservation (an aspect mentioned specifically in section 10(1)(a) of the act) or alternatively as a matter to be taken into account in determining the total public benefit of work. In the *Grove* case, the soil conservation aspect was used as an argument in favor of an application for a license, however the dicta on public benefit (or interest) aspects, seem to pertain to objections to the grant of a license with similar force.

In *Thorpes Ltd. v. Water Conservation and Irrigation Comm'n.*,¹⁷ the public interest matters tend to be focused more specifically on the interests of adjoining land owners. Approval was refused for maintaining levee banks which had been erected to lessen flooding of the applicant's land, because such banks had resulted in greater flooding to adjoining land and had damaged that land through the dumping of soil and stones.

Although the courts have considered the general public interest, no definite guidelines have been specified. Nor has any specificity emerged in assessing the competing interests of immediate users. The view of the Water Resources Commission has been given much weight. As stated in *F.W. Hughes Pty. Ltd. v. Water Conservation and Irrigation Comm'n.*,¹⁸ in the context of disputes, the commission's interests are twofold—a general interest arising through the general right conferred on it by section 4A of the act, and a particular interest arising through the potential impact of a license application on works directly under its control. Section 4A(1), which vests in the commission control of water, states that the commission may take such measures "as may be thought fit" (or as may be prescribed)

15. *F.W. Hughes Pty. Ltd. v. Water Conservtion & Irrigation Comm'n.*, 16 N.S.W. 15 L.V.R. 11 (1937).

16. *The Grove (Cootumundra) Pty. Ltd. v. Landgrove Pty. Ltd.*, 3 N.J.W.R. #333 (1970).

17. *Thorpes Ltd. v. Water Conservation and Irrigation Comm'n.*, 36 N.S.W. L.V.R. 62 (1957).

18. *F.W. Hughes Pty. Ltd. v. Water Conservation and Irrigation Comm'n.*, 16 N.S.W. L.V.R. 11 (1937).

"for the conservation and supply of . . . water . . . and its more equal distribution and beneficial use." As the court stated in the *F.W. Hughes* case, "[i]t may be assumed that in almost all cases the grant of the license is advantageous and so desirable from the applicant's point of view; (the question then being under Section 11) whether it is desirable in the public interest that the rights of the Commission should be cut down." Litigation in this area exemplifies some of the problems that can arise and reflects on some issues of fine tuning, but does little in specifying criteria on what constitutes more equal and beneficial use of water.

APPLICATIONS FOR LICENSES

The cases described above illustrate the lack of specificity of the general provisions of the Water Act on matters relating to the granting of licenses and permits as well as the quantities which may be allocated. Division 4 of the act, which permits the establishment of joint water supply authorities and group licenses controlled by Management Boards, provides a degree of autonomy in distributing water amongst the individual members in such arrangements. Commission approval is nonetheless required for the apportionment of water within the authority or group license and license disputes are heard by either a local land board or a stipendiary magistrate. However, recommendations to the commission on the question of apportionment between members of the Authority can be made independently as specified in Section 20 CA(4)(f)(i).

The provisions of the act which bring some quantitative specificity to the allocations of water are to be found in Division 4B, *Volumetric Water Allocations Schemes*, which were introduced in 1977. Under these provisions an area can be declared to be subject to a volumetric allocation scheme by an order of the Governor published in the Gazette. Following declaration, the commission is charged with the task of preparing a scheme to assess the total quantity of water available for apportionment to license holders, which then determines the maximum quantity that may be taken by the individual license holders. In making this determination, the commission may fix differing quantities of water per hectare according to the type of irrigation that is authorized, or fix maxima for quantities used for other purposes. The commission may subsequently make a proportional reduction in entitlements in periods of water shortage or increase allotments in times of surplus.

Whilst the provisions of the act are not explicit on the areas of jurisdiction, the locations that have been selected for Volumetric Water Allocation Schemes are those where the water is controlled by being downstream from a reservoir. In practice, the commission sets the number of irrigated hectares per person and the volume of water per hectare for

each type of authorized irrigated crop. Such practices lend some objectivity to allocation and on first impression appear to resolve issues of equity between potential water users. However, there is one potential source of tension which arises through the possibility for the granting of new licenses. Under section 20AB, new licenses may be granted to persons who are to draw from a source covered by volumetric allocation, with the amount to be apportioned from the total quantity of water available, in the same manner as the original users within the scheme. These grants will obviously reduce the amount of water available to each original user. Such reductions could be in absolute terms, or could be manipulated as a reduction in the reliability of supply. Thus, the scheme may satisfy the requirements of equity between authorized users, while leaving open the question of how many persons share what is available.

PRIORITIES BETWEEN WATER USERS

The act does not provide a mechanism for assigning priority between new water uses as long as existing uses are not impinged upon. However, provisions do exist under the act for volumetric adjustments of allocation according to certain circumstances (section 20X) and for the priority of specific uses under restrictive conditions (section 22B(4)). This final section specifies that suspensions under restriction are determined in accordance with a fixed priority order.

Thus, suspensions are directed to:

- (a) licenses for uses other than domestic and stock supply;
- (b) rights for irrigation;
- (c) rights for purposes other than irrigation and domestic supply, rights for stock supply and rights held under section 7; and
- (d) rights for domestic supply and rights held under section 7.

While section 22B(4) was specifically designed for circumstances of restriction, its impact has been instrumental as a basis of water allocation priorities. Currently it appears that domestic water supply will receive first priority under the act and that subsequently, industrial users will be given priority ahead of agricultural users.

The general principles of water allocation may be summarized as follows:

- (a) any use of water, even a relatively low priority use, may be sanctioned as long as it does not deleteriously impinge on some existing use of water regardless of priority;
- (b) where several water uses are under consideration which impinge on each other while not affecting other uses, it appears that the higher priority use will be favored; and

(c) under conditions of restriction, the higher priority use will be favored regardless of precedence.

The matter of water rates and charges (sections 137-143), is decidedly vague. While procedures are specified, the act is evasive as far as the actual determination of monetary values.

THE TRANSFER OF WATER LICENSES

Licenses which are determined on the basis of volumetric allocation are reasonably amenable to transfer. The possibility of quantifying rights with precision is far greater under the volumetric allocation scheme than in circumstances where permitted usage is described in more general terms such as land area. Even with volumetric allocation, it is possible under the act for the number of licenses to be increased. In this way, the apportionment to each license holder can be decreased, implying a lack of security for license holders. Policy decisions by the commission to avoid issuing new licenses in the absence of increased water supply can lessen uncertainty in this area, but the tradeoff is the inequity to potential licensees who could use water more beneficially than current licensees. The commission may notify potential users that no further licenses are to be granted for the period of the notice according to section 20Y.

Reliability of supply is a more serious obstacle to the transfer of licenses. With a set storage capacity, which may or may not receive replenishment over a specified time, a choice can be made by the commission as to the amount of water which is to be distributed. The greater the allocation, the lower the probability of actual delivery. If water supply is considered relative to the amount directed to valued uses rather than the volume being washed through the system in stream flow, then high allocations with low levels of reliability will lead to greatest use of available river yield. However, a more modest allocation with greater reliability would be less "efficient" from this viewpoint, but could well lead to avoidance of crop losses.

If water transfers occurred between activities where the impact of low reliability was about the same, then no great impediment arises. If, however, the transfer is to an activity where reliability is of more importance, then some volumetric difficulties will arise. The policy of the commission to prohibit allocations to permanent plantings (where the reliability needs to be high) in most irrigation districts, reflects this state of affairs.

Some informal transfers of water rights within the irrigation sector have occurred over the years, with considerable resistance from the commission. Irrigators wishing to leave the industry could sell their land with the expectation that the original license would be renewed in the name of the purchaser. Failure of such renewal would of course result in de-

capitalization of the irrigated land, causing undue hardship on original irrigators. In practice, water is transferred within the irrigation sector encumbered by land transfers, where a vendor sells licensed land to another landholder and subsequently re-purchases the same land, less the license. Under the volumetric allocation scheme, allocated water could be used on any entitled land so that inter-farm adjustments were possible. Hence, water transfers always required some form of land transfer. However, water supply is not area-specific as long as the land is entitled, and very much more land is entitled to be irrigated than is irrigated from actual licensed allocations.

The feature of such transfers is that the water transaction is contingent on a land transfer and the transferred water being used to irrigate the same area of land or some other entitled irrigation land. Fundamentally, this mechanism did not enable the transfer of water from irrigation to any other water-using activity. Significantly, transfers within any other water use sector or between any other activities are not known and do not appear to be provided for within the act.

In 1983, the commission announced that transfers of a limited and short-term nature would be permitted. The main feature of the "Temporary Water Transfer Scheme" is that direct water transfers between licensed irrigators are enabled without the previous arbitrary use of land transfers. The transfer is only allowable for the given season and the magnitude of the transfer is restricted to the differential between the initial allocation and 100 percent of the allocation. Certain transfer fees and restrictive operational conditions are applied. The general theme of the Temporary Scheme was to provide greater flexibility to water users where "announced allocations" were low (generally less than 30 percent). Consequently, some doubt exists regarding whether the scheme will be continued, particularly where "announced allocations" approach the upper end of the range. Temporary schemes have occurred in subsequent years.

Generally, while the temporary scheme provides some flexibility over a given season, which is defined by the licensed allocation, the volume restrictions and the lack of permanency limit the utility of this proposal. The most significant discrepancy, however, is the restriction of the scheme to irrigation at the expense of other water users. South Australia also has a similar scheme in place for irrigation.

Several other classes of water transfer can be identified in New South Wales. The first occurs in the Joint Water Supply Schemes, as an extension of the land transfer mechanism. In this case, water can only be transferred accompanying the usual process of land transfers. However, the Water Authority is responsible for recording and reporting transfers and does so only periodically to the Water Resources Commission.

The Private Irrigation Districts, constituted under the *Private Irrigation*

Districts Act, 1972, (NSW) are substantially more innovative since permanent water transfers are permissible within the district without any encumbrance of land transfer. The significant contrast of the Private Irrigation Districts is that only one license covers all members of the district, while all general water users are licensed individually by the Water Resources Commission. Subsequently, the interests of individual water users are determined according to the Capital shares of the facilities within the district and it is these shares which form the basis of water transfers.

It is interesting to note that while the Joint Water Authority and the Private Irrigation District provide rational development for water transferability within irrigation, no mechanism exists for the transfer of water from irrigation to other classes of water use.

TOWARDS MARKETS IN WATER

Ad hoc markets have existed in the water industry from time to time, but only within the irrigation sector. With about three quarters of the nation's regulated water being directed to irrigation, it is not surprising that most of the market innovation has been in this area. It has been general practice for irrigators to transfer water through complicated land exchanges, with the forbearance of the state water managing authorities. The legislative structures of Joint Water Authorities and Private Irrigation Districts provide an alternative medium whereby irrigators could transfer water without the encumbrance of land transfers.

The impact of current Australian water law is twofold. First, it is clear that water transfers are possible, and second, it is seen that the water transfers that have occurred have been in the irrigation sector only. This second observation highlights the Australian water reallocation dilemma. While the need is to transfer water from irrigation to the other growth sectors, such as urban, domestic and industrial uses, the only transfers that are permissible are those between irrigators.

At the same time, there appear to be countervailing pressures applied to the principle of water transfer. Keeping in mind that water transfer is possible (as in irrigation), the tradeoff is between the equity of defining private entitlements in existing apportionments of water supply and the public interest in administratively assigning licenses to high priority water users.

It is evident that Australian water allocation policy is at the crossroads with the options being either privatization or administrative control. As Coase has suggested in the setting of minimal transaction costs (as with a water market), the final allocation of the scarce resource (water) will

be the same regardless of the initial pattern of use.¹⁹ However, it is clear that the current argument in Australia concerns the windfalls of the public provision of regulated water, with little attention to transaction costs. At the same time, the current administrative trend, emphasizing reliability and rational prices, will threaten the capital base of irrigation, while the new high value-adding users of water should find themselves paying the full cost of their supply. The end result appears to be that irrigators will be confronted with profound income disparities, while water will be moved from irrigation to high valued domestic and industrial uses, whether by market or by administration.

19. Coase, *The Problem of Social Cost*, 3 J. of L. & Econ. 1 (1960).