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## **8. Enhancing market effectiveness**

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## **Key findings on enhancing market effectiveness**

- Registry systems developed in accordance with Schedule F to the NWI Agreement should be sufficient to support water trade, recognising that the bulk of trade is and likely will continue to be intrastate transfers.
- We would support developments which provide for greater price disclosure to the market, for both permanent and temporary trade, at least as an interim measure while the market continues to develop and mature.
- Efficiency would be enhanced by allowing for the widest possible participation in the market, including of Governments as purchasers of environmental water. The issues here are less about market design and more about the specific governance arrangements for the conduct of Government agencies.
- Jurisdictions should ensure that market design elements are, as much as is feasible, compatible and consistent between States.
- There is a continuum over which consistency is more or less important to trade though some absolutely critical elements of market design (eg, the level of unbundling of water access entitlements and water allocations) remain outstanding and should be addressed as a matter of priority.

## 8.1. Water registry, accounting and metering systems

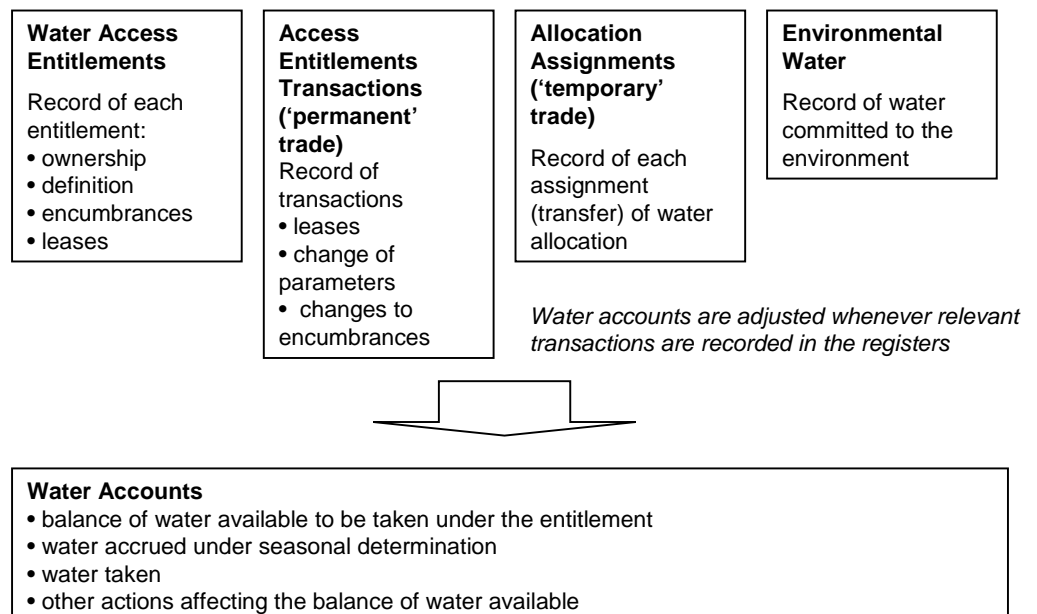
### 8.1.1. Water entitlements registers

An essential feature of any market is the mechanism for recording the transfer of ownership from one party to another. Registry systems need to support market confidence by providing open and transparent information on ownership and property characteristics.

The NWI Agreement imposes clear obligations on parties to have in place “compatible, publicly-accessible, and reliable water registers of all water access entitlements and trades (both permanent and temporary) on a whole of basin or catchment basis,” consistent with principles outlined in Schedule F to the NWI Agreement.

The National Water Commission is currently overseeing a separate project which is further developing this requirement, and which has established a conceptual model for a compatible register system, the elements of each component, and identified where States comply or do not comply. This model is described in the figure below (refer Figure 7).

**Figure 7: Conceptual model for registry systems**



Source: National Water Commission, 2005.

From a market design perspective, the conceptual framework defined by the NWC should be sufficient to support an effective market – it embeds sufficient cross-jurisdictional compatibility in establishing registries and the requirements for a market to operate effectively, recognising particularly that most trading activity will continue to occur intrastate, and that track which does occur across State borders is proposed to be facilitated under a tagged trade model, and hence the entitlement never leaves the register in the State of origin.

The issue is more one of implementation, and particularly each jurisdiction's commitment to the principles in Schedule F to the NWI. Further consideration also should be afforded to:

- including price information on registers;
- addressing terminology inconsistencies between jurisdictions; and
- how entitlements within irrigation districts (particularly where they are not statutorily applied) are reported in registries.

These issues have been acknowledged by the NWC and other stakeholders. The critical requirement is that they are resolved in a compatible fashion across jurisdictions and with regard to the impact on trade.

The NWC Working Group has recommended that registers should cover all entitlements, including those included in private irrigation districts and companies. The working group recommended that the registers should be linked to water accounts and that the registers should be kept in accordance with commercial standards for critical information records.

**Table 10: Current registry status compared to desirable characteristics**

Jurisdiction	Register of water entitlement-content	Register of entitlement transaction - content	Register of water allocation assignment - content	Register coverage	Linkages to water accounts	Manner in which registers are kept
New South Wales	Complies	Complies	Complies	Complies except entitlements within ICs and PIDs not on compatible registers <sup>(a)</sup>	Interim manual linkage in place. Automated linkage planned	Reviewing situation
Victoria	Proposed model will comply	Proposed model will comply	Proposed model may comply	Proposed model will comply	Proposed model will comply	Proposed model will comply
Queensland	Complies	Complies	Complies	Complies	Manual linkage only	Complies
South Australia	Complies	Complies	Not currently applicable as transaction does not exist	Complies, except entitlements within Trusts not on compatible registers <sup>(a)</sup>	Complies – one system	Complies
Tasmania	Complies	Complies	Complies	Complies	Link exists – reliability and timeliness issues	Complies
Australian Capital Territory	Complies	Complies	Not currently applicable	Proposed model will comply	Proposed model will comply	Proposed model will comply
Northern Territory	Complies, except with respect to class, encumbrance	Complies where applicable	Not currently applicable	Complies	Complies – one system	Reviewing situation

(a) Most water in New South Wales and South Australia are held within irrigation areas managed by companies, corporations or trust that may not comply with these registry principles.

Source: NWC Working Group on Compatible Water Registers, 2005.

**Table 11: Current registry information availability**

Jurisdiction	Full access for government agencies	Individual entitlement searches	Available allocation search	Bulk access	Online summaries
New South Wales	Complies	Complies	Not in place	Complies	All in place except movement summaries
Victoria	Proposed model will comply	Proposed model will comply	Not applicable	Proposed model will comply	To be considered
Queensland	Complies	Complies	Not applicable	Partly complies	Complies or under developments
South Australia	Complies	Complies	Complies	Complies	Complies
Tasmania	Complies	Complies	Not applicable	Partly complies	To be considered
Australian Capital Territory	Complies	Complies	Not applicable	Not applicable	To be considered
Northern Territory	Complies	Partly complies	Partly complies	Not applicable	To be considered

Source: NWC Working Group on Compatible Water Registers, 2005.

We support the Working Group's conclusions and consider they are appropriate. Provided all jurisdictions act to comply with the NWI requirements, we see little benefits in having a single, national register of water entitlements.

The Working Group has compared existing registry systems with the recommended arrangements. It identified a number of issues including:

- the lack of information on water access entitlements within private irrigation districts and companies in South Australia and New South Wales;
- deficiencies in terms of the linkages between the registers and water accounts;
- the availability of summary trading information;
- States have indicated a reluctance to include information on the price of trades in public registers, despite this being a requirement of the NWI; and
- privacy concerns with the disclosure of the names and addresses of persons who hold entitlements (Refer Tables 10 & 11).

## 8.1.2. Water accounting systems

A critical aspect of the registries framework is the need to separate out the system for managing ownership and encumbrances on entitlements, from the 'accounting' system used to track the use of and trade in water allocations. We are attracted to the conceptual description of these water accounts as being akin to a 'bank account', recording water used and sold (debits) and water assigned from the primary entitlement and purchased through temporary trade in (credits).

As the vast majority of trade occurs in the temporary market, and this trend likely will continue, the efficiency with which each State's accounting system is able to record trades is probably more important than for entitlements registries. There is no reason why all temporary trades should not be able to be processed in a shorter period of time – say, under three working days, if all required information is provided by the applicant – and water accounts updated within this period.

With a tagged-trade framework, it is interoperability at the water accounting level, rather than for entitlement registries which is most important. Such accounts need to be reconciled regularly, including scope for independent auditing and provision made to provide information to entitlement holders (and others, ie, non-entitlement holders who trade (buy) water temporarily) on the balance of their account.

With regard to the costs of creating and maintaining registers, generally buyers and sellers should pay for systems necessary to complete trades and for providing general market information. Other systems embedded in registers, such as for reporting data to government, for resource management purposes etc, should be funded by government.

The NWC working group has recommended that the settlement process adopted be similar to the land conveyancing process. As part of this process, agency consent for trade is separate from the registration process. Essentially agency approval is given prior to settlement and is conditional upon settlement and registration. The trade is effective on lodgement of registration when changes to water entitlements registers are made.

This process occurs in New South Wales and Queensland (and is proposed to be used in Victoria) for the sale of access entitlements. It differs from the alternative approach whereby agencies consent and are effective immediately or at a date set in the notice and consent – at a date potentially being before settlement is completed. This exposes the seller to the risk that the buyer will not pay and hence may require a broker or agent to participate in the trade to avoid these risks, imposing costs on both parties

We support the former approach and agree with the Working Group that it is likely to:

- better allow risks to be managed;
- be more familiar to financial institutions, solicitors, conveyancers and agents; and
- will work better for interstate permanent trade.

### **8.1.3. Metering of irrigation extractions**

Policies and practices on metering for rural water extraction vary between and within States. Some States have explicit policies on metering of water extractions, others rely more on individual rural water services providers to develop and administer metering systems. There currently is no national standard for irrigation water meters, although a draft standard is understood to be being developed.

In other utility sectors (electricity and gas, and urban water) metering is normally the responsibility of the relevant supply authority, and the primary purpose of the meter is to record consumption data for charging purposes.

Various improvements in metering technologies have been trialed and adopted, and which in some cases have facilitated the development of more sophisticated charging arrangements, or even new 'products'. Shifting hot water power supplies to a separate residential meter, for instance, allowed electric utilities to convert part of their load to an interruptible service, giving them greater flexibility in managing peak load requirements.

The most common form of meter in open channel water distribution systems is the Detheridge meter, which is based on a design that is now around 70 years old. While this metering technology is robust and cost-effective, it is also widely accepted that these meters systematically under-record extractions. This is especially so where channels are operated at (near to) full capacity, and where the meters aren't re-calibrated to account for this.

An analysis undertaken for the National Rivers Consortium estimated that fully one quarter of apparent conveyance losses in the southern MDB – equivalent to around 725 GL of water – was actually under-recording of metered extractions (Marsden Jacob Associates, 2003). This is more than twice the losses from evaporation, and about five times the estimated losses from seepage and leakage. This suggests that actual extractions and use are materially higher than 'nameplate' entitlement volumes indicate. Partly for this reason, irrigators have on occasion been reluctant to support projects aimed at improving meter accuracy.

In different systems meters are read more or less frequently than others. In some areas meters are read only once a year. Other systems provide for more regular meter reading, and some allow for users to self-report a meter reading to the relevant authority (such as on SunWaterOnline, for irrigators in Queensland's regulated supply schemes).

In some areas, such as in South Australia's Central Irrigation Trust Riverland district, there are pilot projects to install real-time remote read metering technology to metered off-takes. These will allow system operators and irrigators to access information on extraction volumes and flow rates virtually instantaneously, to support more efficient system operating strategies and better on-farm irrigation management practices.

Similar trials have been underway for several years in Victoria, particularly in Goulburn-Murray Water's area, associated with the development of 'total channel control' technology. Initial irrigator response to the new meter reading technology was not positive, mainly reflecting the fact that the newer meters ran 'faster' than the older technology.

Although technologically far superior, these options are expensive – implementing remote-read meters in the Riverland is expected to cost nearly \$10 million, part of which is to be funded by the Australian Government.

Accurate and timely information on the volume and flow rate of water extractions is needed to support effective resource management strategies, to provide the entitlement holder with up-to-date information on the amount of water used and to allow them to readjust decisions such as irrigation rates through the year, and to ensure compliance with various regulatory requirements. There is a strong case for improving the reliability and accuracy of metering in the rural water sector – the potential impacts of trade simply reinforce this.

States, Territories and the Australian Government should work with National Standards Commission (or otherwise, such as through the MDBC) to develop and agree national standards on metering for irrigation extractions.

### ***Recommended actions***

Governments should ensure that water registers and water accounting frameworks are compatible across jurisdictions, accepting that this does not require them to be perfectly consistent in all respects.

The National Water Commission's working group has recommended a number of additional actions in relation to entitlement registers including:

- further work to investigate and adopt approaches to maximising the integrity of trade price data, to support price disclosure on registers;
- prepare a comparative table of terminology for entitlements and for transactions which can form the basis for agreement on adoption of common terminology where it is required; and
- establish a working group, to investigate the potential to establish compatible registry systems to handle trade in entitlements within the Irrigation Corporations and Private Irrigation Districts in New South Wales, and the Irrigation Trusts in South Australia. The group should include representatives of these organisations.

We support these recommendations and believe that the establishment of compatible registry systems to handle trade with in private irrigation districts should be the highest priority.

Water allocation accounting systems should be updated frequently (at least every month) to account for use and trade.

These accounts should be reconciled regularly (at least annually), with provision for independent auditing. Account information should be provided regularly (say, quarterly) to entitlement holders.

For the water sector, more comprehensive and accurate metering of extractions should be a priority for each jurisdiction.

Water supply authorities and all State and Territory Governments should ensure that all volumetric water access entitlements, or at least all of those above a minimum threshold volume determined by the relevant resource management agency, should be metered:

- this threshold should be determined having regard to factors such as the costs of installing and administering meters, and the relative environmental 'risk' of that area (ie, the probable extent of any unsustainable overallocation of water access entitlements, and the relative risk of environmental damage from over-extraction).

States, Territories and the Australian Government should work with National Standards Commission (or otherwise, such as through the MDBC) to develop and agree national standards on metering for irrigation extractions.

- These standards should cover meter accuracy, frequency of meter reading and information flows between States (which is necessary to support tagging).

## 8.2. Facilitating the development of innovative product and contract types

A market in water initially was conceived as a means of reallocating scarce water resources amongst alternative, predominantly rural, water using applications and locations. Much of the work to date on water market design has continued to assume, at least implicitly, that transactions will primarily be between irrigators, as water users.

As the market develops further and market participants become more accustomed to the notion of water trade, and as remaining restrictions on market participation are eased, then it is possible that the market may evolve to be quite different than just a means of reallocating water between irrigators. Physically, water may begin to move more between certain regions, including across State and Territory borders. Water may also shift more between certain uses, a trend that perhaps may see a reallocation of water from rural uses towards urban applications.

What may also occur is the evolution of various new products and trading services, built around the 'primary' market in water access entitlements and allocations, but focusing less on the immediate transfer of water between users and more on securing the rights to undertake certain transactions in the future. These sorts of transactions would allow market participants to hedge against movements in certain risky variables – including prices or volumetric reliability – where these risks are important to them and managing them has some value.

The constraints to such markets emerging are less *institutional*, once the market restrictions identified above are removed, and more related to the *demand* for the services they provide.

A feature of existing water markets is that the market operates not so much between suppliers and users or retailers – as does, for instance, the electricity market – but between users directly. Suppliers of bulk water services are generally not exposed greatly to market price risk (albeit they may have some volume-related price risk, such as in New South Wales). For this reason, they may be less likely to be involved in any derivative-type market, of which one of the main benefits is the management of forward price risk.

However, this is not always the case. It is likely that there are further opportunities for non-users to participate in the water market, including new intermediaries such as retailers, who may develop value-added services to end-users. The hydroelectricity generation sector, which may be able to manage water releases more from a portfolio water and electricity generation perspective, may through such a strategy be able to realise value from participating in water markets. To a limited extent, the hydroelectricity industry has already participated in water markets in some areas.

We have not sought to speculate on what types of new products or market participants might emerge over time. As many products as we might consider, there would be many more which probably have not even been thought of as yet, and some which we may currently think have merit but which ultimately the market may judge as valueless.

Currently the Sydney Futures Exchange and State Water in New South Wales are seeking to establish a market around water storage indexes, which are intended to proxy the likelihood of water allocations being available in the future. The success of otherwise of this market should depend on whether *market participants* accept that it offers them a valuable risk management tool (refer Box 5, below).

#### **Box 5: Prerequisites for futures, options and other derivative markets**

Futures markets originally were devised for agricultural and resource commodities, but have developed over time to include a wider range of commodity types – including financial securities, energy products, and other less tangible commodities, such as catastrophe insurance. Futures are contracts to undertake certain activities (such as the delivery of a set quantity of a commodity, at a nominated price) at some defined point in time in the future.

The first futures markets were believed to be in rice futures contracts which were traded in the eighteenth century Japan. Corn and cotton futures contracts were traded in organised markets in New York and Chicago in the United States from the middle of the 1800s.

In Australia, trading in Greasy Wool Futures began in 1960s through a market administered by the predecessor to the current Sydney Futures Exchange (SFE). The SFE took on its current name in 1972, signalling an expansion into a wider range of commodities. Over time these included other agricultural and resource commodities, financial and currency futures, energy products, and futures contracts for equity shares in companies listed on the Australian Stock Exchange. In fact, the SFE and ASX recently announced an intention to merge, in part seeking to realise synergies from the greater integration of futures and equity markets.

Despite the wide variety of commodities for which future contracts may be traded, common to each futures or derivatives market are the following:

- the contract must allow for participants to shift future price risk between themselves;
- this risk needs to be sufficiently large to justify the contract and its transactions costs;
- the underlying commodity market needs to be liquid and robustly competitive, to reduce the likelihood of market manipulation and to assure participants that a transaction at some point in the future will be able to be settled;
- the underlying market must have a level of standardisation and be 'fungible', again to provide certainty as to the nature of the transaction and to its future feasibility.

What would certainly impede the development of these additional markets – which are really just markets in particular types of *contracts* between parties, not in water access entitlements or allocations – is an absence of sufficient certainty as to how each administering jurisdictions will act in the future.

While there are many risks which cannot be directly controlled by any party, such as climate risk, and the performance of markets for agricultural produce, these risks can be assessed and, for a premium, a party may be prepared to take on this risk.

Fundamental changes in matters such as what transactions are permitted within the water market, however, are quite different. A market perception that such fundamentals were subject to revision at some point in the future would significantly curtail the development of derivative product markets.

The key role for Government in providing the environment needed for innovative products to be developed and marketed is to free-up as much as possible the underlying markets in water access entitlements and water allocations:

- regulatory interventions in the water market, through trading restrictions or otherwise, should be transparent and predictable, and clearly targeted towards achieving identified public policy outcomes – perceptions of sovereign risk from Government's changing market rules unexpectedly need to be minimised;
- supporting infrastructures such as water entitlements registries and water accounting frameworks need to be robust, reliable and transparent – poor information flows contribute to market uncertainty, and would limit opportunities for the development of new products;
- all restrictions as to whom may participate in the water market (trading and holding water access entitlements and allocations) should be removed – limiting market participation directly limits the scope for innovative market products to be developed, many of which will probably rely on non-landholders/non-irrigators holding and trading water access entitlements; and
- further consideration should be given to allowing for *conditional* approvals of trade in future years, a factor identified by ACIL Tasman (2003) as important in facilitating the development of new water market products, less focused on the physical exchange of a water product now. ACIL Tasman identified several possible strategies here, including approving future temporary transfers where a comparable permanent transfer would be allowed, and potentially even allowing for future temporary trades in situations where a permanent exchange would not be allowed, but where the maximum or expected level of transfer to occur in the future was below some predetermined threshold.

The market may also develop in ways not previously anticipated because of major shocks, such as step-shifts in certain commodity prices (up or down) or in system performance. Already we are seeing that the market is most active, especially the market in seasonal assignments and temporary trade, in those systems where water is most scarce because of prevailing drought conditions.

Were climate change to further diminish the natural capacity of river systems to support current levels of water extraction and use, exacerbating water scarcity, then the level of market activity may increase substantially from that which is observed at present. Significant changes in the relative profitability of different water-using applications may also create new incentives for water trade, perhaps even reversing some of the 'business as usual' presumptions about the likely direction and magnitude on water reallocation across and within States.

Fundamentally, we do not see that such shifts would give rise to the need to follow a different market design direction to that which we have suggested. The basic design of the market still need to be the same – clarity and security around property rights, transparency and liberalisation of market rules, robust supporting infrastructures like entitlements registers and allocation accounting systems, and opening up of opportunities for wider market participation.

What may change is the relative attractiveness and cost-feasibility of certain elements of market design. Many of the directions we suggest above build on the reforms already undertaken, proposing that States take the next, incremental step in improving the way the market is structured and operates.

In several instances we have cautioned against taking too large a step towards what might be the 'ideal' structure from a conceptual perspective, because we are concerned that the transactions costs of such strategies may not be warranted by the potential gains. Inevitably these judgements involve an element of subjectivity, but in making them we have sought to rely on the existing body of research and analysis being undertaken by State agencies and others, and to present a balance viewpoint on the relative costs and advantages.

Major changes in the pattern, volume and profile of water trade may make some further reforms more important than they seem at present. This may warrant, in the future and for some systems, changes such as further unbundling of water access entitlements, more widespread adoption of market-based approaches to managing scarce delivery capacity, and more sophisticated approaches to dealing with the environmental consequences of water trade changing the spatial and temporal pattern of water extraction and use.

It may also cause a re-examination of the appropriateness of some of the existing systems which support water trade – whereas today a reasonable expectation of the market is that a temporary trade will be able to be processed in a few days, in the future the nature and volume of transactions may require that such approvals be much more rapid.

Such changes will directly affect the mix of products in the water market. Currently, the market consists of various entitlement products, differentiated by reliability, other characteristics (eg, access to carryover) and risk (including policy-induced risks which are largely State-specific, and catchment/system-level risks), and the more homogenous water allocation.

Separating out a delivery capacity entitlement, or some other strategy for future unbundling, both creates a new product (the tradeable delivery entitlement) and changes the nature of an existing one. Trade in an unbundled water access entitlement no longer need be constrained by delivery capacity restriction, making this quite a different product.

### ***Recommended actions***

Innovative product and contract types will evolve as market participants seek to manage risks associated with the water market. Market intermediaries are best placed to facilitate the market in developing such products.

Governments have a broader role to ensure water markets are operating as efficiently as possible by removing restrictions on trade and market participation, including reconsidering the potential for (conditional) approvals of future trades, and contributing to the effective functioning of the market through transparent and predictable regulatory actions and robust supporting infrastructure.

### 8.3. Compatibility between jurisdictions

There are many benefits of having compatible market rules and designs. These include better informed market participants, more efficient and liquid markets, increased competition and better facilitation of trade.

Where systems are shared (eg, in the southern MDB) there would be an obvious advantage in harmonising trading rules. Compatibility in market rules and design within and between jurisdictions would reduce transactions costs, lower uncertainty and generally encourage wider and more active market participation.

Currently, although systems may be interconnected, the rules associated with trade (including associated approval processes) vary between jurisdictions. Such differences have the potential to distort the efficiency with which the market operates by increasing the transaction costs associated with trade.

In some other markets, consistency (or compatibility) has been pursued directly through various means. These include:<sup>12</sup>

- the incorporation of a set of principles in an intergovernmental agreement, but where each State and Territory is individually responsible (though not legally obliged) for implementing and administering legislation in accordance with this agreement;
- the harmonisation of laws and regulations between the States and Territories, which essentially goes one step further than simply agreeing to a set of principles as above. This might extend to having the Australian Government 'accredit' that each State and Territory's legislation is consistent with the agreed principles.

Harmonisation processes tend to need to be periodically revisited, as differences may creep into the State's respective legislative and regulatory frameworks over time;

- enacting uniform legislation in each jurisdiction, such as might be achieved by using an applications of laws approach, as was done for the gas and electricity markets; and
- having the Australian Government itself legislate market arrangements, subject to the Constitution's division of responsibilities between the Australian Government and the States.

Compatibility, however, is not the same as absolute consistency. Rules and trading arrangements need only be *sufficiently* compatible that market participants can operate between and across the different jurisdictions with a minimum of transactions costs.

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<sup>12</sup> Adapted from Phillips Fox and Queensland University of Technology, 2004.

For the water sector there is likely to be a continuum over which rules need to be harmonised, beyond which the gains from further harmonisation might be outweighed by the costs.

At one level the core principles and objectives of water trading must be the same. Efficient outcomes will not result if one jurisdiction commits to free and unfettered trade, yet another imposes substantial trading restrictions and seeks directly to bias market outcomes.

These core objectives need to be agreed up-front to provide clarity to the market as to what the Government, in setting policy on behalf of the community more generally, expects of the market and what it defines as reasonable market behaviours. Agreement to these core principles is important even if there is no physical connection between intra-State markets, as market participants may operate across geographic markets.

To a large extent the process of States and Territories agreeing through the NWI to the core objectives and outcomes sought for the water sector accomplishes this. The NWI, for which all States and Territories are now signatories, presents a comparatively detailed and comprehensive framework on what the parties agree is the basis for an effective and fully-functioning water market within and between States.

Below these core objectives and principles, it is not apparent that outright consistency between jurisdictions is necessary, or indeed even desirable. This is especially so because the interstate market is and likely will remain a comparatively small in proportion to the overall (intra-state/valley) market, and because of the particular geographic complexities of the water sector and the difficulties in establishing a set of consistent rules in each area which deliver on exactly the market outcomes sought.

This is even more so if a 'tagged' framework ultimately is adopted for interstate trade. Tagging overcomes the need to convert entitlements from one register to another, reducing the need for absolute consistency here, though does increase the importance of interoperability between water allocation accounting systems.

Relevant too is the issue of timing. The adjustment costs in securing consistency in the near term may be higher, because it involves the replacement of systems and processes which may have only recently been commissioned, and which may be functioning reasonably well. However, over an investment lifecycle, opportunities to realise further consistency between jurisdictions may be pursued, where the incremental costs are more contained.

Table 12 (below) summarises various elements of water market design, identifying those which must be consistent between jurisdictions, those which should be compatible, and those which desirably would be similar:

- it is clear that, across States, there needs to be a clear and unambiguous commitment to the water market and to the objectives and outcomes that trading is intended to deliver;
- although tagging reduces the need for outright consistency across States, it is still important that a number of elements of market design are made more compatible, especially where differences otherwise would interfere with objective of open and competitively neutral market competition across State borders;
- compatibility is more important where it relates to the principle competitive neutrality. We do not mean here competitive neutrality in the usual context of fair competition between private and public owned businesses competing in the same market, but rather between *jurisdictions* as to the rules and requirements they place on trade; and
- there are fewer arguments for absolute consistency in market design elements which are inherently system specific – such as in the form of a separate delivery entitlement for off-river irrigation district – although to the greatest extent practicable States should strive for standardisation in frameworks, processes, systems and terminology.

**Table 12: Compatibility of market design elements across jurisdictions**

Market Design Element	Comment
<b>Factors which <u>must be consistent</u> between jurisdictions</b>	
<ul style="list-style-type: none"> <li>• Agreement and commitment to a common set of principles and objectives for water trading</li> <li>• Full separation of water access entitlements from water allocations and from water use licences/approvals</li> <li>• Trade in water access entitlements and water allocations restricted only by rules relating to environmental or third party impacts, or the physical ability to transfer water</li> <li>• Removal of restrictions as to whom may participate in the water market</li> <li>• Consistent approaches to management of salinity impacts resulting from water trade</li> <li>• Agreement to a common framework for interstate trade, including agreed and documented procedures for interstate trade in both water access entitlements and allocations</li> <li>• Adoption of a common and consistent framework for the application of exit fees</li> </ul>	<ul style="list-style-type: none"> <li>• These core objectives essentially are reflected in the NWI Agreement</li> <li>• Fundamental to facilitating temporary trade, especially</li> <li>• Rules must comply with Schedule G to the NWI Agreement</li> <li>• Any entity should be able to participate in the market, in any jurisdiction</li> <li>• Necessary to ensure competitive neutrality in trading arrangements</li> <li>• New South Wales, Victoria, South Australia and Queensland should collectively agree on and implement the necessary arrangements for tagged interstate trade in water access entitlements</li> <li>• Necessary to ensure competitive neutrality in trading arrangements</li> </ul>

**Table 12: Compatibility of market design elements across jurisdictions**

Market Design Element	Comment
<b>Factors which should be compatible between jurisdictions</b>	
<ul style="list-style-type: none"> <li>Registry systems to track ownership, encumbrances etc on water access entitlements, with separate accounting systems to record water use and trade in water allocations</li> <li>Timeframes for approval by the relevant jurisdiction of a water access entitlements transfer (including limited term transfers)</li> <li>Timeframes for approval by the relevant jurisdiction of a water allocation trade</li> <li>Provide for the legislative and administrative capability to unbundle delivery rights from water access entitlements/allocations</li> <li>Timeframes and processes for the reconciliation of water allocation accounts, including to recognise interstate transfers of water allocations</li> <li>Compatible fee schedules and other charges</li> <li>Metering standards and meter reading processes</li> <li>Approaches to water supply headworks charging</li> </ul>	<ul style="list-style-type: none"> <li>Necessary to monitor compliance with resource management and resource accounting requirements, as well as to monitor trade and water-use</li> <li>Discrepancies between jurisdictions in the time taken to approve trade are an unnecessary impediment. This should be removed by all States agreeing to a target of, say, no more than 10 working days for approval of all entitlement trades, if complete and correct information is provided by the applicant</li> <li>Approval timeframes should be made broadly consistent, with a target of approval within three working days, if complete and correct information is provided by the applicant</li> <li>Especially relevant in capacity-constrained off-river irrigation areas, and relevant also as a mechanism for removing the impact of exit fees from trade in water access entitlements. Approaches here need only be broadly compatible as delivery capacity rights are inherently system-specific, and hence may be specified quite differently between systems</li> <li>Jurisdictions need to agree on a reasonably compatible process (including frequency, say monthly) for the reconciliation of water allocation account balances, to ensure the timely and accurate recording of inter- and intra-state transfers, and own-use</li> <li>Currently interstate trade requires that applicants pay a fee to both States. Fees should be the same for an interstate transfer as for an <i>intrastate</i> trade. Fees in each State need not be exactly the same, but should be broadly compatible, reflecting the relatively common processes and resourcing requirements for administering trading arrangements</li> <li>Interstate trade (under a tagged trade framework) requires that the State or Origin rely on meter readings from within the State of Destination. Metering standards and meter-reading processes (including the frequency with which meters are read) need then to be broadly compatible across jurisdictions. Arguably this is required also to ensure that water accounting objectives are met across jurisdictions</li> <li>Different States currently adopt different processes for the recovery/pass-through of costs for shared headworks. These charging arrangements should be made more compatible, to ensure that interstate trade outcomes are not biased</li> </ul>

**Table 12: Compatibility of market design elements across jurisdictions**

Market Design Element	Comment
<b>Factors which desirably would be similar between jurisdictions</b>	
<ul style="list-style-type: none"> <li>Water trading documentation</li> </ul>	<ul style="list-style-type: none"> <li>Documentation in each State desirably would be of a similar structure, and require similar information, so as to reduce informational costs to market participants</li> </ul>
<ul style="list-style-type: none"> <li>Terminology used in each jurisdiction would ideally be more consistent</li> </ul>	<ul style="list-style-type: none"> <li>Remaining differences between States in legislative definitions has the potential to create some confusions, though does not appear to be a significant trading impediment</li> </ul>

Differences between entitlement registry systems may have in the past been a barrier to trade, but arguably are becoming less so. Provided all States and Territories adopt and comply with the principles set out in Schedule F *Guidelines for Water Registries* appended to the NWI Agreement, and are guided by the supplementary work being undertaken by the National Water Commission (see further discussion above), we would see little additional advantage, from a market design perspective, in further harmonising entitlement registers. Certainly we would see no strong arguments for having a single, national register of water entitlements.

Administrative processes for interstate trade have improved considerably through initiatives such as the MDBC's pilot trading project, and although the process remains far from seamless it is unlikely that trade is significantly precluded by some of the more time-consuming administrative requirements.

Even so, a preferred market design would include the harmonisation of some of the more 'routine' rules for approving and processing trades, as doing so would be unlikely to impose any great costs on administering jurisdictions but would lubricate the mechanistic aspects of interstate water trade. For example, as far as practicable, aligning or removing the cut-off dates for registering some types of trades in States and Territories would remove one of the often-cited frictions on trade, and at very little cost.

Similarly, a number of administrative processes and requirements have been identified as needing streamlining or amendment:

- several market participants have suggested that the development of a common platform to trade across jurisdictions (to the extent possible, given the different States' requirements) would be beneficial;
- in South Australia there is no separation of the application forms required for technical assessment from the trading application form;
- in South Australia there is a need to re-provide site information for all subsequent trades to and from the same site where the original site information did not cover the full extent of irrigation; and
- the requirement to advertise notice of intention to sell in Victoria (although as noted earlier this is to be removed).

Desirably, the documentation required to process interstate trades (ie, application forms lodged by market participants and inter-governmental documentation), and the timeframes to process and approve these transactions in each jurisdiction, also should be further aligned. As incidental as these processes appear, they do introduce an unnecessary friction into the market.

A further consideration is ensuring that jurisdictional frameworks remain compatible and reasonably consistent over time. Market participants need to be able to make informed market decisions about risk and value, and at a minimum where changes are intended it is important that these are signalled in advance to allow people to adjust.

Most regulatory planning processes in each State and Territory are subject to a formal review (that is legislated for) every five to 10 years. However, many of the processes that govern trade which do not have legislative foundation are not subject to similar review frameworks.

Rules governing trade should be updated as frequently as practicable to reflect the changing nature of water resources and to reflect the demands of market participants.

### ***Recommended actions***

- Jurisdictions should ensure that market design elements are, as much as is feasible, compatible and consistent between States.
- There is a continuum over which consistency is more or less important to trade though some absolutely critical elements of market design (eg, the level of unbundling of water access entitlements and water allocations) remain outstanding and should be addressed as a matter of priority.

## 8.4. Transparency of market data

Markets rely on robust, reliable and symmetrical information. Where information is imperfect, uncertainty and transaction costs will be higher, and opportunities for trade may be foregone.

In the water market, a range of different information may be of benefit to market participants:

- information to assist parties to transactions (conveyancers, financial institutions and buyers) to ascertain the status of entitlements being considered for purchase;
- data regarding physical factors which may impact on the availability and price of water. This includes existing and potential water allocations, storage levels, long-term weather forecasts, agricultural industry outlooks etc. The market requires that this information be regular, timely and available on relevant web sites;
- general market information – this particularly includes information about trading volumes, activity and prices. Relatively aggregated information is useful to resource managers and government, while both aggregate information and information on individual trades is of value to traders;
- basic information about the trading process such as the cost of transactions, likely timeframes for completion, forms that need to be completed, approvals that need to be obtained, trading rules and restrictions etc; and
- market commentary and analysis – similar to the information provided in more highly developed markets such as the stock market, commentary, research, analysis and opinion on the water market will add to participants' knowledge and confidence in the market.

### **Information to ascertain the status of entitlements**

Information regarding the status of entitlements should be available via the entitlement registers. As noted above, the ability to access this information varies between States, though there are processes underway to improve registry frameworks and make them more compatible.

### **Data on physical factors**

Information on allocations and storage levels is generally the responsibility of the relevant water authority. The ease of access and comprehensiveness of this information varies considerably between authorities.

For example, Goulburn-Murray Water in Victoria maintains up to date and easy to locate information on allocation levels. Press releases are provided regarding allocation levels on a regular and predictable basis, and whether the allocation level has changed or not.

## **General market information**

As noted above, the NWC Working Group on Water Registers has recommended that summaries of trading information are available on the internet. However, the Working Group identified that only New South Wales and South Australia (through its WILMA system) currently provide this information.

We understand that Queensland is still developing its system and that Victoria intends to make summary information available on prices and volumes of permanent trade. It will also attempt to do this for temporary trade, but at this stage does not have the legislative power to compel that prices are disclosed for temporary trades.

Other jurisdictions are still considering their position on this matter.

Another source of trading information are the water exchanges. Watermove, for instance, already provides information on prices and volumes of temporary water trades. While Watermove only transacts around one-third of temporary trades in Victoria, the information provided represents a sufficiently large proportion of the market for the trading data to be regarded by market participants as a robust and reliable benchmark.

## **Information about the trading process**

Information about the trading process is typically provided by three entities – the relevant water authority, government departments, and from private sources such as brokers and water exchanges and irrigation district managers.

In the past, studies have shown that a lack of information about the trading process and requirements to trade has created a relatively significant barrier to trade. However, this appears to be a less significant problem now for two reasons:

- more widespread availability and use of the internet, and the availability of more comprehensive information on the relevant web sites; and
- as participation in the market has grown, an increasing proportion of entitlement holders are becoming familiar with the processes involved.

Nevertheless, because the market is continuing to develop, and arrangements for trading (particularly interstate trading) are changing over time, it is important that this information continue to be available.

## Market commentary and analysis

At present there is relatively little market commentary and analysis available, although it is gradually becoming more prevalent. The commentary that is provided tends to come from water brokers and the rural press.

The availability of this information will improve over time and as the market matures and trade becomes more widespread. It is generally not something that policy makers can influence.<sup>13</sup>

Probably the major disadvantage with the current decentralised approach to trading is that price information is sparse and oftentimes unreliable. There is no single point where market participants can go to access trading data. Though in practice information available is available it is not centrally collated and requires knowledge to locate and interpret.

There is some debate about the need for market design to provide for the full transparent disclosure of trading data, and price in particular. The emissions trading regime being developed by the New South Wales and Victorian Governments, for instance, has not yet resolved whether to capture price information on its registry system, nor whether this information would be publicly-accessible were it collected. Some consider that in a bilateral market there is a degree of commercial confidentiality around pricing, and transparency therefore is undesirable.

That information which is available on market performance is mostly provided by the existing exchanges, such as Goulburn-Murray's Watermove or Murray Irrigation's water exchange. The provision of information via these trading systems has provided a benefit to the market, and confidence in the market would likely be damaged were this price transparency lost.

Given the developmental stage of the water market in Australia, and in some areas especially, we would argue for a more transparent approach to the provision of price and other market data.

This should cover both the temporary and permanent markets, and would need to be facilitated by a more ready capacity to interrogate State entitlement registries to extract this data.

Given that temporary trade occurs in a range of disparate market forums, the collation of price information presents more of a challenge. Here we see a further role for State agencies, and possibly also rural water authorities where they are involved in temporary markets.

The objective would be to collate and release information on trading data on a regular basis (say, monthly), which could then be picked up by third parties and added to the relevant market data such as climatic, storage level and product market data.

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<sup>13</sup> Although one of the water exchanges has discussed with us the potential to commission a third party to provide this commentary on an ongoing basis.

The primary motivation here is to further improve participant's awareness of and confidence in the operation of the market. A secondary consideration is to provide for greater external scrutiny of market data, including from State and Australian Government revenue agencies for whom transaction values form the cost base for various stamp duties or for capital gains tax.

### ***Recommended actions***

- Governments should ensure the administrative processes for market participants are simple and expeditious.
  - None of the administrative process issues are of high priority, but States and Territories should investigate their resolution nevertheless;
  - Each State and Territory should also work to develop processes whereby applications (and potentially grant) of consent to trade can be undertaken electronically. It is anticipated this may take some time, with a key area for resolution being identity verification systems; and
  - Separation of consent from registration is medium priority in South Australia, and other States where it does not currently occur (Tasmania, Western Australia, Northern Territory and the Australian Capital Territory).
- Jurisdictions should ensure that adequate, timely and current market information is available to market participants.
  - As noted above, jurisdictions should continue to work on their entitlement registers to make summary market information and information on the status of individual entitlements available to the public;
  - Water authorities should ensure that up to date and relevant information on allocations and storage levels are available on their web sites; and
  - Government agencies and water authorities should continue to ensure that information on trading processes and requirements is available on web sites and that information is rapidly updated to reflect changes in the market.

## 8.5. Market participation by Government

Various Governments have flagged their intention to use the market as a means of acquiring water for environmental flow purposes. Most recently this included the announcement by the Australian Government that it was to seek tenders from irrigators to buy-back water saved from the use of water conservation farming practices, with the environmental water to be secured not later than 2009.

In most States and Territories, water allocated for environmental use as part of the water resource planning process is not tradable. For example, both the *Water Act 2000* (Qld) and the *Water Management Act 2004* (NSW) do not allow for water allocated for environmental uses to be traded. Proposed purchases of water would be in addition to that volume of water allocated for non-consumptive uses under resource management planning processes.

Accordingly, direct Government intervention in the market raises the prospect of the market being influenced by the participation of a very large buyer, who may apply a quite different valuation approach to water than would other market participants.

The efficiency of the market is enhanced by permitting the widest possible level of participation in the market, opening up opportunities to trade from lower (marginal) value occupations to higher ones. If the highest marginal value application for water, at a point in time, is as environmental flows, then using the market to reallocate water towards environmental purposes is desirable.

The issues here are less around market design and more around the governance arrangements and specific 'rules' for the conduct of Government agencies which may seek to purchase water on either/both the temporary or permanent markets for environmental flow purposes. Beyond anything else, governments need have a robust and reliable estimate of what the community's valuation of environmental flows is. In itself this is a complex task.

The processes that will govern environmental purchases have not been formally established in most jurisdictions. The exception is New South Wales and Victoria, where frameworks are being developed to facilitate the State Government's participation in the water market:

- In New South Wales, a Business Plan for the *RiverBank* Program is soon to be finalised that will outline the governance arrangements for the acquisition and management of water for environmental benefit; and
- in Victoria, environmental water will be held by Catchment Management Authorities and may be traded such that any trade is consistent with the relevant Authority's long-term operating strategy and is approved by the Victoria Department of Sustainability and Environment.

What is important also is that any transactions are structured to account for the potential impacts on communities dependant on irrigated agriculture, especially if purchases are targeted at particular locations seeking to both improve environmental flows and to redress localised water-use impacts (eg, water-logging or salinity). Strategies should be developed by governments to manage these potential impacts.

It is likely that a combination of both permanent (water access entitlements) and temporary (water allocation) transactions would be used to secure an increase in environmental flows. Acquiring permanent entitlements allow the environmental trader the opportunity to increase base river flows, or to trade 'surplus' allocation in some (high price) periods, to be used to acquire water on the temporary market at some later time. This introduces the prospect that transactions would need to be repeated periodically, perhaps timed to take advantage of particular market or streamflow characteristics.

From an environmental outcomes perspective there is benefit in ensuring that any environmental flows are procured in a coordinated fashion. A situation of States bidding against each other to secure a target level of flows by an arbitrary deadline is unlikely to be a desirable outcome.

Care needs to be directed to the form of any interjurisdictional coordination. The issue here is the potential trade practices issues concerning coordinated conduct within a market. This conduct must not have the intent or effect of substantially limiting competition in any market. Agreements on matters such as the maximum each State should pay for water, or agreeing to divide the market up in some fashion (eg, one State agreeing not to purchase entitlements from another State's irrigators) would need to be carefully considered.

From a market perspective, all of the normal market rules, clearances and other processes should apply to water access entitlements acquired for environmental purposes.

For instance, if a tagged entitlement regime is in place, then any water entitlements purchase for environmental flows would remain tagged to the State of origin, and the purchaser would be responsible for any ongoing obligations associated with these. This should include ongoing bulk water charges and risks associated with changes to the entitlement as per the relevant and agreed water sharing rules.

If a government intended to permanently 'retire' a water access entitlement from the consumptive pool, then a mechanism would be needed to contribute towards the future infrastructure costs associated with the harvesting, storage and release of this entitlement, notwithstanding that the entitlement would not be used for consumptive purposes.

Generally, purchasers of water (including government) should not be treated differently in the market, nor should the purpose for which the water is used influence the rules applying to a trade. Decisions by government to purchase water for the environment under rules separate to those faced by the rest of the market may be justified from a social policy perspective rather than from an economic efficiency.

### ***Recommended actions***

Appropriate governance frameworks need to be developed to manage government purchases of water, including water procured for environmental purposes.

State and Territory Governments should, in preparation for directly purchasing water in the market, develop frameworks that require:

- governments to clearly define the objective/s for each water purchase and the parameters around them (eg, the communities valuation of environmental outcomes and the resulting price that should be paid in the market);
- decide on the type of product that will address its objective (eg, general reliability or high reliability water in New South Wales to deliver a mix of environmental flows, where to purchase water);
- establish appropriate governance arrangements for participation in the water market; and
- establish a mechanism to coordinate purchases between jurisdictions (as appropriate and with consideration to the *Trade Practices Act*).

These issues should be addressed prior to any large-scale purchases of environmental water.

## 8.6. Minimising transaction costs

It is reasonable for market participants to be charged fees to trade in the market in order to cover the costs incurred by other agencies (water authorities, government) associated with the trade. However, in order to enhance market effectiveness, encourage participation and minimise market distortions, these fees should be as low as possible.

Where interstate trade is possible, fee differentials between jurisdictions should be minimised to ensure that buyers and sellers are not artificially encouraged to favour one jurisdiction, type of trade, or product solely to minimise transactions costs.

Issues associated with setting trading fees include:

- trading fees should not be used purely as a 'revenue raising mechanism' by water authorities and government agencies;
- fees should be consistent between jurisdictions, and consistent also with to the form of trade – fees for interstate transfers should be the same as for intrastate trade, interstate trades should not attract fees from both the State of Origin and Destination;
- there is some benefit in determining a common charge for all trades, regardless of the size or complexity of the trade. This would provide the market with certainty about costs. However, the benefits of a common charge need to be weighed against the merits of:
  - imposing a scale of charges dependant upon the size of the trade, which will ensure that charges do not become an overly high proportion of the value of the trade, thus acting as a barrier to it proceeding, especially for small trades; and
  - more of a 'user pays' system where the more complex or time consuming it is to process the trade, the higher the fee. Although we note here that anecdotal evidence is that larger trades are not necessarily the more complex to assess, and therefore any attempt to vary fees based on the 'complexity' of the trade could not rely on traded volume alone.
- The allocation of costs of establishing and operating registers should be proportionate to the purpose and use of the register.
  - where a key element of the registry system is the provision of information to government agencies and resource managers then these organisations should share the costs of the system proportionately with traders;
  - if it becomes evident that there are additional costs being incurred because of any residual lack of compatibility between State's registry systems, then this cost should be borne by the relevant Governments, not water market participants.

As the market continues to develop, there may be some benefit in keeping fees relatively low in the short to medium term in order to stimulate market participation. This will help the market grow, which in turn will allow the fixed costs associated with trading (such as registers) to be spread over a greater number of participants and hence minimised in the long term.

It is important that traders have clear information regarding the nature and level of charges they will incur if a trade proceeds. Aside from the cost of purchasing entitlements or allocations, the direct costs associated with participating in the water market can include:

- application fees - charges imposed by the water authority or relevant government agency for processing applications to trade. All jurisdictions impose application fees of some sort;
- assessment fees – charges for undertaking an assessment of the water resource implications of the trade. Most jurisdictions charge this fee. In New South Wales the fee depends on the size of the land holding, while the fee in South Australia is a flat \$200 (although it must be paid every time water is transferred to land, regardless of whether a previous site assessment has been undertaken). Only customers in Lower Murray Water's area pay an assessment fee in Victoria;
- stamp duty – fees imposed by the jurisdiction's revenue office or equivalent, which are typically based on the total financial consideration associated with permanent trade. No duty is applied in Victoria and New South Wales only charges a nominal fee of \$10. However fees are significant in South Australia;
- advertising costs – at present in Victoria all sellers of water access entitlements are required to advertise their intention to do so. However this requirement will shortly be removed following the new legislative arrangement;
- search costs – costs incurred by potential buyers or sellers in relation to ascertaining the status of entitlements being purchased. This cost is low – in New South Wales it is currently \$8. No fees apply in Victoria as the register is not yet operating and we understand that fees are yet to be determined; and
- other administrative costs imposed by water authorities or State agencies. For example the Central Irrigation Trust in South Australia charges \$250 to all buyers and sellers.

Aside from the standard water authority charges that an entitlement purchaser may become liable to pay, the other 'indirect' fees associated with trading can include:

- exit fees, which are currently charged by the private irrigation companies in New South Wales, corporations in Queensland, by the Central Irrigation Trust in South Australia, and which are proposed to be charged by most Victorian water authorities from 1 July 2007;

- additional charges which the (typically) buyer may become liable to pay. Most notable amongst these are the once-of salinity charges which are levied on a per ML basis by Victoria in salinity impact zones along the Murray; and
- fees charges by financial institutions related to the establishment and discharge of mortgages.

Also, there is limited consistency between jurisdictions in terms of:

- the steps of the trading process which require a fee;
- the method for levying the fee;
- the terminologies used to describe fees; and
- the quantum of the fees.

The different terminology and lack of explanation of the circumstances under which different fees apply makes it difficult to directly compare charges across different jurisdictions. However, it is apparent that the size of the existing application, assessment, advertising and other administrative fees associated with trading tend to be low compared to the value of the trade, unless very small quantities of water are involved.

While the overall quantum of these charges differs between States, in the southern MDB states the differences are not material and are unlikely to have a distortionary impact on trade. Any small barriers to trade created by these charges are more likely to be due to confusion and uncertainty regarding when charges need to be paid, rather than their size.

However, there appear to be three areas where fees and charges have the potential to limit or distort the market:

- stamp duty – in South Australia the seller of water is obligated to pay stamp duty on a sliding scale which ranges from one per cent to transactions with a value of less than \$12,000, to up to 5.5 per cent for transactions above \$500,000.
- exit fees – exit fees have the potential to distort the market both by discouraging outright trade from certain irrigation districts, and biasing trading incentives where charges are set using different methodologies, planning horizons and other assumptions between schemes.
- salinity charges – while Victoria levies charges on purchasers of entitlements in salinity zones and South Australia and New South Wales do not, this has the potential to distort the interstate trade market in particular. This is not to suggest that the Victorian charges do not have a sound economic basis, rather just to identify the different treatments.

### ***Recommended actions***

To minimise fees associated with trade:

- South Australia should review the need to levy a stamp duty on water trades, to bring its practice into line with other jurisdictions;
- In New South Wales and South Australia, arrangements for salinity charging should be reviewed, in conjunction with Victoria, with the objective of agreeing a competitively neutral approach to salinity management; and
- all jurisdictions should facilitate the development of mechanisms to review exit fees so that these charges are consistent with recommendations earlier in this report.