Freshwater Related Environmental Management Principles and Guidelines

Principles and guidelines distilled from the reports of the High Level Steering Group on Water

An Issues Paper for consideration by ANZECC

Environment Australia

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BACKGROUND

This paper sets out principles and guidelines derived from a number of sources including the following ANZECC/ARMCANZ High Level Steering Group on Water Reports:

- Consistent National Approach for Water Trading (Marsden Jacob Associates)
- Draft Revised Principles for the Provision of Water for Ecosystems (National Working Group on Water for the Environment)
- Managing Groundwater Over-allocation (Sinclair Knight Merz)
- Groundwater Trading (Sinclair Knight Merz)
- Groundwater Quality Protection (Sinclair Knight Merz)
- Draft guidelines for managing Externalities - restoring the balance (CSIRO Land and Water)

In addition, the following two Environment Australia reports commissioned under the National River Health Program were also drawn upon:

- Environmental Water Requirements of Groundwater Dependent Ecosystems (Sinclair Knight Merz)
- Environmental Water Requirements for Wetlands (Murdoch University)

The principles and guidelines outlined in this paper are not a comprehensive re-iteration of those recommended by the above reports, but a sub-set of principles of particular environmental relevance for the following 4 priority areas:

- Water allocation;
- Water trading;
- Groundwater management; and
- Environmental externalities.

The evolving nature of the Natural Resource Management policy context (eg the recent COAG commitment to a National Action Plan for Salinity and Water Quality) provides an opportunity for a re-commitment to the recognition of the environment as a legitimate user of water as agreed within the 1994 COAG Water Reform Framework, and for progression of the debate in areas of evolving priority such as water trading and groundwater management.

The principles identified in this paper should assist jurisdictions in meeting the COAG Water Reform Framework obligations as well as setting the scene for the post-COAG Water Reform Framework agenda.

1. PRINCIPLES FOR WATER ALLOCATION

1. The development of Australia's water resources should be consistent with the objectives of Ecologically Sustainable Development (ESD).

   The core objectives of ESD are:
   - to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations and provides for equity between and within generations; and
   - to protect biological integrity and maintain essential ecological processes and life-support systems.

2. Environmental water provisions should be provided for all surface and groundwater systems to sustain and where necessary restore ecological processes, habitats and biodiversity of water-dependent ecosystems. Precedence in the formal determination of environmental water provisions is be accorded to over-allocated and other priority rivers or groundwater resources.

3. For all river and groundwater systems for which formal determination of environmental water provisions has not yet occurred, water allocations for non-environmental purposes will be made only if natural ecological processes and biodiversity are sustained.

4. Environmental water provisions should be legally recognised, set within a structured review process and responsive to monitoring and improvements in understanding of ecological water requirements.

5. River regulation and/or consumptive use of both surface and groundwater should be recognised as potentially impacting on ecological values.

6. The determination of environmental water requirements should be on the basis of the best scientific information available on the water regimes necessary to sustain the ecological values of water-dependent ecosystems, and with regard for the needs of downstream or other connected water-dependent ecosystems and the ecological significance of the major features of the natural water regime.

7. Where information on environmental water requirements is limited, the precautionary principle should be adopted in setting interim environmental water provisions.

8. The terms and tenure of consumptive water entitlements should balance the desire of water users for a secure property right and the needs of the community for adaptive management of natural resources.

9. All water in the catchment (surface and groundwater) must be considered when making water allocation and management decisions to determine and protect both environmental water provisions and the entitlements of other users.

10. Where environmental water provisions are insufficient or there is significant risk of environmental damage as a result of inadequate water regimes, then extraction

should be capped and action, which may include reallocation, should be taken to improve environmental condition.

11. Significant future irrigation activity or dam construction will only proceed if assessed as ecologically sustainable.

12. All relevant environmental, social and economic stakeholders should be involved in water allocation planning and decision-making.

2. PRINCIPLES FOR WATER TRADING

1. The development of efficient and equitable water trading arrangements should seek to promote economic well being and improve the allocation and management of water subject to providing protection for other water users, the health of rivers, wetlands, ground-water dependent ecosystems and the broader environment, and other third party interests .

2. Water trading should be allowed in all surface and groundwater systems, subject to protection for environmental values and other public benefit interests.

3. Regulation of water trading should ensure that trading does not result in unacceptable impact upon the environment or water quality.

4. All water entitlements, water use and trade should be underpinned by appropriate resource management plans and farm or site use management plans.

5. Only water entitlements that are clearly defined in terms of volume or share may be traded, and water use must be measured and recorded for both buyers and sellers.

6. Core environmental allocations and flows reserved for ecosystem health, water quality and groundwater dependent ecosystems are to be quarantined from water trading.

    6.1. Other discretionary environmental allocations may be traded if consistent with approved management plans or policies.

    6.2. Persons and entities eligible to own and trade water may participate in the water market to promote enhanced environmental outcomes.

7. Water trading zones and groundwater management units should be defined in terms of the ability to transfer the water physically from one area to another, environmental requirements and other public benefit issues.

8. Trade of surface water entitlements should be consistent with river management plans and other relevant resource management plans and policies.

9. Trade of groundwater entitlements should be within aquifers and consistent with groundwater management plans and other relevant resource management plans and policies.

10. Water savings may be traded, recognising however that jurisdictions investing in the generation of water savings may choose to reallocate all or some of those savings to the environment.

11. Exchange rates, a factor applied to trades between localities or jurisdictions to reflect factors such as transmission losses and security of supply, should be applied where water trading will affect the volume, tenure or reliability of the water entitlement or the resource and environmental constraints. Exchange rates also need to take account of resource management plans and policies (such as the MDB Cap).

12. Percentage reductions in entitlement at each trade are not recommended as a method to restore sustainable resource use since they are generally ineffective, limiting trade rather than achieving sustainable water use. The application of reduction factors to volumes traded should only be considered in concert with other strategies and if explicitly tested prior to introduction against relevant criteria including effectiveness.

3. PRINCIPLES FOR GROUNDWATER MANAGEMENT

1. Groundwater should only be allocated to within the limits of defined sustainable yield.

2. Estimates of sustainable yield will incorporate environmental groundwater provisions which sustain and where necessary restore ecological processes, habitats and biodiversity of water-dependent ecosystems.

3. Groundwater management plans, or water resource management plans which incorporate groundwater management, should be prepared for all groundwater management units which are over allocated, approaching over-allocation, or which support significant groundwater dependent ecosystems.

4. In the development of groundwater management plans, strategies should be included to protect groundwater from contamination and maintain its beneficial use (including ecosystem values).

5. Where allocations are at or above the sustainable yield, further allocation is not to be permitted.

6. In over-allocated systems allocations should be reduced to the sustainable yield within as short a timeframe as achievable, as specified in an agreed management plan. The time frame for reduction of allocations to the sustainable yield should be assessed based on consideration of the risk of degradation of the resource,

including the impact on groundwater dependent ecosystems, and the economic and social impacts of the rate of reduction.

7. Groundwater abstraction and consumptive use, surface water regulation and consumptive use, as well as land use practices, should be recognised as potentially impacting on ecological values of groundwater dependent ecosystems. These impacts should be documented in relevant management plans.

8. Provision of environmental groundwater should be on the basis of the best scientific information available on the groundwater regimes, in terms of flux, level, pressure and/or quality, necessary to sustain the ecological values of dependent ecosystems. It must include the identification of key ecological values and processes for groundwater dependent ecosystems. Where relevant, provision of environmental water for groundwater dependent ecosystems should integrate groundwater and surface water requirements.

9. Groundwater quality protection should be pursued through an approach that is based on the beneficial use concept and implemented through an integrated approach utilising a range of measures, including the key measures of:
   a. risk and vulnerability assessment;
   b. land use planning and management;
   c. regulatory measures (eg licensing);
   d. economic and market mechanisms (eg trading); and
   e. education and awareness.

   The approach should also account for managing interactions between water quality and quantity and between surface and groundwater.

10. All extraction bores in Groundwater Management Units, including where relevant Domestic and Stock bores, should be licensed. Regulation and accounting of Domestic and Stock use should be introduced in fully allocated and over-allocated systems where use is significant and needs to be managed. This may include the ability to refuse Domestic and Stock users access to groundwater.

11. Groundwater resource managers should require metering of groundwater extractions within a Groundwater Management Unit where trading occurs.

4. GUIDELINES FOR MANAGING EXTERNALITIES

OBJECTIVE

The objective of these guidelines, in line with the objective of the COAG water resource framework, is to assist jurisdictions to establish resource condition objectives and signalling mechanisms that encourage individuals and corporations whose actions impact on the health and value of Australia's water resources to meet agreed responsibilities, so as to collectively achieve overall resource condition objectives.

DEFINITION

An externality is defined as the impact of changed environmental conditions on people who do not fully participate in the process that caused these conditions to change. This particularly refers in this context to changes in water resource condition or ecosystem health which are not reflected in the costs to the individual or entity causing the change.

GUIDELINES

Step 1 Agree the resource condition objective. Nominating an overall set of resource condition objectives for each water body or region and a pathway indicating how these can be expected to evolve through time is a first step toward the efficient and effective management of externalities.

Step 2 Classify externalities Classifying externalities, in accordance with the above classification system, and identifying the cause or source of them is a second step toward the efficient and effective management of externalities. Water use externalities can be categories as:

- Category 1: Extraction and Storage Externalities – caused by the extraction, harvesting, diversion or storage of water such as irrigation or the generation of hydroelectric power;
- Category 2: Return externalities – caused by the return of (usually) contaminated water and/or wastewater to water bodies, including groundwater, estuaries and oceans; and
- Category 3: Stormwater and Overland Run-off Externalities – caused by land-use practices that change the rate, quantity, quality and timing of flows.

Step 3 Define and assign 'environmental responsibility' Agreeing individual responsibilities in each time period and, where appropriate, providing an indication as to how these responsibilities or standards can be expected to evolve.

Step 4 Signalling mechanisms Nominating the least cost combination of signalling mechanisms to be applied to encourage individuals to meet their responsibilities and thereby to achieve overall resource condition objectives. These include:

- Property rights – property rights for water, wastewater or use of a resource's assimilative capacity create a transferable, tradeable asset of potentially significant value to the holder;
- Charging – an externality component could be incorporated into current pricing structures. The more specific the charge the more likely it is it be acceptable to the community and the more likely it is to change the behaviour causing the externality;
- Grant and fee rebates – Grants and fee rebates can be usefully employed when an individual is charged with, or undertakes voluntarily, work on behalf of the community. Grant and reward systems can be made more cost-effective by allocating the available money via competitive bid or auction process where people tender for the opportunity to supply access to public goods;
- Standards – In practice, the National Water Quality Management Strategy and the National Framework for Drinking Water Quality Management provide a basis from which acceptable water quality objectives can be set. Where water quality

falls below the standards set in these documents, water treatment costs can rise significantly. Enforcement of standards reduces treatment costs.

Step 5 Management principles – Application of the following principles to the use and management of Australia's water resources and associated environments is necessary to ensure the efficient and effective management of externalities.

1. In setting objectives and assigning individual responsibilities and also selecting signalling tools, the net benefits of changing behaviour and achieving the objective should be assessed.
2. As a general rule, resource users should be required to meet the full costs of achieving individual responsibilities.
3. Voluntary or mandatory actions significantly in excess of individual responsibility may be rewarded where and when non-recoverable costs associated with the provision of access to public goods or services are incurred.
4. When agreeing individual responsibility, and where there is scientific uncertainty, the precautionary principle should be observed.
5. Where deemed appropriate and when implementing policy, backsliding from the current level of resource condition should be avoided.

Step 6 Sharing investment to restore the balance Investment, or cost sharing, is a legitimate transitional approach to encourage individuals to achieve their individual responsibilities more speedily and thereby ensure the efficient and effective management of externalities.

Step 7 Implementation framework To set down a plan, the transition pathway for emerging responsibilities so that, in association with other instruments, they deliver water resource objectives in an effective and equitable manner for each resource or region. Plans should be agreed at the highest level in each jurisdiction.

Step 8 Monitor implementation Monitor the implementation of the plans and the achievement of resource condition objectives and thereby ensure the efficient and effective management of externalities.