Submission to the

House of Representative Standing Committee

on Environment and Heritage inquiry

into

Catchment Management

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The Secretary
House of Representative
Standing Committee on Environment and Heritage
Parliament House
Canberra.

30/7/99

Dear Sir/Madame,

Please find *emailed* my submission as requested.

Due to your extremely broad terms of reference I have produced a brief submission supported by various extracts of previously published material on the subject.

All extracts are from published documents with the exception of the "Darling Report" - section 6. I request that this is not published without further my approval and that of the Commonwealth department of Agriculture Fisheries and Forestry who as (DPIE) funded the research project. I have included it because it raises fundamental issues of addressing key catchment issues. As is apparent this version of the document is not yet finished.

I trust that this material is of value to your important inquiry.

For any further information please do not hesitate to contact me.

Jason Alexandra

Summary and conclusions

1. The development of catchment management in Australia has been hesitant and unsystematic. While there has been considerable activity in recent years catchment management ahs failed to live up to its much-acclaimed potential as a means of integrating land and water management. There is much that commends the approach, however, until there are comprehensive reforms to the policy institutional frameworks there is unlikely to much progress. **Australia needs to implement comprehensive and systematic reforms to its land use systems - see section 4 -** *New Zealand's Reform Process - What Can Australia Learn? (adapted from Alexandra 1994*) - **for an example of how NZ has tackle the reform of government to create catchment councils.**

2. The is much potential for integrating SOE reporting at all scales and involving the private sector and all tiers of government with a systematic frameworks - see section 1 an extract from my soon to be published national review of environmental management systems - (RIRDC 1999).

3. An effective catchment based approach could have enormous potential at tackling many pressing environmental issues and play a critical role in meeting the goals articulated in various national and international strategies and policies, but codification of these responsibilities through to local government planning powers is essential - see section 2 and 3 - *"International Obligations On Landuse And Resource Planning Undertaken In Agenda 21".*

It is impossible to have effective catchment management without also addressing questions of resource allocation and property rights, as these are fundamental determinants of how resources will be used and managed. Section 6 addresses these matters and looks to direction for reform. It is an extract from a yet to be published report "Economic and ecological trends in the Darling Catchment" it is made up of two chapters:

- ✓ *Water resources - managing the transition from resource abundance to resource scarcity* and
- ✓ *Redesigning water allocation and property rights systems* (written by Tim Fisher and Jason Alexandra)

Section 1: Extract from my soon to be published review of environmental management systems EMS - RIRDC 1999

Environmental Management Systems For Australian Agriculture - Issues and Opportunities

An independent Review

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As a briefing paper for the Environmental Management Systems in Agriculture - Current issues: Future Directions Workshop Ballina, May 1999

1. The challenge of better environmental management - A duty of care

Australian agricultural systems are diverse, ranging from intensive, hydroponic, horticultural operations - with many parallels to an industrial complex - to semi-wild herding and harvesting, and opportunistic cropping. They are dispersed across a vast continent with highly variable climatic and biological conditions.

In addition to the biophysical variation Australian agricultural industries operate under a variety of regulatory regimes, as result of the "historical accident" of British Colonisation that led to Australia's federal system of Government.

While generalisations are likely to be inaccurate, some can be made with confidence.

1. Agricultural businesses are the dominant users of land and fresh water resources.

2. Agriculture has modified Australian ecosystems more than any other sector.

3. Profound environmental consequences of these modifications are now becoming more obvious. These include high rates of species extinction[1], massive salinity, declining water quality and river health (LWRRDC 1998) and fears for the future of the Great Barrier Reef (Hogarth 1998) to name a few.

Recognition of the economic and environmental consequences of agriculture has lead to increasing calls for self-regulation, applications of "duty of care" and the introduction of codes of practice (Industry Commission 1998).

Increasing numbers of regulatory, consumer, processor and producer groups are also attempting to introduce codes of practice, quality assurance and certification systems to satisfy specific consumer requirements, for market differentiation and for food safety reasons. (For example "Flock-care", cotton BMP , "Farmcare", and the various QA's etc)

Hundreds of million of dollars of taxpayers' funds have been spent pursuing the goal of sustainable land use in the last decade. Copious volumes being written on sustainability of agriculture in the last decade and many agricultural industries are attempting to improve their environmental performance and to satisfy regulators and consumers that their products are produced sustainably.

Applying traditional environmental regulation to agriculture has proven practically and politically difficult. The dispersed nature of agricultural production means that environmental regulations cannot imitate those used to regulate industrial production.

The recent Industry Commission Report "A Full Repairing Lease" (IC 1998) recommended major reforms to environmental legislation through the introduction of a unifying statute - a single piece of legislation that addresses all aspects of environmental, natural resource

[1] Australia has the highest national rate of species extinction in the world. Mammal extinctions are particularly severe in the cropping and pastoral regions.

and planning law. To do this would require major law reform but reforms earlier in the decade in New Zealand offer an important model (Alexandra et al 1994).

The Industry Commission (1998) also recommended adoption of the principles of a "duty of care" for environmental management, and that EMS, voluntary standards and codes of practice should be used to guide environmental management as far as possible.

While the duty of care principle is fine in theory, it has an important limitation. In contrast to injured workers, the environment cannot sue when injured. Therefore, unlike incidents resulting from business operators failing to exercise their OHS duty of care, the environment cannot use legal recourse if injured.

The use of EMS could also be problematic. The great majority of experience in the development and implementation of the environmental auditing and management systems has been in large industrial complexes operated by large businesses, or for complex organisations such as multi-facility corporations or government departments.

There could be significant challenges in applying the systems thus derived to agricultural enterprises, which are often owner-operated. There are, however, several opportunities for overcoming this lack of experience with EMS in agriculture.

These include-

- ✓ working through the first stage processors, retailers or exporters. Many of these are large agribusiness corporations that are familiar with, or see the need to implement some form of EMS or equivalent;

- ✓ building on the experience of those producer groups that have successfully applied codes of conduct through self-regulation or have adopted QA type systems in order to access large markets which specify their use;

- ✓ learning from the organic standards, inspection and certification systems.

1.2 Prepare for change

If the Industry Commission recommendations are acted on, there could be a major overhaul of environmental regulation including those affecting agriculture (Industry Commission 1998). The kind of overhaul proposed may give much greater legislative basis to landuse and regional planning and therefore could rapidly alter the nature of regional and catchment plans and the kinds of processes required to demonstrate that a duty of care has been exercised.

There is also increasing domestic and international pressure for quality assurance systems and certification of sustainable production. These pressures arise from processors and consumer demand; the need to meet goals articulated in regional or industry plans; the need to protect an industries reputation (eg cotton, sugar) and the need by governments to satisfy international obligations. Anticipation and preparation for the eventual introduction of more stringent systems being used in international trade would be a prudent strategy for a commodity-exporting nation (Rowland and Evans 1996). Table x attempts to summarise the likely benefits and motivations o key actors involved in EMS and certification.

Table 1 key actors in an agricultural EMS

"**Actors"**	**Benefits and motivations**	**Responsibilities and powers**	**Risks**
Government - policy and regulatory agencies	Better policy outcomes and achievement of goals. Alternative regulatory and enforcement procedures	A full range of policy instruments	Undue reliance on voluntary measures and self regulation; no guarantees of outcomes
Catchment and regional planners	Implementation pathways; better links to enterprise level	Statutory planning and local regulation	No guarantees of improved outcomes
Certifying, accreditation and auditing providers	Increased demand for services	Certification and auditing of processes; ability to verify claims independently of the enterprise	Multiplicity of schemes; Poor "brand" recognition;
Agricultural producers and processors	Market access; increased demand; Potentially higher prices/profits; Wider recognition of excellence; development of better management skills and systems	Enterprise management	Increased complexity and costs; inability to validate claims; difficultly in measuring outcomes; Consumer confusion; Reputation of uncertified product
Insurance, finance and banking	Reduced risk and potential exposure to risk; reduced potential liabilities	Wide range of commercial powers	???
Science and info agencies	Increased use of information towards BMP and	Ability to measure and valid claims; Ability to provide important info and ability to resolve uncertainty	Increased demands on limited resources;
Consumer, citizens and NGO's	Improved community and environment protection	"Whistle blowing" communication, public opinion	No guarantees of improved outcomes

While the international and regional issues are important, it is also important that any legislative reform or new regulatory system is developed and implemented with industry involvement. Without the involvement and support of those who are directly effected reforms could be rejected as "further attempt to introduce draconian controls on farmers".

Such attempts are unlikely to succeed because in Australia there is a very strong tendency on the part of governments to let agriculture be "market driven". History demonstrates that most Australian States only reluctantly impose environmental controls or land use planning regimes in rural areas. This reluctance persists even when landuse development activities like vegetation clearing are clearly in breach of the spirit of international conventions and numerous national strategies (Alexandra 1995).

The reluctance by the States to regulate rural landuse is contrary to numerous national inquiries recommending the introduction of landuse policies that would regulate agricultural businesses and is in direct contrast to urban landuse which is heavily regulated (Williams and Wallcott 1998). However, it may be that "the markets" will drive or demand "regulation".

The Industry Commission's report on landuse (1998) is a good signal that we should prepare for change. In 1992 they published their report on Water and Waste-Water Disposal (IC 1992) - look at the way water reform has escalated up the agenda since.

1.3. Linking EMS to bio-regional planning

Governments in Australia have opted for cooperative and educational approaches to addressing most rural environmental issues rather than using hard regulation or landuse planning which has a firm legislative basis[2]. We need to ask whether and in what manner the "soft regulation" of the countless local and regional strategies can be connected to enterprise based EMS and how EMS can support regional sustainability strategies.

In Australia in the last decade there has been substantial resources and effort invested in the generation of local and regional environmental strategies (RES) or plans. Catchment management committees, and/or Regional Associations of Councils have often been responsible for preparing these plans (Dore and Woodhill 1999; Alexandra, et al 1998 & ALGA 1997a). Generally, regional strategies attempt to be comprehensive in scope, integrating a wide range of environmental, social and economic factors. Despite the use of cooperative or consultative methodology being used in their development (Dore and Woodhill 1998), the strategies rarely have effective linkages to the commercial and government[3] decision making processes that drive environmental outcomes in a region. (Johnson et al 1999 provides a compelling analysis of this kind of institutional failure in Northern Australia). However, there are some examples of regional initiatives where communities are endeavouring to make these relationships more explicit and are working towards effective regional ESD strategies (Luckie 1998 & Dore and Woodhill 1999).

In those regions, or sectors that have formally adopted environmental plans there is little capacity for businesses to capitalise on any increased responsibility because responsibilities for implementing the plans are usually poorly defined, diffuse and largely voluntary or confined to the public sector[4].

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[2] This in direct contrast to New Zealand where all regional and environmental planning now operates from within a defined statutory framework provided by the New Zealand Natural Resources Management Act (New Zealand Ministry for the Environment 1991 a & b; Alexandra et al 1994)

[3] The links with the sponsoring agency/s - usually an environmental, regional development or natural resources agency - are often very good, but connections to other arms of government are often poor.

[4] There are some very important exceptions to this generalisation that should be the subject of another study. Two that spring to mind are Murray Irrigation's attempts to address salinity and the North Coast NSW Sugar industry's attempts to address acid sulphate drainage. Both benefit from a single corporate entity assuming responsibility and "hard wiring" the environmental responsibility through contracts with their

However, it is conceivable that industry groups within a region could support the implementation of regional environmental plans in a more transparent and accountable fashion by using EMS. Industry would naturally focus on their arenas of responsibility but their results could feed into the achievement of the goals stated in the wider planning framework. Table 5 below, is a theoretical example, based on the process refined and trialed in Northern NSW by Luckie (1998). Alexandra, et al (1998) document 6 recent, regional examples from which this process evolved.

Industries that adopt a regional approach may generate some competitive advantage for their products or services through creating consumer identification with a regional image or brand. This product identification could extend well beyond the quality of the product to the quality of the environment it is produced "sustainably" from. For the image to be more than merely a marketing ploy there would need to be some substance behind any claims. A capacity to monitor progress towards sustainability goals would be vital in providing this capacity to verify the accuracy of the claim.

If enterprise based EMS are nested within regional or industry wide EMS or RES they may be useful for satisfying landuse planning, catchment and environment protection and other regulatory requirements. Murray Irrigation's pollution licensing arrangements with NSW EPA and its supply contracts to irrigators are an example of this.

1.4 A framework for Environmental Reporting

Australia has many national and regional ESD type policies and strategies which address agriculture, the environment and natural resources (eg Commonwealth of Australia, 1983; 1990; 1991a; 1991c; 1992; 1992a; 1996b). The relationship between these policies and their implementation is central to environmental management and reporting - for both accountability and management purposes.

Within any region decision made at a range of scales (from individual to national, local to global) impact on the regional environment. State, national and global policies, agreements and treaties have local or regional manifestations. Specific environmental features (wetlands, forests or World Heritage Areas) or processes (greenhouse gas emissions, conservation) are the subjects of national or international agreements.

Decisions made by state governments in landuse planning or infrastructure - eg to proceed with construction of a freeways or urban expansion - are often major determinants of environmental change in a given region. These decisions are well beyond the influence of farmers.

That local management is influenced and constrained by wider spheres of activity and political responsibilities is clear, yet the linkages between the national and state policies and their regional implementation are not always direct or the relationships clear.

If national or international policies are to be effective they need to be supported by complementary or consistent regional environmental strategies and action plans backed

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members (growers or irrigators). These are the exception rather than the rule as they both have unique structural characteristics that support a collective approach.

with some statutory basis. National strategies such as the *Greenhouse Gas Reduction Strategy* and *The Strategy for the Conservation of Australia's Biodiversity* (Commonwealth of Australia 1996b) should (at least in principle) have national coverage and effectiveness and be backed with competent incentives. Yet how these goals are currently achieved is unclear. Also, due to the Australian Federal system of government, obligations or directions agreed to in national strategies are not always transferred into State legislation or local regulation.

A national framework of environmental responsibility and reporting using the pressure-state- response (PSR) model has been proposed in order to integrate enterprise focused EMS with local, regional and national SoE reporting by Williams and Walcott (1998). They suggest that all spheres of decision making that significantly effect an environment - farmers, local government and ICM committees etc - could usefully apply the pressure-state- response (PSR) indicators at their scale of influence. A modified version of the framework proposed by Williams and Wallcott (1998) is in Table 2.

Their proposed approach is consistent with the findings of a national project investigating the linking of local and regional environmental monitoring and management with SoE reporting (Alexandra, et al 1998). The project found that widespread use of a consistent set of indicators would allow data to be more easily aggregated and compared, and assist in generating useful information for management purposes by both government and the private sector, and for use in national, State and local SoE reports.

Table 2 - a national framework for clarifying environmental management and reporting responsibilities (adapted from Williams and Wallcott 1998)

Scale	**Responsible organisations**	**Key powers**	**EMS/SoE reporting**	**Roles and decisions**	
International and national	C'wealth Ministerial Councils	Trade and Foreign affairs Taxation	SoE Reports to UN etc	International obligations eg. Climate change; bio-diversity convention; tax act. Export control Facilitate national strategies and frameworks eg. COAG water, competition policy	
State	State Governments	Landuse policy, Planning, other legislation Property rights	SoE	Legislation and policy re: ✓ Landuse ✓ Water, ✓ Environment ✓ Pollution control ✓ Chemical use	
Regional	ROC or Catchment committees (ICM, TCM or CMA depending on the State)	consultative	Catchment status reports RES reports	Natural resource management Strategic planning to protect or enhance the environment and the regional economy Planning and integration Community and industry involvement in ESD	

Industry/sector	Peak bodies Industry networks	Peer influence informational	Sector audits BMP Codes etc	R&D directions Revision and uptake of BMP[5] Lobbying, promotion and marketing	
Local	LGA	Statutory planning; rating	Variable - SoE and EMS	Local planning Local agenda 21 LGA EMS Incentives and regulations Provision of service and facilities eg. recycling	
Enterprise or farm	owners	Commercial and property law	EMS Compliance reporting	Farming and commercial responsibilities. EMS Whole farm planning Compliance with legislation, codes or regulations	

[5] For an example of peak bodies playing a key role in promoting awareness and BMP see "Farmcare - cultivating a better future. Code of practice for sustainable fruit and vegetable production in Queensland" Queensland Fruit and Vegetable Growers (1998)

The strength of the framework and nested hierarchy it is attempting to describe is that it recognises that:

- ✓ at all scales there is a need for sound information on the environment;
- ✓ activity at each scale influences the others;
- ✓ the PSR model is useful for informing environmental management at all scales;
- ✓ farmers and others at a local scale are not exclusively responsible for environmental management - it is a collective responsibility;
- ✓ management, policy, regulatory and planning systems operate in a multi-dimensional, multi scale, and interactive set of relationships; and
- ✓ effective management of the environment requires well-defined responsibilities at all scales.

In contrast to neatness of the theoretical framework, in practice many factors impede effective linkages between knowledge, informed observation and appropriate environmental management at all scales. These include:

- ✓ confusion over the locus of responsibility between different levels of government and the private sector;
- ✓ ill-defined targets for environmental management;
- ✓ ill-defined roles and responsibilities between numerous responsible organisations;
- ✓ the plethora of organisations, strategies and plans which overlap and attempt to address interrelated issues;
- ✓ inadequate, patchy, management and monitoring programs, often initiated in reaction to specific environmental problems, and
- ✓ unsystematic approaches to managing, understanding and recording ecological processes.

Williams and Walcott (1998) also argue cogently that it is the role of all spheres of decision-making to be able to identify the impacts of their decisions and develop appropriate actions. They argue that farmers have been lumped with an excessive level of responsibility for sustainable landuse.

Rickson, et al (1998) support the belief that farmers are only one of the decision-makers influencing sustainability. However, they point forcefully to the influential role of agribusiness as the determinant of resource use patterns on farm. They also suggest that the influence of public policy processes is in decline, as a result of globalised business, capital and markets. Importantly for the adoption of EMS it seems feasible that first stage processors and exporters, as well as public policy could drive the adoption of on-farm EMS (see Environmental QA - a cautionary tale in section 2).

The PSR model

EMS and SOE share several common principles, particularly regarding the role that monitoring, review and revision can make towards improved management. State of the environment reporting is recognised as a powerful tool for informing decision-makers about how the environment is changing, the significant of the pressures and the effectiveness of human responses.

Overseas, both the OECD and the United Nations promote SoE reporting within their member countries and, in Australia, all States and Territories (except Victoria) have formal state of the environment reporting systems (Alexandra, et al 1998). Rarely have there been attempts to integrate public and private sector reporting.

Governments' commitments to SOE reporting are based on the principle that better measurement and interpretation of information about the state of the environment helps to improve management responses. In 1996, the Commonwealth government produced a National State of the Environment Report *Australia: State of the Environment 1996* (Commonwealth of Australia 1996). This used the pressure-state-response model, developed by the OECD. The pressure-state-response model, as adapted for state of the environment reporting in Australia, is illustrated in Figure 3 below.

The model relies on the use of indicators - simplified measures that represent key elements of complex systems. They are usually chosen for specific purposes and differ from other measures in providing meaning that extends beyond the attributes directly measured. Indicators are physical, chemical, biological or socioeconomic measures that are used to represent the key elements or processes of complex ecosystems (ALGA 1997a).

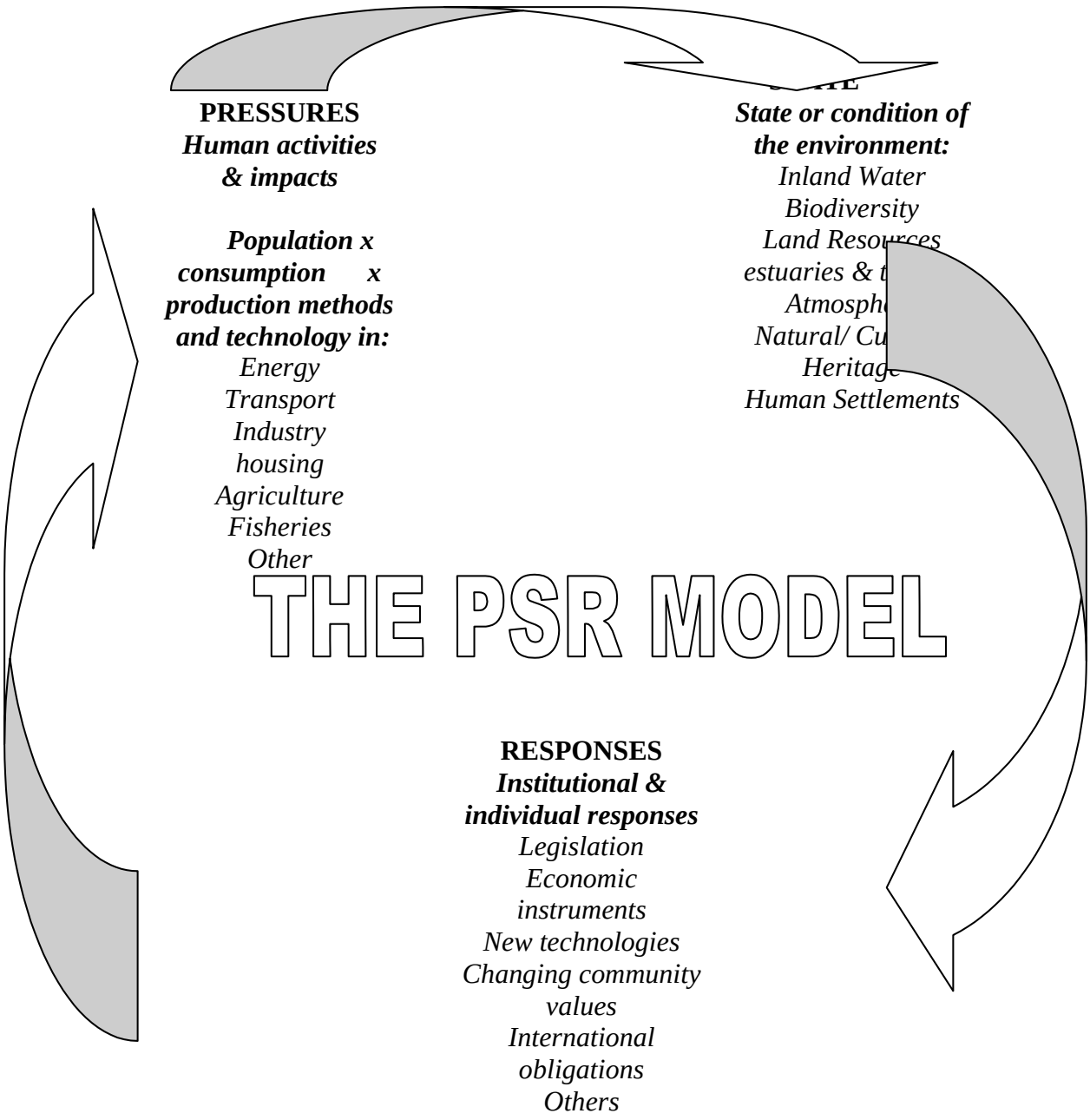
Pressure indicators are selected from among human activities that affect a given environment. Response indicators are selected from human responses. State, or condition indicators, are selected for their ability to register changes in the environment due to the impacts of the pressures and the effectiveness of the responses.

Some important features of the pressure-state-response model are:

- ✓ Pressures are human activities that affect the environment. Natural events such as floods, drought and non-anthropogenic fires are considered aspects of the state of the environment.
- ✓ Responses are defined as actions taken by people in response to perceived environmental problems or potential problems.
- ✓ The model is based on the concept of causality - both pressures and responses affect the condition of the environment. Responses also affect the pressures on the environment.

The pressure-state-response model has acknowledged shortcomings. In particular, the implied cycle of cause and effect is simplistic and sharp distinctions cannot always be made between pressures, states and responses.

FIGURE 1. THE PSR MODEL



A modified PSR model

Most local government, community groups and regional organisations are familiar with strategic planning - based on issue identification, development of objectives and action plans (ALGA 1997b) - but few are familiar with the PSR model and its relevance to implementing environmental strategies.

An adapted PSR model is described below. It is a fictional example but demonstrates how farming businesses within a region may contribute to an integrated regional strategy addressing a priority environmental issue. The table demonstrates this useful

conceptual and reporting framework. The framework has been successfully trialed in several regions, including the Northern Rivers of NSW (Luckie 1998) where it has proven useful for organising the range of pressure, states and responses. The framework offers:

- ✓ integration of strategic planning and the PSR model;
- ✓ a systematic framework for describing issues and priorities whilst tracking the changing pressures, conditions and responses.
- ✓ continual refinement of implementation strategies, and
- ✓ analytic tools and monitoring programs inherent in the PSR model.

Table 3 Water quality examples of the Adaptive Framework Linking SoE and Strategy Development

environmental value or issue	*the cause of the issue, and indicators to monitor* ***pressure***	*the environment* ***condition*** *and indicators to establish trends*	***Objective****s re the issue*	*A reasonable* ***target*** *quantified if possible*	*Actions to meet this target*	*responses used to address the issue, or protect value*
KEY ISSUE OR VALUE	CAUSES OF THE ISSUE	CONDITION AND TREND	OBJECTIVE/ GOAL	TARGET	STRATEGIES or ACTIONS	RESPONSE MONITORING
Declining water quality in Creeks and rivers. [Note ICM or CALP water quality strategy]	1. Stormwater from urban areas - *quality of stormwater* 2. Leaking septic tanks, - *Number of leaking septics.* 3. Intensive agriculture, increased use of NPK fertilisers - *number of cows amounts of NPK used.* 4. Loss of riparian vegetation - *Kilometres of intact stream side buffers.*	Water quality monitoring programs indicate poor conditions throughout the farming areas of catchment x. *Water quality trend down. % time of water quality standards in x number of creeks.*	No further decline in water quality below the 1998 benchmark. Where possible water quality in all creeks to improve. No increase in nutrient exports from farms to rivers.	Restoration of water quality achieved for 90% of monitoring sites by 2005. Reduction in nutrient levels in water in Creeks to below x particularly in drier months.	1.Improve quality of stormwater by retro-fitting older urban stormwater systems. Adopt design code for new ones. Install trash racks, wetlands and sediment traps. 2. Annual septic checks. 3. Ag industry, processors work with NSW Ag on nutrient plan 4. Incentives for riparian restoration,	1. Water sensitive design standards adopted. *1. $ Spent on storm water improvement.* 2. More than 50% of septic inspected annually. 3. Number of farmers using soil tests. 3. Timing of x% of applications in season. x 3. Number of dairy farms recycling nutrient rich water. 4. Total length of streams revegetated.

Section 2:

2.1. Background to the ESD principles

The concept of sustainability has gathered momentum since it originated in the 1980 World Conservation Strategy of the International Union for Conservation of Nature and Natural Resources (ICUN).

The ICUN promulgated sustainability as a strategic approach to the integration of conservation and development consistent with the objectives of:

- ecosystem maintenance;
- the preservation of genetic diversity; and
- sustainable utilisation of resources.

A suite of interrelated principles, such as conservation of biodiversity and the precautionary principle are now internationally accepted as the axiomatic basis of ESD.

Intergenerational equity - the rights of all future generations to equitable treatment - has also been recognised as a core ESD principle. It needs to become a principle guiding all responsible social organisations so that the present generation doesn't deny future generations their rights to a healthy environment.

Sustainability is a value-based concept that requires the moral choice of accepting intergenerational equity as an overriding ethic. Once this ethic is accepted the key questions relate to how to systematically manage information, technology, markets and social organisations to ensure that decision making processes foster sustainability.

ESD gives recognition to the central importance of economic activities which provide for human needs. However, it challenges the value of some activities or developments, because the value of a given activity may be less than the total costs, when the impacts of the activity to the wider physical or cultural environment are taken into account.

Therefore, to access economic activities or development options we must ask in the widest sense, is the growth really making us (humanity) wealthier? Or, in other words "do the total benefits outweigh the total costs?"

To answer this important question detailed and multi-factor assessments are required that can take in historical, cultural and ecological factors. Accurately accounting for a full range of impacts and accessing the qualitative aspects of specific activities or developments becomes central to determining whether they are consistent or contrary to ESD principles.

Accurate assessment becomes increasingly important as growth in the physical dimensions of the economy pushes beyond optimal scales, relative to the biosphere's capacity to sustain that growth. When optimal scales are exceeded the growth actually makes us (humanity) poorer. Growth can cost more than it is worth at the margins.

2.2. International adoption of the ESD principles

ESD principles have received national and international endorsement. ESD is central to Agenda 21 - a global action plan for sustainable development to be implemented over the next decade and beyond.

Agenda 21 was signed by over 150 nations, including Australia, at the United Nations Conference on Environment and Development held in Brazil in 1992. Its 40 chapters represent the most comprehensive international strategy for combating the problems of poverty, development and environmental degradation (UNCED 1992).

Agenda 21 is a commitment, by the majority of the world's national governments, to the development of policies that will protect the environment and promote sustainable use and management of environmental systems and natural resources.

The international agreement is of a general nature, so the real test of Agenda 21 comes in transferring the broad policies to effective action within individual countries. Previous attempts to combat environmental and development problems are littered with well intended national and international plans but few on-ground successes (UNEP 1986).

Integration of economic, natural resources, and environmental policy is the hallmark of Agenda 21. It recognises that social, economic and ecological processes are interrelated. Implementation of Agenda 21 requires deliberate, managed reform processes within the economic, legal and administrative systems within each of the signatory countries.

Chapter 10 of Agenda 21 commits signatory countries to adopt an integrated approach to the planning and management of land and associated natural systems - rivers, biodiversity etc. It recognises that expanding human requirements and economic activities are placing increasing pressures on land resources, creating competition and conflicts, and resulting in sub-optimal use of both land and land resources. It calls for resolution of these conflicts and moves to adopt more effective and integrated landuse policies and planning systems in order to achieve more efficient use of land and natural resources.

Chapter 10 also obliges governments to consider the need for reorganisation and strengthening of current decision-making structures, and reforms to policies, planning and management processes. It recognises that such reforms are likely to be necessary to achieve an integrated approach to the planning and management.

In summary, in relation to planning and land resources, the signatory countries, including Australia, agreed to:

- the development of integrated goal-setting and policy formulation at the national, regional and local levels that takes into account environmental, social demographics and economic issues;

- the development of policies that encourage sustainable landuse and management of the land resources and take into account and the interests of the local population;

- the review of their regulatory frameworks, including laws, regulations and enforcement procedures in order to identify improvements;

- the application of economic instruments and the development of institutional mechanisms and incentives to encourage the best possible land use and sustainable management of land resources.

These are wide ranging commitments that chart a significant course of reform for landuse planning in Australia. If they are comprehensively acted upon they should result in substantial changes to way we do planning and resource management in all spheres of government.

Appendix 3 describes two further chapters of Agenda 21 that deal with the role of business and NGOs. These are relevant to the present study and to land use planning more generally because as the Hornsby dispute demonstrates there are important roles for community organisations (NGOs) and businesses in bringing about the changes that have been committed to by our Government with its signing of Agenda 21.

2.3. Australia's ESD Strategies

The National Strategy for Ecologically Sustainable Development (ESD), was endorsed by heads of Government in 1992 (Commonwealth 1991a). It outlines Australian Governments' (State and Federal) commitments to achieving sustainable development and followed the Commonwealth Government's ratification of Agenda 21 at Rio de Janeiro.

Paralleling the move toward ESD as a national and international policy framework has been the increased acceptance of the concept of local agenda 21, integrated environmental or natural resource management and integrated catchment management. This has sprung from the recognition of the integral nature of natural systems - that changes to one part influence other parts of the system. This is especially obvious in water resources management, where what occurs in one part of a catchment will ultimately effect conditions downstream.

Both Agenda 21 and integrated resource management now have local expressions - many local governments are adopting local Agenda 21 plans and numerous catchment communities are implementing integrated catchment management strategies.

The Hornsby Council has an Agenda 21 Committee and the Hawkesbury Nepean Catchment Management Trust and the Berowra Catchment Management Committee are leading examples of the kinds of catchment based and focused organisations involved in integrated resource management.

2.4 Codifying ESD in the NSW Local Government Act

ESD is now the stated objective or focus of numerous pieces of legislation in various States of Australia.

The NSW *Local Government Amendment (Ecologically Sustainable Development) Act 1997* specifies that Local Government must have regard to 4 key ESD principles when carrying out their responsibilities:

- the precautionary principle;
- intergenerational equity;
- conservation of biodiversity; and
- improved valuation, pricing and incentives- (see box 1 below).

Box 1 below provides a plain English guide to these principles and their implications. These were developed as part of a comprehensive process used to generate the Northern Rivers Regional Strategy (Northern Rivers Regional Strategy Secretariat 1998). This guide to ESD principles and their implications for planning has been adapted from the Northern Rivers Regional Strategy's 1998 publication - *Guiding Principles for a Sustainable Future: Part I – Final Report for Phase One of the Northern Rivers Regional Strategy*.[6].

[6]Northern Rivers Regional Strategy Secretariat. 1998. *Guiding Principles for a Sustainable Future: Part I – Final Report for Phase One of the Northern Rivers Regional Strategy*, NRRS: Northern Rivers Secretariat, NSW.

BOX 1 - ESD in NSW Local Government Legislation

The Local Government Amendment (Ecologically Sustainable Development) Act 1997 specifies that Local Government must have regard to the ESD principles in column 1, when carrying out their responsibilities, including when determining applications for development approval . Column 2 provides an interpretation of the implications of these principles -

1. SUSTAINABILITY PRINCIPLES	*2. IMPLICATIONS*
Precautionary Principle If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (or prevent immediate mitigation action). In the application of the precautionary principle, public and private decisions should be guided by: (i) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and (ii) an assessment of the risk-weighted consequences of various options.	We do not always know what the effect will be of the things we do. Just because we are not sure of the extent of impacts does not mean that we should not put environmental safeguards in place. Policy and planning decisions should err on the side of caution, placing the burden of proof on the proponent to demonstrate that they are ecologically sustainable. If we choose to do things which could damage the environment we must take responsibility for ensuring that impacts are minimised and that the lowest risk options are chosen. There must be a readiness to deal with the impacts in an effective manner. ♦ **We must think before we act and take responsibility for what we do.** ♦ **We must take steps to ensure the prevention of serious or irreparable damage to the environment even in circumstances where we have no firm knowledge that significant damage will be done.**
Inter-generational Equity The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	Everybody is entitled to the benefits that result from a healthy environment which give us important elements of our "quality of life". Equally, future generations should not be prevented from having a high quality of life because of what this generation does. ♦ **Decisions should be made which benefit the whole community.** ♦ **We must ensure that our children's children are at least able to enjoy what we have – socially, economically and environmentally.** ♦ **All people have the right to an environment that supports and improves their health and wellbeing.**
Improved Valuation, Pricing and Incentive Mechanisms Environmental factors should be included in the valuation of assets and services, through applying principles such as: (i) polluter pays - those who generate pollution and waste should bear the cost of containment, avoidance or abatement; (ii) full cost pricing - the users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; (iii) environmental goals, having been established should be pursued in the most cost effective way, by establishing appropriate incentive structures, including market mechanisms.	The social and environmental impacts of goods and services should be paid for separately, and the charges should full costs of providing the good or service. For example, charges for waste services should reflect the real cost of operating the service and the any costs to the environment. While many environmental values are difficult to price in monetary terms, it is important that environmental values are reflected in the prices paid for goods and services. If social and environmental costs were included in the prices of goods and services, the balance of supply and demand would become much more realistic. ♦ **We should identify and acknowledge the real costs of what we do, including the costs of production, use, management and disposal.** ♦ **Our decisions need to recognise the full range of values, even if these cannot always be quantified.** ♦ **The community needs to be made aware of the full costs of developments and activities.**
1. SUSTAINABILITY PRINCIPLES	*2. IMPLICATIONS*

Conservation of Biodiversity and Ecological Integrity Conservation of biodiversity and protection of ecological integrity should be a fundamental consideration. The non-evolutionary loss of species and genetic diversity needs to be halted and the future of evolutionary processes secured.	The natural environment provides society with a wide range of useful goods and services which are fundamental to life and economic activity. It also provides us with a range of intrinsic values which do not directly support human activities (such as genetic and species diversity in natural systems and habitat values). We must protect biodiversity and ecological processes in order to maintain healthy water, soils and air, and to maintain our economy. ♦ **A healthy environment means a healthy economy.** ♦ **Biodiversity and the web of life is worth protecting and conserving in its own right.**

The following ESD principles are in addition to those Local Government Authorities must have regard to when carrying out their responsibilities, as specified by the Local Government Amendment (Ecologically Sustainable Development) Act 1997. However as the analysis in Section 4 demonstrates many of these are closely related to the ones which are specified by the Act. The ESD principles which are not explicitly required by the Act are:

SUSTAINABILITY PRINCIPLES	***IMPLICATIONS***
Global Perspective A global perspective is needed to ensure that Australia does not simply move its environmental problems elsewhere. This requires recognition and consideration of the ecological footprint of our activities and developments. We must share the global responsibility for action on greenhouse gases, ozone depleting substances, biodiversity and habitat protection and pollution reduction.	Some of the effects of what we do are felt outside our own region. For example, the non-renewable fossil fuels we use come from outside our region. Similarly, the air pollution we create by driving cars is dispersed beyond the boundaries of our region. The impacts of many individual developments or activities may not be noticeable on their own, however, the cumulative effects may be quite the opposite. ♦ **We should look beyond our own backyard; think globally, act locally.** ♦ **Our region is not an economic island (or an environmental one).**
Qualitative Development Qualitative development requires an increase in the qualitative dimension of human welfare and not the quantitative growth in resource throughput as a key objective. Conservation of resources needs to be an integral component of the planning and implementation of development and activities. However, investment is needed to replenish and expand the capital base, and the human, technological and natural productive base should not be depleted.	Traditionally, we measure our progress in terms of economic growth, which is simply a measure of how many resources we use. Our wealth as a community also includes quality of life and our cultural diversity. A measure of development which includes quality of life factors will provide a much clearer overall picture of the prosperity and progress of a region. Sustainable economic development is defined as an activity that improves the prosperity within a region, or at least maintains it, without prejudicing the capacity for future generations to enjoy the environment. ♦ **Development means more than just economic growth.** ♦ **Development should enhance our quality of life, (recognising that this means different things to different people) without compromising our environment.** ♦ **Conservation of resources needs to be an integral consideration in the planning and implementation of development and activities.**

SUSTAINABILITY PRINCIPLES	*IMPLICATIONS*
Limits on natural resources use The scale and throughput of material resources needs to be limited by the capacity of the environment to both supply renewable resources and to assimilate wastes. For example, harvesting rates of renewable resources should not exceed their rate of regeneration.	Some resources, such as quarry resources and fossil fuels, are finite. Other "renewable resources", including agricultural, fisheries and forestry systems degrade or become less productive if they are overused or subjected to other negative influences. If we overuse our resources there will be none left for our children's children. ♦ **We should care for our natural and human resources:** **– We must use them efficiently – aim for the optimum sustainable yield and look for alternatives;** **– We must recognise our region's limited resources and its limited ability to assimilate waste.**
Constant Natural Capital and Sustainable Income Our stock of capital – natural environment, technology and knowledge – is required to sustain our lifestyles and activities. The natural capital (eg, biological diversity, healthy environments, fresh water supplies, productive soils) must be maintained or enhanced from one generation to the next. Only that income which can be sustained indefinitely, taking account of the biodiversity conservation principle, should be taken.	Some elements of our natural capital, such as life support systems (eg, biogeochemical cycling) are essential to our survival and cannot be substituted for by man-made capital. Other aspects include the ecosystems of our region (biological wealth) and the amenity or "non-use" values of our natural environment, such as landscapes and climate. Our lifestyle and wellbeing are part of the income we derive from this natural capital. ♦ **Our natural capital is part of our region's greatest assets.** ♦ **Development and activities in our region should not damage or deplete our natural capital.**
Efficiency and Resilience Efficiency of resource use must become a major objective in economic policy. Economic policy needs to focus on developing a resilience to withstand economic or ecological shocks. We should aim to establish a range of inputs and outputs in economic activities. Projects undertaken and processes used in production should be efficient; that is, they yield the greatest output per unit input.	The economy and social environment are complex networks of contact and exchange. Their resilience lies in the diversity of activities and the strength of the links between them. ♦ **Social, economic and ecological diversity and efficiency encourage resilience.** ♦ **Maximising our use of our resources will increase our efficiency – aim for the greatest output per unit input.**
Community Participation Strong community participation will be a vital pre-requisite for effecting a smooth transition to an ecologically sustainable society.	Informed community involvement is vital to ensure that what we do benefits the whole community. We need to develop mechanisms to ensure that we have representative levels of involvement and that participatory planning processes are not dominated by minority interests or professional or political guilds. ♦ **The community has a vital role to play in decision making.** ♦ **Education and access to information are necessary to ensure effective community involvement.**

Section 3: INTERNATIONAL OBLIGATIONS ON LANDUSE AND RESOURCE PLANNING UNDERTAKEN IN AGENDA 21

Agenda 21 is global action plan for sustainable development to be implemented over the next decade and beyond. It was signed by over 150 nations, including Australia at the United Nations Conference on Environment and Development held in Brazil in 1992. Its 40 chapters represent the most comprehensive international strategy to date for combating the problems of poverty, development and environmental degradation.

The international community has made a commitment to the development of policies that will protect the environment and promote sustainable use and management of land and water resources. Many aspects and numerous individual chapters of Agenda 21 are relevant to the management of land and water resources. The following summaries give an indication of those relevant to improving landuse planning, and catchment management in Australia.

Chapter 27: Strengthening the Role of Non-Governmental Organisations: partners for sustainable development

This chapter emphasises the key role that non-governmental organisations (NGOs) should play in the implementation and review of environmentally sound and socially responsible development. Signatory nations have agreed to improve the formal arrangements for the participation of NGOs at all levels of decision-making from policy formulation to implementation. Specific activities towards this end include:

- increasing financial assistance to NGOs to enable them to augment their role as social partners;
- providing NGOs with access to accurate and timely information to improve the effectiveness of their programs to promote sustainable development.

Chapter 30: Strengthening the Role of Business and Industry

This chapter argues that business and industry, have a major responsibility to promote sustainable development and to reduce impacts on resource use and the environment by recognising environmental management as one of the highest corporate priorities. Signatory nations agreed to use regulatory measures, economic incentives and legislation to promote cleaner production and responsible business.

With respect to promoting cleaner production, signatory nations have an obligation to encourage business and industry:

- to report annually on their environmental records, as well as on their use of energy and natural resources;
- to adopt and report on the implementation of codes of conduct promoting best environmental practice.

The objectives of promoting responsible business are:

- to encourage the concept of stewardship in the management and utilisation of natural resources;
- to increase the number of entrepreneurs engaged in enterprises which promote sustainable development.

Section 4 NEW ZEALAND'S REFORM PROCESS - WHAT CAN AUSTRALIA LEARN? (adapted from Alexandra 1994)

4.1. A law reform exercise to overcome fragmentation and lack of integration

The New Zealand Government attempted to remedy the problems of confusion and fragmentation in environmental and resource management by "clearing the slate" and creating a new framework for resource management. The resultant Resource Management Act (RMA) established, in law, the principles of ecologically sustainable management of natural resources, along with an administrative system for implementing the principles.

New Zealand began its natural resource and local government law reform simply because the old system was failing miserably. Like Australia, and many other parts of the world, resource management, planning and environmental law had evolved in a piecemeal and reactive fashion. Complex, ineffective, overlapping and sometimes conflicting rules lead to confusion, delays, inaction and inadequate environmental outcomes.

In general the problem areas were:

- **high costs of working with the current laws.** The many different institutions and processes significantly increased costs of planning and development.

- **lack of integration**. The existing laws often had conflicting objectives and were often inconsistent.

- **unreasonable delays**. Multiple consent processes, operating on different timetables, delayed many developments.

- **inadequate regulations** of new activities and new issues. Wastes and hazards were inadequately treated under existing legislation. There was no capacity to take account of new issues such as those resulting from global warming and changing climatic conditions.

In response to these problems, a law reform exercise was undertaken. It was started with no preconceived outcomes. All law and administrative arrangements relating to natural resources, planning and the environment were reviewed. The result was the New Zealand Resource Management Act.

4.2. The New Zealand resource management act

4.2.1. The act - in summary

The Resource Management Act simplified and consolidated the legislation formerly contained within numerous separate Acts which governed planning, environmental and resource management in New Zealand.

In introducing this Act, the New Zealand Parliament revoked 167 separate acts. The Act amalgamated all planning, water, air and soil legislation. Parts of the fragmented legislation had been reviewed previously but this was the first attempt to align and integrate all relevant legislation.

The Act establishes processes which simplify the allocation and use of natural resources and is aimed at achieving greater efficiency, accountability and clarification of the role and relationship of agencies (Ministry for the Environment, 1991). In associated reforms of local government, over 700 statutory authorities from harbour management trusts to drainage boards were abolished and regional councils based on catchment boundaries were established.

Reform was based on re-assessing all statutes dealing with the management of natural or physical resources. The initial direction of the reform was a complete re-thinking of the role of government with a strong predisposition to remove government involvement unless compelling reasons for retaining it were demonstrated. This would seem to promote a free market ideology with subsequent regulatory problems, but it must be remembered that any activity relating to the environment (excluding mineral mining) must conform to national policy, regional policy, national regulatory standards and possibly district or regional rules and regulations.

These many levels are designed to be congruent, and complementary and not obstructive and conflicting. Undertaking an activity that will possibly affect the environment requires a consent, or permission from the correct governing body (regional, district, city council) as it did in the past. The critical difference is that there is now only one process treating all activities, from subdivision to commercial recycling. The focus is on the effects of an activity and not the activity in itself.

All planning documents and resource use and development consents are now measured against the purpose of the Act. (see below)

The RMA represents a paradigm shift in the approach to resource management whereby the emphasis is on the *effects* of a development rather than the development itself. The RMA places the emphasis on everyone in the community to take responsibility for resource management. People or organisations applying for consents are obliged to be very clear about the activity being undertaken. Open consultation by the "developing" party with neighbours, other affected parties and competing users is mandatory. A dialogue is encouraged whereby all parties can contribute to gaining a common understanding of how the resource should best be managed within the bounds of the principles of sustainable management.

4.2.2. Purpose

The purpose of the Act is to promote sustainable management of natural and physical resources, excluding minerals. 'Sustainable Management' is defined as the use, development and protection of natural and physical resources such that people and communities are able to provide for their social, cultural and economic well being and health and safety while:

- sustaining the potential of natural and physical resources (except minerals) to meet the reasonably foreseeable needs of future generations;
- safeguarding the life supporting capacity of air, water, soil, and ecosystems, and
- avoiding, remedying or mitigating adverse effects to the environment.

4.2.3. Local and Regional Government

Parallel to the formation of the Resource Management Act, the Local Government Commission worked on re-organisation of local and regional government. This reform resulted in a completely new system of local government under which the RMA Act could operate.

New Zealand's Regional Councils regions now conform, as far as practical, with catchment boundaries. Each region consist of a number of districts, and district boundaries are congruent with those established for regional councils, thus a group or cluster of districts fits neatly into a region.

An integrated system of hierarchical government exists. Each level has different functions but a continuity of purpose, direction and strategy has been put in place. The basic hierarchy of government looks something like this:

CENTRAL>>>	REGIONAL (13)>>>	DISTRICT (73)
GOVT.	COUNCILS	COUNCILS

Within a clearly defined hierarchical framework of national and regional policies, the Act specifies the development of regional and district plans. These plans are consistent with and apply national and regional policy within the regional or district context, through specifying practical parameters for land and water use, pollution, etc. (Salter, 1991). The Act also provides a standardised and integrated consent process that covers land and water use, subdivision, coastal waters and discharges to the environment. Also covered are heritage issues, appeal provisions, monitoring and enforcement.

4.2.4. Matters of national importance

The Act sets out matters of national importance. All persons exercising functions and powers under the Act shall recognise and provide for the following matters of national importance:

- preservation of natural characters of the coastal environment and other water bodies;
- protection of outstanding natural features and landscapes;
- protect areas of significant indigenous vegetation and significant habitats of indigenous fauna;
- maintain and enhance public access to and along coastal marine areas, lakes and rivers;
- relationship of Maori and their culture and traditions with their ancestral lands, water, sites and resources (waahi tapu and other taonga).

Those who exercise powers and functions must have particular regard to;

- Kaitiakitanga (traditional guardianship);
- efficient use and development of natural and physical resources;
- maintain and enhance amenity values;

- intrinsic values of ecosystems;
- recognition and protection of the heritage values of sites, buildings, places or areas;
- maintain and enhance the quality of the environment;
- any finite characteristics of national and physical resources;
- protection of the habitat of trout and salmon;
- principles of the Treaty of Waitangi.

4.2.5. National Policy Statements

A hierarchy of policy statements and management is put in place by the RMA. The Minister for the Environment produces national policy statements on matters of national significance. The public are made aware of the proposed statement and invited to comment. Once this has occurred the proposed statement is publicly notified and a Board of Inquiry is appointed. The Board considers all submissions and produces a report. This report is made public and then the Minister is required to consider the report and make recommendations that he or she thinks fit. The Governor General will then approve the national policy statement at the recommendation of the Minister. The Minister may review, revoke or change the statement by following the same procedure mentioned above for initiating a national policy statement.

4.3. Regional Planning Arrangements

Regional Councils have the pivotal role in resource management administration. They have primary responsibility for the management of water, soil, geothermal resources and pollution control. Each regional council must establish regional policies and plans that set the objectives for the integrated management of resources in their area.

Regional and district policies and plans must be consistent with national policy statements. The RMA sets out the matters to be considered by authorities when establishing their respective policies.

Regional plans are optional (except regional coastal plans), and focus on more specific resource issues that require more detailed policies and rules. The RMA lists the issues to be considered when preparing the regional plans. The plans may include rules which regulate, prohibit or allow activities. Regional plans are designed to assist a regional council in carrying out its functions. Regional councils are the pivotal regulatory agencies for resource management, and in particular perform the functions of catchment management authorities.

District plans are mandatory and are designed to assist territorial authorities in carrying out their functions under the Act. The Act sets out the matters to be considered by the territorial authority in preparing plans. District plans must be consistent with regional policy statements or plans. District plans may include district rules that can prohibit, regulate or allow activities.

The Act sets out the requirements about the provision of information to the public. It removes some of the previous formality in public hearings, and allows that hearings and evidence may be heard in Maori native language. There is a commitment to open

government with freedom of information, but protection of sensitive information (eg. trade secrets or sacred Maori information) is allowed for under the act.

Policy statements and plans are to be reviewed in full at intervals no more than ten years. The policy statements and plans continue to be in operation whilst in review.

4.4. Monitoring

Monitoring is carried out to assess the suitability and success of particular policies. Thus regional policies and plans ought to be defined clearly enough to determine whether they have been successful or not. The cost of monitoring a particular option must also be included in the process of selecting the most appropriate activity. The Act provides for dynamism in that a constant process of review and monitoring ought to occur.

4.5. Consents

The regional management plans provide the rules for the use of the natural resources in any region. Anyone intending to undertake a resource use activity should refer first of all to the relevant management plan. Various consents are provided for in the Act. These are required when an activity contravenes restrictions and when a plan states that consent must be sought. Five types of consent exist:

- land use consent
- coastal permit
- discharge permit
- sub division consent
- water permit

There is one standard consent process for the 5 types mentioned above. For instance a single coastal consent replaces the numerous permissions previously required to undertake activities on the coast.

The Act classifies activities into several categories relating to the granting of a consent. These are:

- permitted activities where the Act or plan states that no consent is required.
- controlled activities that subject the granting of the consent to conditions specified in the plan.
- discretionary activities where the full discretion of the council (regional or district) is exercised in accordance with criteria set in the plan.
- non-complying activities where an activity contravenes a plan but is not prohibited
- prohibited activities for which no consent can be sought (stated in the plan).

The essence of the consent system is flexibility, although it is up to each community or regional council to define an “absolute limit”. Performance standards are used to apply necessary controls to permitted activities.

The consent authorities are able to require further information relating to the application to enable better understanding of the nature of the activity. Any person may make a submission on a resource consent that is notified (made public). Pre-hearings are arranged to clarify, mediate or facilitate resolution of any matter or issue. It is presumed

that a hearing need not be held unless the consent authority considers it necessary or an applicant or any person making a submission requests this.

Various conditions may be attached to resource consents if they are granted. These may include a financial contribution, bond, covenant, administrative charge and in the case of discharge, a condition related to the best practicable option.

Landuse and subdivision consents are attached to the land with the exception of activities relating to river and lake beds. Regional plans contain the specifics relating to the transfer of the various types of consent.

The maximum period for consents is 35 years, however land use consents, reclamations and subdivisions are unlimited unless otherwise specified in the consent. If no period is specified in the consent, the duration is 5 years. The Act allows for the review, suspension and cancellation of consents. This may arise from changes in the manner in which the consent has been used, the future viability of the consent, illegal practices and the like.

At periods agreed to in the consent, reviews of the consent are undertaken by the consent authority.

4.5.1. The "Call In" procedure

The Minister for the Environment has the power to 'call in' applications (for consent) of national significance. This serves to lift the application out of the local arena and place the decision making process into the national level. The following criteria may be used to determine whether an issue is of national significance:

- has there been public concern/interest regarding its effects on the environment?
- has the proposal involved or is likely to involve significant use of resources?
- effects of the proposal on any structure/place etc. of National significance.
- is it likely to be significant in terms of the Treaty of Waitangi?

The consent authority has an obligation to notify all people involved once the application has been called in. The Minister is now responsible for the consent process. The standard resource consent process still applies thus avoiding any suggestions of bias. A Board of Inquiry is appointed to consider the application. Public submissions on the proposal are taken and provisions are made to ensure that regional and local interests are well represented on the Board. The Minister must make a decision on the report within 20 working days. The right of appeal (against the Minister's decision) to the Planning Tribunal is standard.

4.6. Declarations, enforcement's and ancillary powers

Disputations over consents or any environmental conflict can be resolved through various mechanisms that the Act provides for. The Planning Tribunal has the anchor role in dispute resolution but provisions are made for alternatives such as pre-hearing conferences, mediation and conciliation.

The Act promotes a "user-friendly" type of tribunal whereby parties before the tribunal will be able to be represented by someone other than a lawyer, the hearing shall take place as close as practicable to the site of the issue, and written evidence in Maori will be permitted as long as translation is available.

4.7. The planning tribunal

The Planning Tribunal hears appeals, makes enquires under the Act and issues enforcement orders. It had a similar function under pre-existing law but now there is more emphasis on the enforcement aspect of environmental control. It is made up of 5 planning judges and up to 10 planning commissioners. The Governor General appoints one of the judges as the Principle Planning Judge. Alternative planning judges, deputy commissioners and special advisers can be appointed. The Ministers of Justice, Environment and Maori Affairs consult over the appointment of Tribunal members. The Act specifies the criteria needed to appoint assessors, and the Tribunal is able to appoint special advisers.

The Act allows for planning judges to deal with specified tasks sitting alone and some assessors can do likewise with some matters under the direction of the planning judge.

The Tribunal has the powers of the District Court but can regulate its own proceedings such that formalities are waived if it is fair and efficient to do so. If a number of proceedings relate to the same matter then they can be heard together. The hearings will, in general, be in public but evidence can be heard in private and its publication restricted or prohibited, as the Tribunal sees fit.

Appeals before the Tribunal are heard de novo (ie. afresh). The Tribunal can direct local authorities to change plans and policy statements. Where there are inconsistencies between national policy statements and regional policy statements or plans, or between a regional policy statement or plan and a district plan, the Tribunal has the power to order changes to correct the problems.

The Tribunal can review a decision if new important evidence is made available or there has been a change in circumstances that might have affected the decision. Appeals against the Tribunal decision on points of law are heard in the High Court.

It seems that the Planning Tribunal is an all-powerful body that can over-ride the Minister, virtually run environmental enforcement, and control the direction of environmental policy. The conservation movements held these types of fears when the Act was in its submission phase. Previous experiences with the "old" Planning Tribunal left many people cynical and disillusioned with the mechanisms open to them to resolve resource issues. Current reports from New Zealand, however, show that the number of cases reaching the Planning Tribunal is at an all time low and the provisions for alternative dispute resolution are very popular (pre-hearings, consultations). Early consultation is saving money and time once the statutory processes begin. Examples of this are the Wanganui sewage discharges, Mangahao power scheme and the renewal of ECNZ's water rights on the Lower Waitaki River. These major projects have been resolved through consultation and lengthy hearings were not required.

Section 6: Water resources - managing the transition from resource abundance to resource scarcity (first written 1996)

Trends
- ***declining health of rivers and their catchments***
- ***declining diversity, distribution and abundance of freshwater and riparian flora and fauna***
- ***increasing public concern about rivers***
- ***competition for limited water***
- ***increasing recognition of the need for environmental flows***

Key Issues-
- ***policy ferment and conflict***
- ***capacity of government agencies to manage the transition to ESD***
- ***uncertainty about water resources regulations and management goals***

Policies and strategies
- ***National Water Quality Strategy***
- ***COAG Water Resources Policy***
- ***MBD Natural Resources Management Strategy***
- ***NSESD***
- ***MBD Water Quality Policy and MDB Cap***

6.1 Unhealthy rivers, healthy controversy and policy ferment

In recent years numerous controversies have drawn wider public attention to the Darling River, its tributary rivers and their catchments. The management of the system has come under increased public scrutiny. Media attention has increased, particularly since the massive Algal Bloom in 1991. Water allocation problems, (acerbated by the 1991 - 1994 drought) have also been the focus of ongoing controversy and debate.

In this the driest of inhabited continents, water is a critical strategic resource. Availability of water is one of the principle factors determining biological and economic activity, human settlement patterns and agricultural productivity. Demands on this renewable, but scarce, resource are increasing. At the same time as the quality of the water in most of rivers is declining the understanding of ecological and hydrological processes is increasing.

Since the early 1990's water reform has escalated on the political agenda. As the Recommendations of the Prime Ministers Science and Technology Council report on "Managing Australia's Inland Waters" represents the best available scientific available and must be acted upon, despite the fact that they may incite the opposition of certain vested interests. To ignore the warning and the directions identified would cast doubt on the ability of governments to take scientific advice seriously. (Department of Industry, Science and Tourism September, 1996.)

Further evidence that the water management issues have escalated up the political agenda can be found in the fact that water reform is being addressed through the Council of Australian Governments.

The pressures driving the water reform and catchment management efforts in Australia include:-

- heightened awareness of the consequences of poor river and catchment management and increasing community concern about the state of our rivers;
- economic reform agendas, including *privatisation* and *corporatisation* of water authorities along with government debt reduction programs;
- increasing understanding of catchment and ecological processes;
- increased recognition of the strategic, economic and ecological significance of water;
- declining water quality including increasing intensity and severity of algal blooms;
- and increasing competition for limited water resources.

The outcomes of the current reforms will be central to the future of Australia's rivers especially in terms of formalising environmental flows and establishing fair and efficient allocation systems. Both environmental flows and water allocation systems are defined briefly below:-

- environmental flows, - allowing enough water to sustain the rivers' (including floodplains, wetlands etc) natural ecological processes by limiting the amount of water extracted to that which minimises ecological degradation and enables the river to function in a healthy way - in other words extracting no more than the sustainable yield,
  - or by specifically releasing water from storages for the purposes of maintaining the health of the whole river system by mimicking natural flow regimes, or specific releases which provide water to specific wetlands,
- water allocation systems -who gets what water - the systems for allocating the limited available water amongst competing and changing uses and users.

Attempting to determine and allocate environmental flows is now recognised as critical to the future health of our rivers.

6.2 Balancing competing demands in a changing world

Competition for the limited water resource is becoming acute and the resultant conflicts protracted, costly and divisive. Attempts to balance the requirements of the ecosystem and the different users of the water resource along a river system as extensive as Darling is by no means simple.

The complexity is due in part to the large spatial and temporal scales involved as well as the sheer number of water users. The number of potential extractors of water from the river, its, floodplain, its tributaries and its catchments is large. Changes in catchment landuse, gully dams, floodplain harvesting, major storages and direct river pumpers and even shallow groundwater extractions all change the flow regimes.

Whilst it is acknowledged that some progress has been made towards recognition of environmental flows, existing agencies (and water allocation systems) so far seem ill equipped to the challenges of creating a balance between extractive uses and the

environment, even despite commitments to do so from highest level of government. It is possible that institutional inertia restrains those agencies who for decades have had as a principle purpose the commercial development of water resources for irrigation. Despite all the right rhetoric it seems that they are simply ill equipped to the changing demands of becoming *"ecosystem"* or whole of catchment managers.

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In considering how allocation arrangements should be reformed and how adequate environmental flows may be achieved it became apparent that there are many profound and complex scientific, legal and policy questions for which there are no simple solutions. These include:-

- How to achieve a fair distribution of this water between the various ecological and economic demands on the systems?
- What are the respective rights of the rivers, their floodplains and wetlands plus upstream and downstream human communities, and various grazing and irrigation industries? How should these rights be determined?
- Should environmental flows be seen as a threat to irrigators or a urgent priority to ensure the rivers maintain their health?
- How should water be fairly allocated between competing demands?
- In other parts of the world indigenous people have successfully claimed native title rights to water and fisheries. What does native title mean to water in Australia? Do we need to wait until there have been claims tested through the courts to find out. Would any new tenure system be in breach of the racial discrimination act?
- What kinds of reforms to water management and allocation systems will return adequate amounts of waters to rivers to met environmental flows requirements? How will we know? What aspects of the river ecology will need to monitored and for how long before we know if the flow regimes are suitable?
- What are the best indicators of river health?
- How resilient are our fresh water ecosystems and how will they respond to the cumulative changes already underway?
- What should be made of irrigators claims to the need to create permanent property rights to water?
- Will any new system of allocation be sufficiently flexible to cope with unforeseen changes in the future? or will there further upheavals? what about climate change? etc

Many of the water allocation conflicts that have become apparent are a result of differing views of the world, different priorities and incapacity for management agencies to balance competing interests in limited resources. While governments have been forced by popular concern and environmental degradation to adopt ESD policies there is widespread confusion as society (or specific sectors) confront the transition to ESD practices. In water resources and catchment management it will mean new arrangements, new approaches, new responsibilities. There is a major public policy challenge in managing the transition processes.

It is useful to consider the water allocation issues in the context of a transition from an era of resource abundance to one of resource scarcity. We can see the transition in terms of a change from coherent policies which supported economic development to the emergence of policies which attempt to place economic development within an ESD context, and therefore by necessity place major restraints on market forces.

Clearly, in the past, resource management policy framework aimed to for economic growth through encouraging industries based on the exploitation of resources. Throughout most of this time resources were abundant and their exploitation was limited by capital, technology, knowledge. We have recently moved in an era where resource exploitation limits are being reached or breached and this is providing impetus to the adoption of generalised ESD policies. Predicably the implementation of the new policies are being limited by institutional inertia and conservatism as well as by fear of change, losses for vested interests and limits in capital, technological capacity and knowledge.

The transition has been described as a shift from an "economic development paradigm" to a "sustainability paradigm". Despite its official endorsement from governments it is a painful, and disruptive transition which confronts many dearly held values and assumptions, and may threaten vested interests and expectations of profit. These alone can exert great inertia on necessary change processes.

During this period of transition management agencies are struggling to balance competing interests in limited resources, and to develop new methods for dealing with the issues.

There is a powerful case for further reforms to water allocation. The arguments in favour of comprehensive reforms can be seen repeatedly by examining:

- river health, ecological and environmental flow issues
- the 'rights' of land holders, floodplains and wetlands to receive beneficial flooding,
- the reliability of supply to irrigators, stock and domestic water user and
- the requirement for reasonable quality water flowing to natural and urban communities along the lower reaches of the rivers and into South Australia.

Adoption of ESD strategies by Governments is not the only policy influence on water management reforms. Many other contemporary trends and policy responses are also influential, for example: the current account deficits, and the corresponding drive for exports, economic rationalism, corporatisation, GATT, Globalisation of trade policy and currency markets, reforms to drought policy, government debt and downsizing etc. In this soup of policy, outcomes which favour ESD are by no means assured!

6.3 Limiting resource exploitation - the MDBC Water Audit and the cap

After more than 120 years of increasing extractive water use in the Darling System in 1995 the MDB Ministerial Council agreed to an interim cap on further water diversion from the rivers.

Subsequently the Commission and the various state agencies have been attempting to establish more accurately the environmental flow requirements for the rivers and identify ways of achieving them.

In the context of the extended debate over rights to water, many irrigators organisations have advocated the creation permanent tradeable property rights and that governments

or environmental interest should buy these back to create environmental flows. In the next section we look at the questions of property rights to water.

6.4. Redesigning water allocation and property rights systems (by Tim Fisher and Jason Alexandra - 1996)

Trends
- ***declining health of riverine ecosystems***
- ***increasing competition for limited water***
- ***increasing recognition of the need for environmental flows***
- ***calls for freeholding of water rights***

Key Issues -
- ***need to redesign property rights for water***
- ***R&D into options and implications of different allocation systems***
- ***need for a flexible adaptive allocation framework***
- ***need for formalisation of environmental flows***
- ***need to ensure water policy reforms consistent with ESD principles***

Policies and strategies
- ***COAG Water Reform Policy***
- ***National Competition Policy***
- ***National Water Quality Strategy***
- ***NSESD***
- ***MBD Water Quality Policy and MDB Cap***

6.4.1 The challenge of redesigning property rights

Possibly the biggest threat to the future sustainable management of the rivers of the Murray-Darling system would be institutionalising current levels of extractive water use. For all intents and purposes this is what the creation of permanent property rights to water would do. Due to the magnitude of this threat and the opportunity that currently exists to reform water allocation system, we now devote considerable attention to the issues of redesigning property systems and the implications of the permanent and limited tenure rights systems.

Instead of permanent rights we proposes some limited tenure property rights policies and mechanisms which aim to balance:

- the investment security needs of irrigators
- the much-needed security and flexibility required for environmental water
- the inevitable and unavoidable need for governments to adapt to changing conditions and priorities in water resource and environmental management in the future
- COAG National Water Resources Policy and National Competition Policy requirements, including the requirement for water resource assets to realise a positive real rate of return.

Permanent tenure models of water entitlements and rights pose an unacceptable risk both to the environment and to the public interest. Rivers and water resources demand an adaptive approach to management; management which would be seriously compromised if water entitlements had to be purchased at market value for re-allocation to the environment.

The model proposed of limited tenure property rights offers enormous potential in a range of COAG policy areas, including

(i) achieving a positive real rate of return on assets,
(ii) improving water use efficiency and irrigation practice generally, and
(iii) accelerating the transfer of water to highest value end use.

We are concerned that, amongst government officials and irrigators alike, there is a sort of vested interest in favour of a simple, permanent (or freehold) property rights system for water. For many irrigators, such a system would provide them with a much greater claim to the resource (ie. one that exists into perpetuity) than is necessary. A great many irrigators would be given a stronger legal right to water resources than they have at present; thus eroding the existing public rights in determining water management priorities. For government agencies, a permanent system of water entitlements would involve little bureaucratic intervention, and a lesser political risk of putting irrigation communities offside than exists at present. Further serious consideration of options and implication of different property rights systems is required before commitments are made to permanent reforms to Australia's water allocation systems. Consideration of how to design less-restrictive alternatives to permanent property rights is required.

6.4.2. Water rights -the Policy Framework

Numerous policy are relevant to the redesign of water allocation systems and water property rights. Two polices areas of particular relevance are the COAG Water Resource Policy, and the policy principles underpinning the National Strategy for Ecologically Sustainable Development. (NSESD). Each is discussed in more detail below.

A number of other policies are also relevant to water property rights and therefore warrant consideration. These include

- the National Water Quality Management Strategy
- the Murray Darling Basin Agreement
- the National Strategy for Ecologically Sustainable Development
- Agenda 21 (1991 United Nations Conference for Environment and Development)
- the Biodiversity Convention & other international agreements (eg. Ramsar)

Within the context of these existing policies governments are obliged to redesign an allocative system which not only engenders economic efficiency in the short term, but also underpins sustainability in the long term (Young & McCoy 1995). Any allocative system must be designed to be adaptable, with sufficient feedback loops to allow for "policy learning" (Dovers 1996) as it is almost inevitable that it will have to operate within the context of unforeseen changes, such as climate change. Furthermore any new

system may generate unintended consequences or fall victim of partial or complete policy failure.

6.4.2. The National Strategy for Ecologically Sustainable Development

The National Strategy for Ecologically Sustainable Development was endorsed by the Council of Australian Governments and released in December 1992. (Commonwealth of Australia)

The principles of ESD are open to considerable interpretation. Nevertheless, there is now broad consensus about the fundamental principles of ESD including:

- the provision of equity within and between generations
- protection of bio-diversity and the maintenance of ecological processes and systems
- establishing bio-physical limits to natural resource use
- appropriate pricing of natural resources, and the use of pricing and/or other mechanisms* to take account of environmental values (**eg. property rights mechanisms*)
- the maintenance of resilience within both ecosystems and economies to ensure protection from natural or human-induced perturbations, stresses or shocks
- the adoption of an anticipatory and precautionary policy approach (*ie. ensuring that a water property rights system does not lock-in a consumptive regime at the expense of current or future environmental needs.*)

6.4.3. COAG Water Resources Policy

The principles contained in the COAG statement are particularly relevant to the issue of water property rights:

> *"In relation to water resources policy, Council agreed: ...*
>
> *3. in relation to pricing:*
> *(d) rural water supply –*
> *(ii) to achieve positive real rates of return on the written-down replacement costs of assets in rural water supply by 2001, wherever practicable,*
>
> *and*
>
> *4. in relation to water allocations or entitlements: –*
> *(b) ... States would give priority to formally determining allocations or entitlements to water, including allocations for the environment as a legitimate user of water,*
> *(d) that the environmental requirements, wherever possible, will be determined on the best scientific information available and have regard to the inter-temporal and inter-spatial water needs required to maintain the health and viability of river systems and groundwater basins. In cases where river systems have been over allocated, or are deemed to be stressed, arrangements will be instituted and substantial progress made by 1998 to*

provide a better balance in water resource use including appropriate allocations to the environment in order to enhance/restore the health of river systems;

(e) in undertaking this work, jurisdictions would consider establishing environmental contingency allocations which provide for a review of the allocations five years after they have been determined.

8. in relation to the environment

(b) to support ARMCANZ and ANZECC in their development of the National Water Quality Management Strategy, through the adoption of a package of market-based and regulatory measures, including the establishment of appropriate water quality monitoring and catchment management policies and community consultation and awareness."

Government could go a lot further towards implementing these commitments. Reforms to the legislative underpinning of catchment management should be part of it.

6.4.4. National Competition Policy and Legislation

In addition to the pricing principles included in the COAG Water Resources Policy, the Competition Principles Agreement requires a range of reforms directed at removing the competitive advantage enjoyed by state commercial enterprises (such as rural water supply services). These broadly incorporate COAG principles, and also require the states to impose full Commonwealth, State and Territory taxes or tax equivalent systems, provided that the benefits of doing so outweigh the costs.

6.4.5. The Case Against Permanent Tenure in Water Entitlements

Freehold or permanent water entitlements should be opposed and limited tenure rights supported for a number of reasons.

In our view there is no valid case for permanent property rights over water.

The major objection to limited tenure entitlements is that irrigators need security for their investments. However, the provision of secure periods of tenure not exceeding (say) ten years, together with clearly-defined rollover provisions, represents adequate security for any irrigation investor. The fact that limited tenure irrigation entitlements has not stopped irrigation investment to date (on the contrary!) clearly demonstrates that perpetual tenure is not a pre-requisite for investment. Clearly investment security must be balanced with ecological sustainability in this regard, and has to be balanced against the need for some security and flexibility in environmental water allocations.

There are a number of reasons why water resources should remain in public hands, all centring around the need for flexibility in the management of our water resources and river systems. These are as follows:

- **Climate Change** – Various models of climate change predict significant reductions in rainfall over much of Australia, together with increased climatic variation.

Climate change may well reduce substantially the availability and reliability of our water resources. Hence water resource managers must have the capacity to safeguard in-stream and riparian watering requirements in the face of increased pressure on available water resources.

- **Salinity** – Rising in-stream salt levels from irrigation and dryland salinity may well require increasing allocations simply to dilute salt concentrations to levels at which Murray water can continue to be used in South Australia. This is because of the combined impact of irrigation salinity, increased aquifer pressure in the Mallee and Riverland region, and the rapidly growing (but as yet unquantified) contribution of dryland salinity in the Murray and Darling uplands to surface water salinity.
- **Ecological Watering Requirements** – The requirements of freshwater ecosystems is a major issue. Despite the work currently being undertaken to assess environmental flow and water quality requirements in some parts of the Murray Darling, knowledge about environmental requirements will always be uncertain and dynamic, and provision will need to be made for further adjustments over time. This is particularly the case in freshwater ecosystems, where our knowledge base is limited. It is worth noting here that ecological requirements are undoubtedly linked to (for example) commercial and recreational fishing values.
- **Public Liability** – The issue of permanent property rights may well increase public liability for any subsequent changes in water management. (eg. public liability for water entitlements issued, or yet to be issued, in ways which may have extinguished native title contrary to the Racial Discrimination Act 1975) It is worth noting here that many legal issues of water property rights have yet to be tested in law.
- **Nutrient Levels** – it is conceivable that additional flow volumes may be required to manage nutrient levels (and blue-green algae) in the MDB.
- **Public Right to Set Management Priorities** – Irrespective of the specific reasons, the public has a fundamental right to change its preferences and priorities in the management of public natural resources over time, particularly when the future of rivers such as the Murray Darling is at stake.

If water is privatised under some form of freehold tenure, the only option for governments in changing management priorities over time is to buy-back (compulsorily acquire) water at its market value. As the table below illustrates, this will be an expensive business.

Volume of Water:	**Low Price** *$400/Ml*	**Medium Price** *$500/Ml*	**High Price** *$650/Ml*
1,000 Ml	$400,000	$500,000	$650,000
10,000 Ml	$4 million	$5 million	$6.5 million
100 Gl	$40 m	$50 m	$65 m
1,000 Gl	$400 m	$500 m	$650 m
2,200 Gl*	$880 m	$1.1 billion	$1.43 billion

*Prof. Peter Cullen's estimate on environment's need for a 20% reduction in water use in MDB

Numerous questions which go to the heart of proper public policy development must be asked in relation to the apparent preference for the buy-back option. Why should governments have to come up with this money to purchase something which is currently public property?

Far more effective options and approaches to returning water to the environment are available such as the following:

- **non permanent property rights mechanisms** – limited tenure models of water property rights involving the resumption of a percentage of water entitlements on roll-over for sale and/or allocation to the environment – see below
- **off-allocation & sales rules** – changing rules and restricting (or ceasing) access by irrigators
- **security/reliability of access** – reductions in guaranteed reliability or security of supply.
- **water conservation and demand management** options, where water saved is returned to the environment through:
  - grants for improved water use efficiency on-farm
  - funding for property management plans
  - funding for waste water and drainage re-use strategies
  - funding for reducing losses from public storage and delivery systems and evaporative losses from poorly-managed wetlands
- **restructuring grants** – assistance for irrigators to move-out of the industry, or to restructure into new, more water efficient farming practices/crops.
- **taxes on trades** – resuming a percentage (eg. 20%) of water traded
- **funding via irrigator contributions** – includes the potential to finance buy-backs of water entitlements
- **conditional state government funding** for Land and Water Management Plans – ie, no funding unless water is returned to the environment
- **delayed implementation of water prices** – ie, any program of water price rises could be drawn-out or delayed in return for progress on environmental flows
- **restrictions on temporary transfers** – such restrictions would limit temporary trades, thus freeing-up water for the environment

Buy-backs may also encounter a range of political difficulties. For example, when would a government countenance forced acquisition? Which irrigators would be targeted, and why? On the other hand, why would a government buy-back water from one group of irrigators and not another? Is there a potential for conflict of interest where (for example) governments may be reluctant to buy-back water from irrigators soon after the construction of dams and weirs?

Furthermore, if water is converted to freehold property, many irrigators would be gaining a windfall at the public expense. That is, while entitlements were issued at little

or no cost to the irrigator, their value would be realised (in one form or another) as a windfall gain. Part of this value lies in the fact that annual volumetric charges are so low, generally not even covering recurrent costs, and certainly not recovering historic capital costs or returning a positive real rate of return on assets. If these charges were to rise, the capital value of irrigation entitlements would fall.

6.4.6. A Limited Tenure Model of Water Property Rights

Entitlements to use water should be defined in ways where tenure is clearly limited, and where the capacity of governments to reduce water utilisation in a system is not unreasonably restricted. At the same time, limited tenure water entitlements should specify a certain minimum amount of security for irrigators both within and beyond the tenure of entitlements.

A limited tenure model of irrigation water entitlements would have the following characteristics

- **Share of Resource** – Entitlement defined in terms of a percentage share in the available resource for that particular administrative region. Environmental flow management plans would be periodically reviewed to determine total available resource for extractive use. Entitlements would only be reduced either at mid-term rollover or on expiry of licence term, or as a penalty for non compliance with the terms of the licence.
- **Tenure** – All water entitlements would be limited in tenure to between 1 year and 10 to 15 years. Tenures beyond 15 years would be both unacceptable (to the public interest) and unwarranted (in terms of investment security).
- **Renewal Provisions** – Every licensee would be guaranteed renewal of say 80% of their existing allocation on expiry. Importantly, 20% of each entitlement would automatically revert to public ownership on expiry and renewal/re-issue of licence. Governments then have the option of returning all or part of this water to the environment, and/or auctioning all or part of the entitlement to the highest bidder under established rules of trade.
- **Mid-term Rollover Provisions** – Subject to compliance with licence conditions, licensees could roll-over their entitlements for another full term in mid-term, or alternatively when ownership of the entitlement has transferred, thereby minimising uncertainty about availability of the resource in years to come.
- **Conversion of Existing Permanent Rights** – A sunset would be imposed on some or all water rights (ie. rights currently tied to land and/or to other permanent water rights), followed by a straight conversion to limited tenure entitlements.

Renewal provisions are obviously a key feature of this model. In resuming a fixed percentage of water entitlements on expiry, important policy objectives can be met in the following areas:

- **Positive Rate of Return on Assets**: COAG Water Resources Policy requires a positive real rate of return on water infrastructure by 2001, as well as on any new water infrastructure. Full implementation of this principle provides a simple, de-politicised and efficient means of realising a positive real rate of return on water

infrastructure and entitlements to government in an equitable, efficient and non-political way. The only alternative is to value assets and increase annual water charges accordingly; both of which are highly difficult and controversial tasks.

- **Asset Renewal and Replacement**: Currently no state provides for the recovery of depreciation and replacement costs in major infrastructure such as dams and weirs. Revenue from sale of resumed portions of entitlements would provide a resource base to assist in financing these very considerable costs.
- **Increased Capacity to Return Water to the Environment**: Again, COAG requires that water be returned to the environment where rivers are over-allocated. This mechanism provides Governments with a comparatively simple opportunity to return water to the environment over time without any specific financial outlays.
- **Accelerated Industry Restructuring**: Permanent trades in water would be accelerated under this model, increasing the movement of water to the highest value end use.
- **Improved Water Use Efficiency**: Under this model, individual irrigators will be provided with an incentive to improve on-farm efficiencies, and irrigation authorities would have an incentive to reduce system losses and increase system efficiencies. Irrigators who are already highly efficient would have a number of options involving either buying-up entitlements to cover the anticipated reduction in entitlements and/or trade on the temporary market.
- **Facilitating a Sound Basis for Trade**: A consistent and standardised approach to the tenure and renewal conditions of water property rights will facilitate orderly trade where a value can be more readily be assigned to an entitlement than is the case with the current mix of tenures in water entitlement. The only variable remaining will be the relative security or reliability of the entitlement in question.

In supporting the COAG requirement for a positive real rate of return on assets it is worth noting that such a requirement serves:

- as a financial discipline to prevent uneconomic investments by commercial water resource management agencies
- to maintain a competitively neutral position in relation to water technology and engineering industries, the private water infrastructure industry, and indeed any other industry related to agricultural production.
- to provide for a fair return to the public for use of the resource
- to minimise the potential for market distortion and market failure (areas include land-use and related issues; windfall gains from trade in entitlements; water use efficiency and investment in water technology; costs associated with the over-allocation of irrigation entitlements; salinity; water quality; freshwater and estuarine ecosystems and related values.)
- to pre-empt future GATT requirements re natural resource pricing and agricultural input subsidies.

In accordance with COAG and Competition Policy provisions on environmental regulation, water entitlements should have strong conditions governing use, renewal and rollover covering issues such as:

- farm management planning and riparian land management (where applicable)
- conditions on minimum efficiency of water use consistent with accepted industry best practice and soil type
- conditions on water metering, drainage management & water re-use
- conditions on monitoring runoff and drainage water quality
- pesticide and herbicide use and management
- conditions on groundwater levels in salt-prone areas (ie. irrigation to stop if groundwater rises above 1.5 m)
- conditions requiring on-site storage of irrigation water as appropriate
- reporting compliance (or non-compliance) with licence conditions.
- conditions on pumping – timing; duration; volume; water levels; limits on pumping capacity
- regulation, enforcement, spot-checking and penalties administered by an independent regulator

6.4.7. Environmental Allocations

There has been discussion in some states on the question of who should be allocated the "ownership" and responsibility for environmental water allocations. One proposal has been to allocate environmental water to environmental non-government organisations (NGO's) who may then determine management priorities for their particular reach of river, and participate in permanent and temporary transfer markets to raise management funds.

Governments should reject this model for a number of reasons as follows:

(i) Constitutions of mainstream environment NGO's do not allow for taking-on such responsibilities. Certainly most environment NGO's have been established for quite different purposes.

(ii) Funding, staff resources and expertise required to undertake such a responsibility are not available to the environment movement. Furthermore, Australia does not share the culture of generous and wealthy beneficiaries and patrons to help finance things such as the acquisition of water entitlements.

(iii) Trade, financial viability, legal liability and the potential for conflict of interest would all present serious problems for environment NGO's. For example, what would happen if an environmental trust ran into financial difficulties or went broke? Who would ensure that the objectives of an environment NGO (eg. a sporting shooters, fishing or tourism-based NGO) is consistent with environmental management objectives? Who would be liable for property damaged during a managed flood event?

(iv) Relations between environmental NGOs and water management agencies, or with other NGOs could become problematic. For example, would environmental trusts

> be required to pay for the management of headworks and delivery systems for environmental flow regimes? Would water managers be *required* to do what the environmental trusts want in all instances? What would happen if the preferred management regime of an upstream environmental trust impacted negatively on environmental requirements further downstream?

As is the case with the management of national parks and marine parks, and in the regulation of air and water quality, environmental management of public environmental values is quite rightly a government responsibility. Government must not start divesting itself of these responsibilities.

Appendix 6: A brief profile of Jason Alexandra - Alexandra and Associates Pty Ltd

Jason Alexandra has over 20 years experience in environmental and natural resources management. He has worked in the practical, research and policy arenas and has had extensive experience with community groups, NGO's and government programs working to improve river and catchment health. He has been a Director of Greening Australia and a Member of the Murray Darling Basin Community Advisory Committee.

Jason has a broad understanding of water and river management at a national scale. Jason has published widely and was a principle author of *"Water In Australia - Managing Environmental, Social, and Economic Change"*. He has reviewed the implementation of various policies and programs focusing on sustainable land and water management.

In 1995 he undertook a national review of community environmental monitoring including programs such as salt-watch and water-watch. He has worked with the ALGA and the Commonwealth SoE Unit to develop and refine methods for environmental monitoring and reporting suitable for use at the catchment scale. Jason has experience in program planning, administration and evaluation through his consulting work and in his role as a Director of the Land and Water Resources R&D Corporation (LWRRDC).

Jason is also a commercial farmer with an innovative and pragmatic grasp of farming systems, water use, revegetation and farm-forestry. He has been the driving force behind a number of innovative rural enterprises.

Awards: Inaugural Banksia Environmental Award

EXPERIENCE RECORD:

1996 - 1999 Non Executive Director of the Land and Water Resources R&D Corporation

1995 - present Consultant and Principle of Alexandra & Associates Pty Ltd

Alexandra and Associates Pty Ltd. is a consulting company that specialises in agriculture, environment and natural resource management work. Recent contracts include:

- ✓ A review of environmental management systems (EMS) and their application to agriculture;
- ✓ Development of a framework for applying ESD principles to urban and catchment planning and to improve the rigour of environmental impact assessment;
- ✓ A national review of organic farming systems for RIRDC;
- ✓ A national review of policies effecting farm forestry for the Joint Venture Agro-Forestry Program;
- ✓ The Mid term review of the Commonwealth Farm Forestry Program (with Hassalls Pty Ltd);
- ✓ Development and refinement of regional environmental indicators and reporting systems for the for the Australian Local Government Association (ALGA) and Environment Australia's SoE Unit;
- ✓ Review of the Draft National Indicators for Biodiversity;
- ✓ The first national review of community environmental monitoring (CEM) resulting the publication of a directory of CEM groups - *"Listening to the Land"* for DPIE and EA..

1989 to 1996, Sustainable Landuse Coordinator, Australian Conservation Foundation

As Sustainable Landuse Coordinator I was responsible for directing and coordinating activities in land and catchment management during the crucial years of the Decade of Landcare. The role had a core focus on ecologically sustainable land and water use and included a number of regional or catchment ESD case studies (Upper Darling, sugar industry, catchment and dryland

salinity in the Murray Uplands) and campaigning nationally on land and water policy reform and vegetation retention. Duties included: analysis of land and water management policies; promotion of sustainable land management; liaison with industry, landcare, and catchment management groups; and negotiating with industry bodies, farmer organisations, and Government.

1992 - 1996 Member of the Murray Darling Basin Community Advisory Committee
The Murray Darling Basin Community Advisory Committee is an independent body which provides advice to the Murray Darling Basin Ministerial Council on the Murray Darling Basin Initiative.
1991 to 1994, Director of Greening Australia Ltd

1992 President International Tree-Crops Institute, Australia

1986 to present, Farmer, Ellinbank via Warragul, Victoria
Our 38 hectare farm in the fertile, high rainfall hills east of Melbourne is used for farm forestry, conservation and intensive horticulture. The farm has been extensively revegetated with belts and blocks of trees for shelter, fodder, wildlife and timber production. Tree-crops include specialty timbers, temperature climate nuts, stone and pome fruits. Approximately 4 hectares were used for the Victorian Treecrop Nursery (business sold - see below). A 2 hectare constructed wetland is used as sanctuary for water birds. The farm is frequently used for educational purposes and field days.

1979 to 1994, Owner/manager the Victorian Treecrop Nursery.
The Victorian Treecrop Nursery was established in recognition of the need for revegetation. The provision of free advice and the promotion of complex, diverse agro-ecosystems were central to the business's success. Annul production peaked at over 200,000 trees. The business was sold in 1994.

1981-89 Consultant, Landscape Planning and Development
Consultant on revegetation projects, including supervising consultant for the Victorian Ministry of Planning & Environment on revegetation of industrial wasteland.

Selected Publications
"An ESD framework for urban planning and development" TEC in publication
"Environmental management systems for Australian Agriculture" RIRDC in publication
"Creating a viable farm forestry industry in Australia – what will it take?" RIRDC 1998
"Environmental indicators for National State of the Environment Reporting—community and local use" (with J. Higgins and T. White). EA, SoE Unit. 1998.
"Ecological and Economic Trends in the Upper Darling Catchment". ACF. 1997
"Adjusting Natural Resources Management to Ecological Realities - is there any role for the Rural Adjustment Scheme" LWRRDC 1997.
Listening to the Land — A Directory of Community Environmental Monitoring in Australia. ACF
"Sustainable Natural Resources Management - who should foot the bill?" ABARE 1996
"Wilderness -- Cultivated Myths and Colonial Battle Grounds" Inaugural Ecological Economics Conference. Coffs Harbour November 1995
"New Zealand Legislates for Sustainable Development - Lessons for Australia. A Brief Review of the New Zealand Natural Resources Management Act." ACF 1994.
"Water In Australia - Managing Environmental, Social, and Economic Change." Alexandra, J and Eyre, D. authors of several chapters. Edited by Johnson, M. and Rix, S. Pluto Press 1993.
"The Darling, a River Running out of Time" (with T. Fisher), eight-page feature and supplement to *Habitat* on river health and environmental flows. ACF 1994
Using Market Mechanisms for the protection of our Inland Rivers. NSW EDO Sydney
Trees as Tools for the Sustainable Management of Irrigated Land. Conference Proceeding, University of New England, Armidale, February 1993
Managing Catchment Management. Mary River Catchment Forum, Kenilworth 1993

Research Priorities for Sustainable Water Management in Australia. Urban Water Research Council. Australian Water and Waste Water Association Conference, Gold Coast, March 1993
Opportunities for a Farm Based Forestry Sector in Australia. Catchments of Green Conference Proceedings, Greening Australia, March 1992
Water and the Environment in Australia (with D. Eyre), ACF 1992
The Role of Trees for the Sustainable Management of Irrigated Land. The Role of Trees in Sustainable Agriculture Conference, Albury. RIRDC 1991
Water Allocation for the Environment. Conference Proceedings, Centre for Water Policy Research, University of New England, Armidale 1991
'Murray River—Water Main or Sewage Drain? Acres Australia 1991