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COMMISSION

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Environmental Water
Provisions Policy for
Western Australia

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Ian Loh, Paula Deegan and Jeff Kite were the key Commission officers involved in the preparation of this Policy.

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Foreword

The Water and Rivers Commission is Western Australia's primary water resource management agency. It is the Commission's responsibility, on behalf of the community, to equitably share water resources between the ecological needs, social expectations and demands to consume water for economic benefit.

The Commission collects and analyses water resources information, prepares policies and management plans, issues licences, regulates water use and protects the quality of water and important water dependent ecosystems. In discharging its responsibilities, the Commission is required to exercise judgement and discretion in protecting and controlling water use, while at the same time ensuring there is appropriate community involvement in decision-making processes.

An important component of the Commission's role in water allocation is that of making provision for water for the environment. However, this aspect is only part of a multi-objective decision-making framework adopted by the Commission. Economic, social and ecological considerations are all important and all need to be considered and balanced in water allocation decision-making, consistent with the objectives of the National Strategy for Ecologically Sustainable Development.

This policy describes principles and processes to be applied by the Commission in determining how much water should be retained for the environment when allocating and reviewing water use rights. It also identifies important linkages to the State's statutory framework.

A draft of this policy was released in February 1999 for public comment and submissions following a major review of the Commission's planning and policy approaches to the matter.

The draft policy was one of a series of Water Reform discussion papers promoting public comment on proposals to update the law governing water resource management in Western Australia and to meet the Council of Australian Government's Water Reform Framework Agreement.

The Rights in Water and Irrigation Act 1914 was substantially amended in November 2000 and this Policy incorporates those amendments.

Comments on the draft document were sought from a wide range of stakeholders and 33 submissions were received. Most were wholly or partially supportive of the draft policy and the opportunity to comment, although a number of issues were raised that required further clarification. These, together with issues raised through the water law reform process and the Commission's most recent experience in the provision of water for the environment, have been considered in the finalisation of this policy.



Contents

1 Introduction	1	References	11
1.1 Background	1	Glossary	12
1.2 National context	1	Appendices	
1.3 Statutory context in Western Australia	1	1. Excerpt from COAG Agreement on	
1.4 Terminology	2	Water Resources Policy Reform (1994)	13
2 Policy statement	3	2. National principles for the provision	
2.1 Intent	3	of water for ecosystems	14
2.2 Primary objective	3	3. Supporting information	15
2.3 National objective and principles	3	4. Stakeholder consultation list	20
2.4 The Commission's guiding principles	3	Further information	23
3 Implementation	6	Figure	
3.1 Allocation framework and planning		1. Environmental Water Provisions in the	
processes	6	Water Allocation Process	9
3.2 Determination fo EWRs and EWPs	7		
3.3 Community involvement	8		
3.4 Supporting information	10		



1. Introduction

1.1 Background

For many years, the Commission and its predecessor organisations have protected the needs of water dependent ecosystems where the environment has been identified as a key factor in water allocation. Operational practice and procedures evolved from studies of the impacts of groundwater use in the semi-arid Pilbara region in the 1970s and in the Perth area in the 1980s.

Consideration of the needs of the environment is now well developed in groundwater allocation planning and management in many areas, and is being increasingly applied to the management of surface water resources. However, a more consistent approach to the provision of water for the environment across the State is required.

No policy statement has previously existed to describe the principles and approaches for appropriate provision of water for the environment. Nor has there been clear documentation showing how the need to provide water for the environment fits within the context of the *Rights in Water and Irrigation Act 1914*. The critical linkages of water allocation planning and decision-making with the requirements of the *Environmental Protection Act 1986* and the requirement to ensure effective community involvement have also needed clarification.

This policy aims to provide guidance on these matters.

1.2 National context

National policies and strategies developed over the past decade have significant implications for the provision of water for the environment as part of the allocation and management of water resources. The Government of Western Australia is either a signatory to, or has formally endorsed, these documents. Of relevance to the development of the approach described in this policy are:

- National Strategy for Ecologically Sustainable Development (1992);
- Intergovernmental Agreement on the Environment (1992);

- National Water Quality Management Strategy (1992) and subsequent Guidelines;
- Council of Australian Governments' (COAG) Framework Agreement on Water Resources Policy Reform (1994) and subsequent agreements;
- National Principles for the Provision of Water for Ecosystems (1996); and
- National Strategy for the Conservation of Australia's Biological Diversity (1996).

The Commonwealth *Environment Protection and Biodiversity Act 1999* also has significance with respect to the provision of water for the environment. This Act represents the most fundamental reform of Commonwealth environmental laws since the first environmental statutes were enacted in the early 1970s. Referral for environmental assessment under this Act is required for six specific matters of national environmental significance and where the Commonwealth has specific responsibilities e.g. where proposed actions may affect wetlands listed under the Ramsar Convention.

The COAG Framework Agreement on Water Resources Policy Reform (1994 and subsequent agreements), the National Strategy for Ecologically Sustainable Development (1992) and the National Principles for the Provision of Water for Ecosystems (1996) are the most relevant to this policy. Important parts of the COAG Agreement and the National Principles are provided in Appendix 1 and 2 respectively. The National Principles were being reviewed at the time of publication of this policy.

1.3 Statutory context in Western Australia

The *Rights in Water and Irrigation Act 1914* (the Act) specifically provides for water for the environment. The objects of the Act include:

“to provide for management of water resources, and in particular -

- (i) for their sustainable use and development to meet the needs of current and future users; and



- (ii) for the protection of their ecosystems and the environment in which water resources are situated, including by the regulation of activities detrimental to them;” (Section 4 (1)).

With particular emphasis on object (ii), the Act provides for:

- a statutory planning process which requires specific identification of environmental values and how the rights to water should be allocated including the needs of the environment;
- the need to obtain the approval of the Minister for Water Resources before implementation of plans (also subject to the provisions of the *Environmental Protection Act 1986* as explained below);
- the establishment of local water resources management committees including, where practical, people with knowledge and experience in the conservation of ecosystems;
- a statutory framework for broad public consultation in plan development and, specifically, consultation with water resources management committees and stakeholder bodies; and
- the ability for the Commission to put conditions on licences or to amend licences to protect the environment as well as making directions for the same purpose.

The *Environmental Protection Act 1986* is also pivotal in the approach to the establishment of water provisions for the environment in Western Australia. In particular it provides for:

- the identification of statutory environmental values and environmental quality criteria to be protected as part of Environmental Protection Policies (EPPs); and
- the assessment of proposals which may have a significant impact on the environment and the setting of statutory conditions by the Minister for the Environment.

The Minister for the Environment also has the power to reject proposals where it is considered that they may have an unacceptable impact on the environment.

The Conservation and Land Management Act 1984, Wildlife Conservation Act 1950, Aboriginal Heritage Act 1972 and the (Federal) *Native Title Act 1993* may also have significant implications for the provision of water for the environment.

1.4 Terminology

Consistent with the National Principles for the Provision of Water for Ecosystems, the Water and Rivers Commission has adopted the concepts of Ecological Water Requirements (EWRs) and Environmental Water Provisions (EWPs) with some minor refinements of terminology.

Ecological Water Requirements (EWRs) are the water regimes needed to maintain ecological values of water dependent ecosystems at a low level of risk.

EWRs are determined on the basis of the best scientific information available and are the primary consideration in the determination of Environmental Water Provisions.

Environmental Water Provisions (EWPs) are the water regimes that are provided as a result of the water allocation decision-making process taking into account ecological, social and economic impacts. They may meet in part or in full the ecological water requirements.

The water allocation decision-making process includes assessment of the proposed EWPs under the *Environmental Protection Act 1986* where environmental impacts may be significant.

The following terms have also been adopted for this document.

Social water requirements are defined as elements of the water regime that are identified to meet social values. These requirements are not a primary consideration in the allocation decision making process. However, they may be established as part of the EWP depending on their impact on natural ecosystems and the significance of the social value maintained by the water regime.

Mitigation water requirements are elements of the water regime that are identified to improve diminished water quality resulting from land use practices and developments in the catchment. They may form part of an EWP. However, if this is not possible, mitigation water requirements will need be considered as part of previously unallocated water or consumptive use allocations.

Further definitions of terms and words used in this document can be found in the Glossary.



2. Policy statement

2.1 Intent

This policy describes the approach to be followed by the Water and Rivers Commission in determining how water will be provided to protect ecological values when allocating the rights to use water in Western Australia. The policy lists the guiding principles to be followed when making such decisions and outlines a water allocation planning framework in which these principles are to be applied.

The policy also describes the relationship between the Commission's approach to water resources planning and management processes under the provisions of the *Rights in Water and Irrigation Act 1914* and the Environmental Protection Authority's responsibilities under the provisions of the *Environmental Protection Act 1986*.

The policy will be in place for five years at which time a decision will be made as to whether the policy requires a major review. Minor amendments to the policy may be made at any time, with the approval of the Minister for Water Resources.

2.2 Primary objective

The primary objective of this policy is:

- to provide for the protection of water dependent ecosystems while allowing for the management of water resources for their sustainable use and development to meet the needs of current and future users.

2.3 National objectives and principles

In meeting its primary objective, the policy must be considered within the context of the core objectives of the National Strategy for Ecologically Sustainable Development (1992).

These are:

- to enhance individual and community wellbeing by following a path of economic development that safeguards the welfare of future generations;

- to provide equity within and between generations; and
- to protect biological diversity and maintain essential ecological processes and life support systems.

The National Strategy for ESD also adopted the "precautionary principle" as a basis for policy development and implementation at all levels of Government. The precautionary principle states that:

- where 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.

The policy also aims to be consistent with the National Principles for the Provision of Water for Ecosystems (1996). The National Principles identify that the overall goal in providing water for the environment is:

- to sustain and where necessary restore processes and biodiversity of water dependent ecosystems.

To meet this goal, the document identifies twelve principles that are listed in full in Appendix 2 of this policy.

2.4 The Commission's guiding principles

Consistent with relevant State and National objectives and principles for the protection of water dependent ecosystems, the guiding principles to be followed by the Commission when making decisions related to the provision of water to the environment are listed below.

Protecting Ecological Values in the Allocation Process

1. The Commission will undertake water allocation planning and decision-making in a way that protects important ecological values and supports ecologically sustainable development consistent with the requirements of the *Rights in Water and Irrigation Act 1914* and the *Environmental Protection Act 1986*.



2. In its water resources planning and management processes, the Commission will aim to ensure that essential natural ecological processes and the biodiversity of water dependent ecosystems are maintained. This will require the identification of ecological values at regional, sub-regional and management area levels and recognition of the Environmental Protection Authority's statutory role in determining ecological values and objectives.

Determination of Ecological Water Requirements

3. The water regimes required to maintain the ecological values at a low level of risk (i.e. the Ecological Water Requirements) will be determined on the basis of the best available scientific information.
4. Where scientific knowledge of ecosystem requirements is limited, and estimates of interim EWRs and EWPs are required for allocation planning and licensing processes, the Commission will adopt the "precautionary principle" as defined in the National Strategy for Ecologically Sustainable Development (1992).
5. The Commission will clearly identify the basis for the determination of EWRs, including where estimates have been based on limited information and the consideration given to climatic extremes.
6. The Commission will continue to encourage, support and conduct research to improve the state of knowledge on the water regime requirements of significant ecosystems within Western Australia, and to participate in national processes to develop and improve approaches to the determination of EWRs.

Environmental Water Provisions

7. The Commission will aim to meet all EWRs when EWPs are proposed. If, in the view of the Commission, EWRs cannot be met without significantly compromising the identified economic and social benefits of possible water allocation strategies, the Commission will ensure that:

- the risks to ecosystems of not meeting the EWRs are identified, together with the social and economic costs of fully meeting the EWRs;
 - community consultation is undertaken in the development of allocation scenarios and EWP options; and
 - the proposed allocation strategy is referred to the EPA for assessment and/or advice under the *Environmental Protection Act 1986*.
8. In proposing EWPs for developed, partly developed or altered water resource systems, consideration will be given to the environmental changes that have occurred due to past flow regulation, water abstraction, adjacent land uses or water quality effects, as well as the capacity for restoration of the altered ecosystems.
 9. If, after EWPs have been set, they cannot be met in the short term because of allocations to existing users, a strategy will be developed in consultation with users and other stakeholders, to ensure such provisions are met within the minimum practical time.
 10. EWPs will not form part of any market in tradeable water entitlements.¹ However, EWPs may be reviewed through a public planning process which may identify that more or less water is available for consumptive use.
 11. Water regimes identified to meet social values (ie social water requirements), will form part of EWPs where they do not unacceptably impact on significant ecological values.
 12. Any mitigation water requirements will be separately identified and are additional to EWRs. They may form part of EWPs but if this is not possible, they will normally be met from unallocated water or water that would otherwise have been available for consumptive use.
 13. Further allocations to new or existing users will only occur where EWPs are being met. Where EWPs have not been set, allocations to users will be made on a precautionary basis that minimises ecological risk.

¹ *Water entitlements are defined through licences to use water, issued by the Commission, or contractual arrangements between water licence holders and their customers.*



Community Involvement, Management and Review

14. Community involvement and adaptive management are fundamental aspects of water resources allocation planning and management processes including the establishment and review of EWPs.
15. Allocation planning and licensing processes will allow for regular review of allocations and EWPs to consider the implications of improved knowledge of hydrology, ecology, climate variation and community values for water management issues.
16. The Commission will require effective management and monitoring to ensure that EWPs are being met and that environmental values are being protected.
17. The Commission will require that users are responsible for the efficient use of their licensed water allocation and for minimising any ecological damage from their use.

As required under the *Rights in Water and Irrigation Act 1914*, allocation plans will be submitted to the

Minister for Water Resources for approval. Where plans are formally assessed by the EPA under the provisions of the *Environmental Protection Act 1986*, the Minister for the Environment has statutory decision-making powers to set conditions requiring that specified environmental values must be protected and that the Commission will ensure the EWPs adopted in approved plans meet these requirements.

Fundamental to these guiding principles is the overall principle of ensuring that the Commission's approach to providing water for the environment is "transparent". This requires the specific identification of EWRs and EWPs and particularly applies to situations where judgements must be made between the ecological, social and economic factors involved, for example where the proposed allocation strategy would mean that EWPs will not be the same as EWRs due to social and economic factors.

The likely requirement for formal assessment of such proposals under the *Environmental Protection Act 1986* provides further opportunities which ensure stakeholder involvement and procedural justice in the decision-making processes. As is appropriate in such matters of balancing community values, the final decision will be made by the Government of the day.



3. Implementation

3.1 Allocation framework and planning process

The water resources allocation framework and management planning processes which will be applied by the Commission are defined in the *Rights in Water and Irrigation Act 1914*. “Plans for management of water resources” (Division 3D).

The Act provides for three different classifications of management planning, namely regional, sub-regional and local area management plans. The plans may relate to more than one region, sub-region or local area respectively and may also be combined into a single document.

The provision of water for the environment is considered at each of the three allocation planning levels. The Environmental Protection Authority will often play a key role in defining environmental values and in assessing the adequacy of EWRs and EWPs in water resource management plans. A brief description of each of the different levels is given below.

Regional Management Plans identify water resource values, including ecological and other environmental values, at a regional level, and establish how these values are to be protected. They define the likely future uses of the water resources and may give a preliminary indication of the quantity of water that could be diverted from the region including the possible scale and nature of any development. Another important purpose of these plans is to indicate how water resources planning and management will be integrated with land use planning and management.

Sub-regional Management Plans identify water resources values, including ecological and other environmental values at a sub-regional level, and will specifically define EWRs and EWPs (although where appropriate these may be of an interim nature). They will establish how ecologically sustainable development of water resources is to be facilitated by the Commission including the quantity of bulk water allocations for particular consumptive uses and how the rights to water are to be allocated to meet various

needs. Cumulative effects on the environment of potential water source developments and other land uses are considered where this has not been done at the regional planning level. The plans will also show the strategies that will be adopted to implement the plan including the water allocation licensing policy and how EWPs will be explicitly incorporated into planning and environmental decisions.

Local Area Management Plans cover part of a single water resource (e.g. a groundwater sub-area). EWRs and EWPs for the area will be specifically defined. The plans will establish how rights to water are to be allocated to meet various needs including the quantity of water that can be diverted on an ecologically sustainable basis. Allocations to specific future uses and the licensing policy will be defined, together with the nature and extent of the delegated authority that may be conferred on a relevant water resources management committee.

Local area management plans must not be inconsistent with relevant sub-regional plans which in turn must not be inconsistent with relevant regional plans. The plans require the approval of the Minister for Water Resources. The Commission will make a specific decision every seven years, after appropriate consultation, as to whether management plans require review.

Water allocation planning decisions are principally implemented through issuing water licences under the *Rights in Water and Irrigation Act 1914*. EWPs are reflected as constraints and conditions on the water quantities licensed under this Act. Where established, water resources management committees will play a key role in advising the Commission on these matters.

The EPA can consider the plan or proposal and where the implementation of the proposal could have a significant environmental impact, it may be formally assessed under Part IV of the *Environmental Protection Act 1986* and binding conditions may be recommended to be set on the Commission or proponent. In the past, these have often been set in relation to the implementation of (water development) proposals such



as dams or groundwater schemes, but under proposed amendments to the *Environmental Protection Act*, they could also be set on the Commission's allocation plans.

Following the completion of consultation and appeal processes, the Minister for the Environment can set conditions of implementation that give the final EWP the force of law. Such allocation plans are also likely to have monitoring and review requirements as commitments on the Commission or the service provider/developer or other water users.

Licences issued under the *Rights in Water and Irrigation Act* and associated conditions will be required to be consistent with the Minister for the Environment's conditions. Monitoring and review may be required to be undertaken by the Commission. Consistent with the current approach for larger projects, some of these requirements may be passed on to water users as licence conditions.

3.2 Determination of EWRs and EWPs

The process and procedures for establishing ecological water requirements and environmental water provisions are reasonably well developed for groundwater systems, particularly at the sub-regional and local area management planning scales.

Approaches for determining EWRs and EWPs for surface water systems are now being developed and applied in Western Australia. The "holistic approach" to the determination of EWRs of Arthington *et al.* (1992) has been promoted nationally since the early 1990s and was reviewed in a "Comparison Evaluation of Environmental Flow Assessment Techniques: Review of Holistic Methodologies" by Arthington in 1998. The holistic approach is not a technique in itself, but provides a framework for the development of more specialised techniques as our scientific understanding of EWRs improves.

In many ways, the approach that has been used in WA in the development of EWRs for groundwater systems is also an holistic approach.

As defined in Section 1.4, EWPs are the outcomes of water allocation decisions following consideration of ecological, social and economic goals. Consequently,

they may be less than EWRs where some ecological impact is accepted, provided key ecological values are protected. As already explained, where this occurs, proposals are likely to be assessed under the provisions of the *Environmental Protection Act 1986*. However, if cautious allocation decisions are made, EWPs can often be set to meet the EWRs. This approach has been used successfully in a number of groundwater management situations in Western Australia. In areas where there has been minimal disturbance of natural values, EWPs should fully meet EWRs.

By definition, EWPs include water regimes that seek to maintain social values as well as ecological values. In some situations, therefore, EWPs provide additional constraints on sustainable diversion limits over and above those of EWRs alone. This is most likely to be the case for water resources where protection of recreational or other social values is of high importance and may require, for example, the maintenance of water levels in wetlands and river pools during periods of low rainfall.

Given this background, a general approach to the establishment of EWRs and EWPs for both groundwater and surface waters has evolved. This process is carried out with active public consultation and usually involves the following steps:

1. Identification of ecological values supported by the water system and determination of vital or important components of the ecosystem and ecosystem processes which support these values and which are sensitive to changes in the water regime.
2. Determination of water requirements (EWRs) for sensitive components of the ecosystem that preserve the ecological values.
3. Modelling the water resource system to estimate water available for consumptive use with EWRs applied.
4. Formulation of management objectives for the water resource system, including social water requirements.
5. Proposing EWPs using existing information on EWRs and taking into consideration vital consumptive and social uses.



6. Determination of proposed quantities of water available for consumptive uses (the sustainable yields), after first allowing for EWRs.
7. For environmentally significant proposals:
 - (a) review of the proposed EWRs and associated estimates of the water available for consumptive use, by the EPA under the provisions of the *Environmental Protection Act 1986*;
 - (b) specification, by the Minister for the Environment, of key ecological values which must be protected and any requirements for further investigations necessary to refine the EWR/EWP regime in the future.
8. Finalisation and approval, by the Minister for Water Resources, of the water allocation plan which ensures EWRs protect the ecological values set by the Minister for the Environment and provides allocation guidelines for consumptive uses.
9. Adoption, by the Water and Rivers Commission, of a compatible water allocation licensing policy for managing the consumptive water use in the management area.
10. Review of EWRs/EWRs as information becomes available from monitoring and further research.

A flow diagram which summarises this process is shown in Figure 1 (see opposite).

Implicit in this approach is that EWRs cannot be tradeable. Only water that is in excess of EWRs (by definition) may become available for consumptive uses. Water use licences specify consumptive use rights that are tradeable under the *Rights in Water and Irrigation Act 1914* as it is intended to be amended. In some circumstances, reviews of EWRs through a public planning process may identify that additional water could be made available for consumptive use and trading.

In most cases, EWRs and EWRs will be detailed descriptions of water regimes which will vary spatially and temporally. They will not usually be just percentages of mean annual volumes, flows or water levels. In some cases, such as in Regional Management Plans, initial estimates of EWRs and EWRs may be

broadly defined for the purpose of providing initial estimates of sustainable yields. For some areas of high conservation value, it might be determined that all water should be allocated to ecological values, such as is proposed for the Shannon River.

However, for Sub-regional and Local Management Plans, specific EWRs and EWRs will usually be identified. Examples are preferred or absolute minimum levels in a range of wetlands or river pools in certain months or for certain periods, required peak water levels in spring, and monthly flow rates or depths required in riffles (e.g. rapids), over weirs or flows released from storage reservoirs. There could be a requirement for short-term large releases from reservoirs or for rivers and wetlands to dry out completely. Specific water quality requirements may also be included in EWRs and EWRs.

Mitigation water requirements to improve water quality may be included in EWRs where the water requirement is relatively small and is of high social value. However, they will be specifically identified and the purpose of the mitigation will be given. Where large quantities of mitigation water are required to improve water quality, they will also be clearly identified but may be traded for consumptive use if catchment management practices are demonstrated to adequately mitigate the adverse water quality impact.

3.3 Community involvement

Community involvement is an essential component of planning and management of water resources. With respect to the provision of water for the environment, this policy identifies a number of opportunities for the community (including all relevant stakeholders) to be involved in decision-making processes. However, because of the importance to the effective implementation of this policy, more specific information is provided in this section.

Under the provisions of the *Rights in Water and Irrigation Act 1914*, the establishment of water resources management committees is a key element of community/stakeholder involvement in planning and management processes. These committees must be consulted in the development of relevant water resource management plans. In the development of these plans, there are also requirements for:



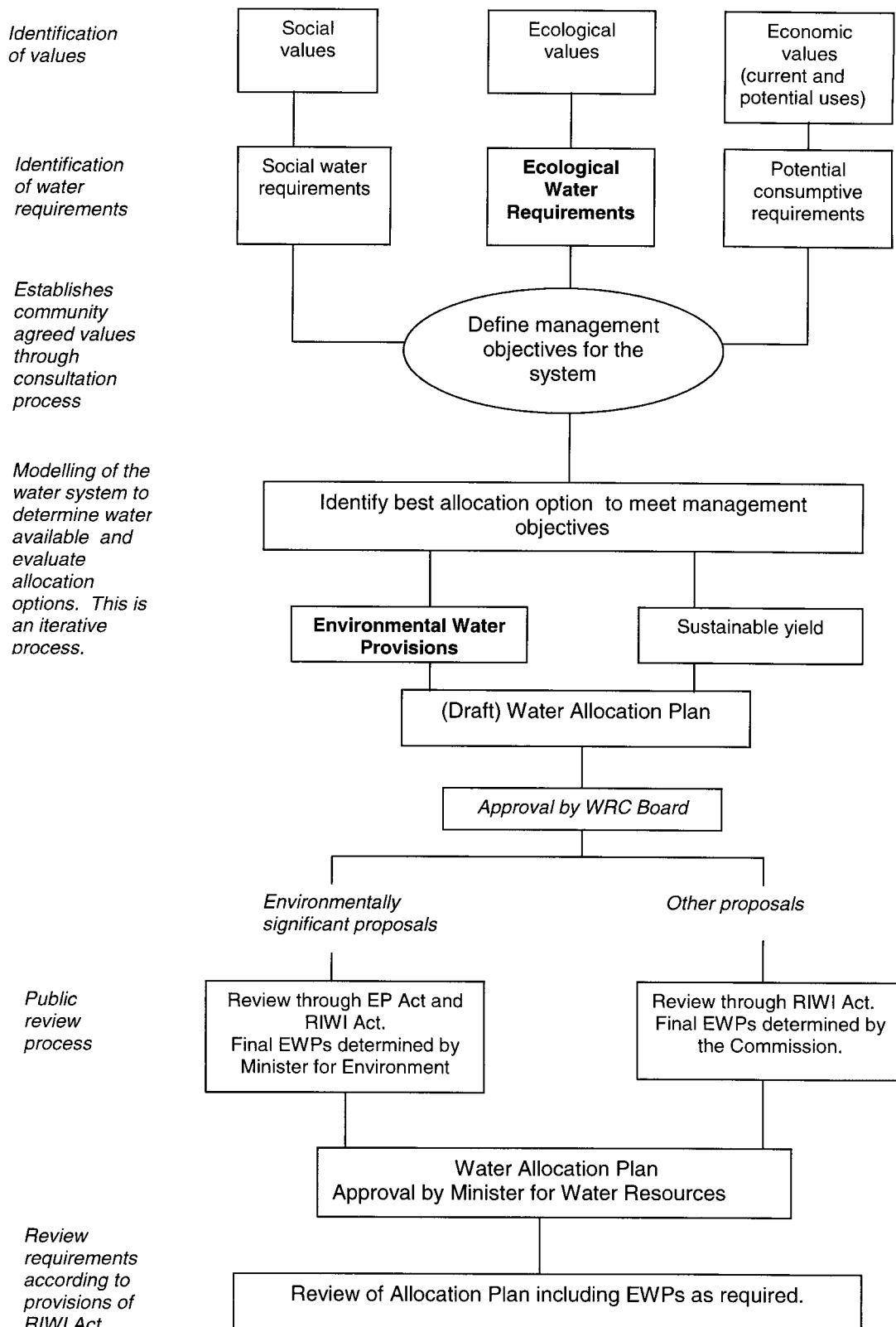


Figure 1. Environmental Water Provisions in the Water Allocation Process



- notification of the preparation of a draft plan;
- call for public submissions and the preparation of a summary of submissions;
- referral of the plan, as modified as a result of submissions, to bodies which the Commission considers may be affected or should view the plan for any reason; and
- a further opportunity to provide submissions on the modified plan.

For plans where EWPs may have significant implications for the environment, referral to the EPA will be required for possible environmental impact assessment. The *Environmental Protection Act 1986* provides for similar opportunities for community involvement in the Commission's planning process, but with additional opportunities for appeals by third parties. Wherever possible, the statutory planning and consultation processes of the Commission and the EPA will be integrated to avoid duplication of effort by stakeholders.

While these are the statutory requirements, in most cases, stakeholders will also be given additional opportunities to have input to the preparation of plans using such approaches as workshops, open forums and displays, surveys and meetings with stakeholders. For important plans, consultative committees may be established to assist with plan preparation.

The Commission will also develop a timetable for the preparation of water management plans, in particular those which will include EWPs. The timetable will be available for inspection by stakeholders and will be regularly reviewed to take account of changing priorities due to such things as new water resource development proposals, increasing water use reflecting changing land use and increased understanding of ecological impacts on water dependent ecosystems.

3.4 Supporting information

There are many matters of detail which need to be considered in the implementation of this policy. Such matters include:

- determination of the ecological and social values to be protected;
- management of situations where meeting approved EWPs require reductions in consumptive use;
- protection of the environment where EWPs have not been set; and the
- need to consider water quality and integrate decisions related to EWPs with other aspects of catchment and river/wetland management.

Further information about these issues is provided in Appendix 3.



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Glossary

Aquifer:	A geological formation or group of formations, able to receive, store and transmit significant quantities of groundwater.	Ecological water requirements (EWRs):	The water regimes needed to maintain ecological values of water dependent ecosystems at a low level of risk.
Biological diversity (biodiversity):	“Variability of all living organisms and the aquatic ecosystems and other ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems” (Convention on Biological Diversity, 1992).	Groundwater:	Water found under the land surface which occupies the pores and crevices of soil or rock.
Commission:	The Water and Rivers Commission established by section 4 of the Water and Rivers Commission Act 1995.	Mitigation water requirements:	Elements of the water regime that are identified to improve diminished water quality resulting from land use practices and developments in the catchment.
Ecological values:	The natural ecological processes occurring within water dependent ecosystems and the biodiversity of these systems.	Social water requirements:	Elements of the water regime that are identified to meet social (including cultural) values.
Ecologically Sustainable Development:	“Using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased” (ESD Strategy, 1992)	Surface water:	Water flowing or held in streams, rivers and other wetlands on the surface of the landscape.
Ecosystem:	A term used for a specific environment, e.g. wetland, or part thereof, to include all the biological, chemical and physical resources and the interrelationships and dependencies that occur between those resources.	Sustainable yield:	The amount of water that can be taken from a water resource system (expressed as an extraction regime) without causing unacceptable impacts.
Environment:	“Living things, their physical, biological and social surroundings, and interactions between all of these.” (<i>Environmental Protection Act 1986</i>)	Water dependent ecosystems:	Those parts of the environment, the species composition and natural ecological processes of which are determined by the permanent or temporary presence of water resources, including flowing or standing water and water within groundwater aquifers.
Environmental water provisions (EWPs):	The water regimes that are provided as a result of the water allocation decision-making process taking into account ecological, social and economic impacts. They may meet in part or in full the ecological water requirements.	Water regime:	A description of the variation of flow rate or water level over time; it may also include a description of water quality.
		Water resources:	Water in the landscape (above and below ground), with current or potential value to ecosystems and the community.



Appendix 1

Excerpt from: Council of Australian Governments' Framework Agreement on Water Resources Policy Reform (1994)

4. In relation to water allocations or entitlements:
- (a) The State Government members of the Council, would implement comprehensive systems of water allocations or entitlements backed by separation of property rights from land title and clear specification of entitlements in terms of ownership, volume, reliability, transferability and, if appropriate, quality,
 - (b) Where they have not already done so, States would give priority to formally determining allocations or entitlements to water, including allocations for the environment as a legitimate user of water,
 - (c) In allocating water to the environment, member governments would have regard to the work undertaken by Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) and Australian and New Zealand Environment and Conservation Council (ANZECC)
 - (d) That the environmental requirements, wherever possible, will be determined on the basis of the best scientific information available and have regard to the inter-temporal and inter-spatial water needs, required to maintain 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 2001* 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. (**NB Agreement amended in 1996 to extend time frame from 1998 to 2001*)
 - (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, and
 - (f) Where significant future activity or dam construction is contemplated, appropriate assessments would be undertaken to, inter alia, allow natural resource managers to satisfy themselves that the environmental requirements of the river systems would be adequately met before any harvesting of the water resource occurs.



Appendix 2

National Principles for the Provision of Water for Ecosystems (ARMCANZ/ANZECC, 1996)

Note: The National Principles were being reviewed at the time of publication of this Policy.

1. River regulation and/or consumptive use should be recognised as potentially impacting on ecological values.
2. Provision of water for ecosystems should be on the basis of the best scientific information available on the water regimes necessary to sustain the ecological values of water dependent ecosystems.
3. Environmental water provisions should be legally recognised.
4. In systems where there are existing users, provision of water for ecosystems should go as far as possible to meet the water regime necessary to sustain the ecological values of aquatic ecosystems whilst recognising the existing rights of other water users.
5. Where environmental water requirements cannot be met due to existing uses, action (including reallocation) should be taken to meet environmental needs.
6. Further allocation of water for any use should only be on the basis that natural ecological processes and biodiversity are sustained (i.e ecological values are sustained).
7. Accountabilities in all aspects of management of environmental water provisions should be transparent and clearly defined.
8. Environmental water provisions should be responsive to monitoring and improvements in understanding of environmental water requirements.
9. All water uses should be managed in a manner which recognises ecological values.
10. Appropriate demand management and water pricing strategies should be used to assist in sustaining ecological values of water resources.
11. Strategic and applied research to improve understanding of environmental water requirements is essential.
12. All relevant environmental, social and economic stakeholders will be involved in water allocation planning and decision-making on environmental water provisions.



Appendix 3

Supporting information

1. Determination of ecological and social values

The definition of terms such as “environmental values” and “beneficial uses” is a vexed one and often depends on context. For example the National Principles for the Provision of Water for Ecosystems (1996) defines “ecological values” broadly as follows:

Ecological values are defined as the natural ecological processes occurring within water dependent ecosystems and the biodiversity of these systems.

It is not proposed to be prescriptive about what are and are not environmental, ecological and social values in this policy. However some guidance about how the Commission goes about identifying values is provided below.

The determination of EWRs requires identification of ecological values. For relatively undisturbed ecosystems, it is clear that the aim is to protect existing “natural” ecological values. For ecosystems which have already suffered disturbance due to regulation and/or as a result of land use changes, the aim is not so clear. The options are to:

- maintain the current ecological values;
- maintain and/or enhance current ecological values;
- identify the likely pre-existing natural ecological values and determine the key values which EWRs should aim to re-establish; or
- provide for a combination of current ecological values and key pre-existing natural ecological values.

Other questions arise as to who identifies these values and who determines which are the values to be maintained. In Western Australia, it is usually scientists and natural resource managers who *identify* these values based on available information as part of the development of water resource management plans

(under the *Rights in Water and Irrigation Act 1914*). The community will also have the opportunity to identify ecological values.

However, it is likely that the final decision about the determination of which values will be protected will be made through the provisions of the *Environmental Protection Act 1986*. This may be through the environmental impact assessment (EIA) process for environmentally significant proposals or through environmental protection polices (EPP) where they are in place and establish the values. Relevant values may also be determined under the *Conservation and Land Management Act 1984* (e.g. through areas being declared as National Parks or Nature Reserves) or under the *Wildlife Conservation Act 1950* (e.g. where rare flora and fauna may be affected).

Ecological values that are water (or more specifically, water resource) dependent include:

- biodiversity;
- ecological processes and functions;
- wetland vegetation;
- phreatophytic vegetation (vegetation accessing the groundwater table);
- riverine vegetation;
- aquatic invertebrates (including subterranean fauna); and
- vertebrates (eg fish, waterbirds, crocodiles, water rats).

Biodiversity may include more specific ecological values such as a specific species of vegetation or fauna, or a particular community structure of aquatic invertebrates. Similarly, ecological processes may include specific processes such as migration of a species of fish, maintenance of channel morphology and the energy flow in food webs.



It can be debated as to what are “values”, “ecological features”, “management objectives”, or “processes” and what is an appropriate hierarchy for such descriptions. In the final analysis, it is not necessary for this policy to be prescriptive. What is more important is that there is agreement about the key aspects of ecosystems which need to be protected through the determination of EWRs.

The setting of EWRs also requires the identification of key social values as part of the determination of social water requirements. As for ecological values, this may require consideration of the indigenous social values of relatively undisturbed water systems and contemporary values of systems which have suffered disturbance due to regulation, and/or land use changes. In some cases, the disturbance may be directly due to the establishment of towns and cities and the associated development of water-based recreation sites.

Identifying key social values will require consideration of :

- Aboriginal and other Australian heritage;
- recreational and tourist pursuits;
- landscape and aesthetic aspects; and
- educational and scientific aspects.

Where there is small-scale domestic and stock water use of rivers and wetlands (such as that defined as riparian use under the *Rights in Water and Irrigation Act 1914*), it may be appropriate for this to be considered a part of the social water requirements and therefore part of the EWRs, even though it is a consumptive use.

In some cases, there may be statutory requirements to meet Aboriginal heritage values under the provisions of the *Aboriginal Heritage Act 1972* or the *Native Title Act 1993*.

Clearly, the identification of social values requires consultation with the community, and especially key stakeholders. Under the Commission’s management planning processes and the EPA’s environmental impact assessment and environmental protection policy processes, there are statutory requirements for community involvement.

Social values are generally not the primary consideration in setting EWRs (ecological values are usually the primary consideration), but they may be established as part of an EWR depending on their impact on EWRs and the significance of the social value sustained by the water regime.

Although commercial and economic use of water for such purposes as public water supply, industrial water supply, irrigation and hydroelectric power generation are clearly of major social value to the community, they are considered as part of consumptive use bulk allocations and are managed through the normal allocation licensing processes.

Although the focus of EWRs in river systems has usually been to protect the values of areas downstream of dams or weirs, it is important to include consideration of the direct impact of a dam and its reservoir on river values and the effect of barriers to fish passage, particularly for proposed new developments. Consideration of the direct impacts of dams and reservoirs on values which are not water-dependent (eg impacts of construction on vegetation beyond the riverine area), are not within the scope of EWRs. Where these latter impacts may be significant, they will be considered as part of the normal environmental impact assessment process under the Environmental Protection Act 1986, with the water service provider/developer as the proponent.

2. Existing use greater than EWRs

While some eastern States are already in the situation where water has been over-allocated in many areas and there is an urgent need to greatly reduce consumptive use to provide more water for ecosystems, Western Australia is fortunate that this is not expected to be a major problem.

There are some areas which are considered to be fully allocated (e.g. Carabooda) and some where Water Corporation abstraction has been reduced to meet EWR criteria (e.g. Whiteman Park). There are also areas where a precautionary approach is being taken and allocation caps have already been established pending the setting of EWRs. In most areas, a conservative approach to allocation to consumptive uses, particularly over the last 10 years, has meant that significant environmental damage has been avoided.



However, it is likely that for some river systems which have major storage reservoirs and for some localised areas of intensive groundwater or surface water use, additional provision of water for the environment may need to be made. These situations will normally be identified when allocations plans are reviewed, particularly where current plans do not include EWPs or where allocations plans including EWPs are established for the first time in rapidly developing areas. In these situations, there may arise a need to reduce consumptive use. Principle 9 states that where EWPs cannot be met “a strategy will be developed in consultation with users and other stakeholders, to ensure such provisions are met within the minimum practical time”.

The State Government has a commitment to compensate where resource use must be reduced due to existing or likely unacceptable environmental impacts if this is done in a way that is unfair or unreasonable. The *Rights in Water and Irrigation Act 1914* provides for compensation where licence amendments treat people differently. If additional water needs to be provided for the environment, there are a number of options available which can address such situations in the management of water resources.

One option is for a water resources management committee to decide that the equitable approach is to reduce all use by a certain percentage. For example, in the situation where the resource has been over-allocated by 5%, all licences could be reduced by 5%. However, this could only be done after public consultation on the proposal and the Minister for Water Resources was satisfied that it was the most appropriate course of action.

Another option is for the Commission to buy back excess allocation. Under this option, the Commission would probably advertise for water entitlements at a certain price, until the water use matched the availability.

A third option is that a water resources management committee may consider that a certain type of use should be phased out. For example, it might decide in a certain area that irrigation of pasture was the least important water use and that this should be curtailed until overuse was eliminated. Compensation would be payable in this situation.

Furthermore, local by-laws can provide for compensation or an “act of grace” payment to be made under the *Financial Administration and Audit Act 1985* even if people are not treated differently when licences are amended. The by-law provision is intended to allow for “compensation” provisions to be negotiated during the development of water resource allocation plans which include proposals for the restructuring of water use. Where the outcome is that some water users are facing significant financial hardship, such payments will be considered but are at the discretion of the Government.

Consistent with the Guiding Principles in the policy, whatever approach is adopted, it must form part of a strategy which has been developed in consultation with users and other stakeholders.

3. Protection of the environment where EWPs have not been set

Not all water licensing areas across the State have water resource allocation plans and in many areas where there are plans, EWPs have not been set. This situation will continue as the Commission works through its program, on a priority basis, to review previous plans and establish new allocation plans.

As a result, there will be many areas of the State where applications are made for water licences where there is little information on ecological values which may be affected by water abstraction. On the other hand, there are also many areas where there will be a reasonable understanding of whether there is likely to be a risk to ecological values. Consistent with Guiding Principle 13, in these situations, allocations to users need to be made “on a precautionary basis that minimises ecological risk”.

Where a licence application is received and water abstraction, or any associated effects of water use (e.g. nutrient discharge), may have a significant impact on the environment, the assessment provisions of the *Environmental Protection Act 1986* must be followed. As the Water and Rivers Commission is considered a “decision making authority” (DMA) for the purposes of this Act in relation to licensing, the Commission must ensure that the proposal is formally referred to the Department of Environmental Protection (DEP) in such



a case. The referral may be made by either the proponent or the Commission. This may apply to many large developments whether or not EWPs have been set. Small scale developments requiring a licence are not normally referred to the EPA.

The proposal is then advertised in the West Australian Newspaper with an associated level of assessment. This may be either “no assessment”, “informal assessment with advice” to the Commission and other DMAs, “formal assessment” or a “quick no” where it is not believed that the proposal could possibly be made to be environmentally acceptable.

The Commission will develop an agreement with the DEP on how to determine whether a proposal may have an environmentally significant impact.

Whether or not proposals are formally assessed under the *Environmental Protection Act 1986*, the Commission will limit the allocation (in size and time) to provide reasonable surety that significant ecological damage does not occur and ecological risk is minimised.

Conditions on the approval to take water will be applied which are consistent with any approvals under the *Environmental Protection Act 1986*. These conditions are likely to require monitoring to detect ecological damage or any emerging threat of ecological damage. If ecological damage is identified, the water user will be required to take corrective action and the licensed allocation may be reduced.

4. Integration of EWPs with water quality and catchment management considerations

Wherever possible, Environmental Water Provisions should be determined as a part of water resource management plans which consider the management of water quantity and water quality within a catchment context. The catchment should preferably be a river basin (or in some cases, such as the Gnamagara Mound, a groundwater flow system) and both surface and groundwater should be dealt with in the same plan. This is the optimal approach as it encourages consideration and integration of all aspects of land and water management.

However, in many situations, this will not be possible. Experience has shown that certain imperatives and limited planning resources will often require that plans are developed, as a matter of priority, covering specific areas and parts of water systems. In these situations, the EWPs and the plans themselves, will often need to be considered as being of an interim nature, which will be subject to review within a catchment context at a future date.

While considering all aspects of catchment management will often not be possible, it should at least be possible and usually necessary, to consider water quality issues which have direct implications for EWRs and EWPs.

Water quality issues need to be considered in four main areas when establishing EWRs/EWPs. These are where:

- part of an EWR may be required to address water quality problems which are mostly caused by surface water diversions or groundwater abstraction (e.g. where river pools were previously oxygenated by continuous flow or low oxygen levels in wetlands have been caused by lower than normal water depths);
- water regimes identified as EWPs may need to have associated water quality parameters to ensure appropriate protection of ecological and social values (e.g. when water is released from a reservoir or water is pumped into a wetland from a deep aquifer);
- there is a need to establish mitigation water requirements, as defined in the policy, to provide for the flushing of algal blooms or the dilution of saline systems affected by dryland salinity or similar; and
- the implementation of EWPs would not make a significant improvement to wetland or river health unless other actions were taken to improve water quality problems associated with catchment or waterway management.

The way that water quality issues are dealt with in allocation planning depends on the cause of the associated water quality problems, recognising that in some situations the cause of the problems may not be known or may be considered to be the result of a combination of factors.



For the first two dot points, the causes of the existing or potential water quality problems are assumed to mostly relate to regulation/abstraction activities. In these situations, it is entirely appropriate that water quality criteria are specified as part of the EWRs and EWPs and associated water regimes are set to ensure acceptable quality.

For the last two dot points, the causes of the water quality problems are likely to be mostly related to the

activities of landowners in the catchment. In these cases, mitigation water requirements may be considerable and should not be considered to be part of the EWPs. Land use practices should be addressed through land planning and management processes. In addition, EWPs should only be implemented where there is a community commitment to improve wetland or river water quality through changes to land management practices.



Appendix 4

Stakeholder consultation list

Draft Policy (Released for public comment February 1999.)

Submissions received from:

Department of Environmental Protection
Department of Resources Development
AgWest
Ministry for Planning
Dept Commerce and Trade
Water and Rivers Commission (Water Quality Branch)
Water Corporation
Western Power
Peel Development Commission
Gascoyne Development Commission
National Parks and Nature Conservation Authority
Shire of Murray
Shire of Mundaring
City of Gosnells
Bureau of Meteorology
Dr Hilda Turnbull MLA
Swan Groundwater Advisory Committee
Gingin Advisory Committee
Avon River Management Authority
Broome Groundwater Advisory Committee
Upper Canning-Wungong-Southern Catchment Team
Conservation Council
WA Water Users Coalition
Rainbow Coast Commercial Horticulturalists
Pastoralists and Graziers Association
Australian Property Institute
Harry Butler
David Keast
Bruce Teede
Astrid Herlihy
Brian Young
Otto Mueller
F. Jupp

Presentations were given to:

Department of Environmental Protection
Wanneroo Groundwater Advisory Committee
Canning-Wungong-Southern Rivers Advisory Committee

Consultation on the final policy included:

Department of Environmental Protection
Environmental Protection Authority
Conservation Council
WRC Board
Minister for Water Resources
Legislative Council Committee
Grower representatives from Advisory Committees
Water Corporation
State Water Reform Council



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Further information

Any project where the proponent/operator is unable to comply with this Policy, or where site conditions prevent the application of this Policy, should be submitted to the Commission as early as possible in the development of the proposal so that the matter may be resolved.

Any enquiries relating to the content of this **Policy** should be directed to:

WATER AND RIVERS COMMISSION
HYATT CENTRE
3 PLAIN STREET
EAST PERTH WA 6004
TELEPHONE (08) 9278 0300
FACSIMILE (08) 9278 0301

For further enquiries on any matter relating to the **management of water resources in the regions**, please contact the Water and Rivers Commission's regional offices.

Swan-Goldfields Agricultural Region

7 Ellam Street, Victoria Park 6100

Telephone: (08) 9355 3544

Facsimile: (08) 9472 1389

or

254 Fitzgerald Street, Northam 6401

Telephone: (08) 9622 7055

Facsimile: (08) 9622 7155

North West Region

Chiratta Road, Karratha 6714

Telephone: (08) 9144 2000

Facsimile: (08) 9144 2610

or

Lot 225 Bandicoot Drive, Kununurra 6743

Telephone: (08) 9168 1082

Facsimile: (08) 9168 3174

South West Region

U2 Leschenault Quays,

Austral Parade, Bunbury 6230

Telephone: (08) 9721 0666

Facsimile: (08) 9721 0600

or

South West Region

21 Sholl Street, Mandurah 6210

Telephone: (08) 9535 3411

Facsimile: (08) 9581 4560

Mid West-Gascoyne Region

Pass Street, Geraldton 6530

Telephone: (08) 9964 5978

Facsimile: (08) 9964 5983

or

82 Olivia Terrace, Carnarvon 6701

Telephone: (08) 9941 4921

Facsimile: (08) 9941 4931

South Coast Region

5 Bevan Street, Albany 6330

Telephone: (08) 9842 5760

Facsimile: (08) 9842 1204

or

Suite 1, 55 Strickland Street, Denmark 6333

Telephone: (08) 9848 1866

Facsimile: (08) 9848 1733



