

# **Protection of the Groundwater, Wetlands and Associated Ecosystems of the Swan Coastal Plain**

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**A public discussion paper**

**Environmental Protection Authority  
Perth, Western Australia  
June 1990**

# Foreword

The Environmental Protection Authority has recognised for some time the urgent need to provide further guidance for the community, developers, land owners and government, in relation to protection of the significant elements of the environment that we all tend to take for granted. Wetlands and groundwater are two key components that contribute significantly to our surroundings and lifestyle.

As part of its programme to identify environmental opportunities and constraints, the Environmental Protection Authority has seen the need to develop an Environmental Protection Policy under Part III of the Environmental Protection Act for the Swan Coastal Plain. This is the area surrounding Perth which is under greatest pressure. An Advisory Committee was formed by the Environmental Protection Authority to assist it in preparing such a policy. This Committee has now reported to the Environmental Protection Authority. To accompany its report, the Committee has provided a draft of such a policy.

Environmental Protection Policies are required under the Environmental Protection Act to pass through several public consultation phases prior to their approval by the State Government. Once approved, they are considered to be part of the Environmental Protection Act, and therefore subject to its compliance and enforcement requirements.

Because these policies have the force of law they require careful drafting to comply with the technicalities of law. In the case of the proposed policy submitted by the Committee, it might be some time before the necessary precise legal drafting is completed. In the meantime, knowing that the Committee has reported, many members of the community are concerned about the policy's implications.

In recognition of the importance that the community has given to protecting water resources, wetlands and other portions of the environment in the Swan Coastal Plain and the potential implications that their protection might have on existing and future land uses, the Environmental Protection Authority has decided to take the unusual step of releasing forthwith the report of the Advisory Committee and its draft policy, in the form of a discussion paper. With the benefit of public comment on both the merits of such a policy and, if relevant, its legal implications, the Environmental Protection Authority will proceed to revise it and make it public, before presenting the Draft Environmental Protection Policy to the Minister for the Environment.

The Swan Coastal Plain is important to the whole community of Western Australia. It is the view of the Environmental Protection Authority that decisions that affect its uses must be made with full knowledge of community expectations and values. Therefore, the Environmental Protection Authority encourages open debate and comment on the proposals contained in this discussion paper. Through this process the Environmental Protection Authority should be able to develop an Environmental Protection Policy that provides the proper guidance for the future. The policy should reflect the principles and beneficial uses set forth in the discussion paper.

While the discussion paper has been prepared in a form similar to that of an Environmental Protection Policy, the Environmental Protection Authority emphasises that this consultation is a preliminary step which will lead to the preparation of a formal, draft policy in accordance with Section 26 of the Environmental Protection Act.

## How to Make a Submission

The Environmental Protection Authority invites people to make a submission on this draft of an Environmental Protection Policy.

Comments from government agencies and the public will assist the Environmental Protection Authority to prepare a Draft Environmental Protection Policy which can be formally progressed under Part III of the Environmental Protection Act. This will mean further public consultation and consideration before the Policy is accepted by the government.

## Why write a submission?

A submission is a way to provide information, express your opinion and put forward your suggestions as to future course of action, including any alternative approach. It is helpful if you indicate any suggestions you may have to improve the draft.

All submissions received will be acknowledged.

## Developing a submission

You may agree or disagree, or comment on, the general or specific issues discussed in the draft of the Environmental Protection Policy. It helps if you give your reasons for your conclusions, supported by relevant data.

You can make an important contribution by suggesting ways to make the draft of the policy more acceptable.

When making comments on specific aspects in the draft:

- clearly state your point of view;
- indicate the source of your information or argument if this is applicable; and
- suggest changes, safeguards or alternatives.

## Points to keep in mind

By keeping the following points in mind, you will make it easier for your submission to be analysed.

Attempt to list your points so that the issues raised are clear. A summary of your submission is helpful. Refer each point to the appropriate section in the draft of the policy. If you discuss several sections of the draft of the policy keep them distinct and separate so there is no confusion as to which section or point you are considering.

Attach any factual information you may wish to provide and give details of the source. Make sure your information is correct.

Please indicate whether your submission can be quoted, in part or full, by the Environmental Protection Authority.

Remember to include your name, address and the date.

The closing date for submission is 31 August 1990..

Submissions should be addressed to:

The Chairman  
Environmental Protection Authority  
1 Mount Street  
PERTH WA 6000  
ATTENTION: COLIN MURRAY

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# **Environmental Protection Policy for Groundwater, Wetlands and Associated Ecosystems of the Swan Coastal Plain**

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**Report of the Advisory Committee to the Environmental  
Protection Authority**

**March 1990**



# 1. Introduction

The two essential components which form the basis of our lifestyle on the Swan Coastal Plain are on a collision course. One, the environment, is continuously modified by the other, economic growth. And the engine driving these two into conflict is population growth.

The question of population size may be seen as beyond the scope of this Committee's work and beyond the capacity of the State Government to control. However, the community will be wise to re-examine its assumptions about the basic determinant of our lifestyles, for to ignore it is to fret about the tone of the violins while the theatre burns.

The social, economic and bio-physical environment of the Swan Coastal Plain depends for its continuing existence on the groundwater beneath it. This essential resource is sustained by annual rainfall infiltration. The superficial aquifers, upon which all of these environments rely, exist because of the highly porous nature of the soils of the Plain. The quality and quantity of the groundwater resource is a very significant determinant of the quality of the social, economic and bio-physical environment of the Plain.

Water is abstracted from these aquifers for domestic, commercial and recreational purposes while a significant portion of the native vegetation also draws from the superficial watertable. Wetlands frequently represent a surface expression of the groundwater.

On the Swan Coastal Plain, groundwater has tended to accumulate and form mounds. While groundwater is evident throughout the sediments of the Plain, it is these mounds, such as the Gnangara Mound, Jandakot Mound and Serpentine Mound, which are of crucial importance.

The reasons for the existence of the highly valuable groundwater resource are also a crucial aspect of the threat to both the quantity and, more significantly, the quality of that resource. The porous soils have limited pollution attenuation capabilities. Further, while considerable knowledge is available about the groundwater, it is generally agreed that substantial research is required before a better understanding of the relationships between land use, soils and the groundwater can be achieved and predictions of effects and consequences of defined incidents or trends can be made with any confidence.

There is substantial evidence to point to contamination of the groundwater from previous land use activities, especially point sources (eg Hirschberg, 1989). Evidence is also being obtained which points to levels of contamination of the groundwater occurring from dispersed sources, including urban development (eg Atwood and Barber, 1989).

All land use developments, whether urban, industrial, recreation or agricultural, have the potential to contaminate the groundwater and alter recharge to the aquifers. Clearly, the actual impact will depend on the site characteristics, level and philosophy of design, and long term management. However, unless action is taken, impacts which reduce groundwater quality are inevitable. Once they occur, the impact is likely to be permanent and remedial action can only marginally improve the situation.

In addition to threats from land use activities, projected effects resulting from climate change induced by the "Greenhouse Effect" could see significant changes in the annual rainfall received on and adjacent to the Swan Coastal Plain, leading to changes in the total water volume, surface and underground, available to all of the environments in the region. However, in looking to the local environment to respond to these potentially significant changes, the natural variability that has applied to the environment within the historical and longer term past needs to be recognised. The fluctuations in rainfall and alteration to our physical surroundings through development of the landscape have demonstrated that the environment can cope with some degree of change but that there are limits to its ability to accept or support such impacts. There are many instances, such as the contamination of wetlands (EPA Technical Series No 33), eutrophication of Peel-Harvey Inlet (EPA Bulletin No 363) and salinisation of land and water, where these environmental limits have been exceeded. In the case of Peel-Harvey Inlet, concerted and co-ordinated action may lead to environmental improvement.

There is considerable need to improve our understanding of the interactions and processes involved on the Swan Coastal Plain between the bio-physical and social environments, our knowledge of the relationships between land use activities and recharge characteristics, as well as other groundwater impacts. The relationships between groundwater and wetlands and between wetlands and specific



sly been identified as areas requiring further research (EPA Bulletin No 295). Intensive appreciation of cause and response, the actions and controls that can be based on our current but imperfect state of knowledge.

Development on the Swan Coastal Plain has related to the groundwater and ultimately led to the wholesale destruction of many wetlands since European settlement. No action has been taken place, significant alteration of the remaining wetlands through loss of vegetation has occurred. The majority of wetlands present at the time of settlement no longer exist and those that remain are under increasing threat as Perth intensify its land uses. There is still a view in the community that wetlands that are reserves have little or no value and that alternate uses for them, such as agriculture, are a high priority.

There is a growing view in the community that the remaining wetlands of the Swan Coastal Plain are vital for the maintenance of ecological systems and the time has been reached when action is to be taken to protect them.

Increased population pressures and related development on the wetlands is readily apparent. Many wetlands have elevated nutrient levels which often lead to toxic algal blooms, and obnoxious odours. Even where these do not occur, there is growing concern that biological values are being degraded (Chalmers and Davis, 1989). More research is needed to gain a better understanding of these effects and their relationship to land use.

Loss of remnant native vegetation, particularly banksia woodlands, and the loss of partially reduced available fauna habitats. Further, the intrusion of urban and industrial development has affected the values of the remaining habitat areas. Given the already degraded state of the fauna and their habitats, it does not make sense to increase those activities such as hunting, use of power boats in sensitive areas and other human activities. All wetlands demand adequate protection and appropriate management.

Development on the Coastal Plain is increasing, and with it comes the need to develop further land into new resources. The majority of water supplies on the Plain come from groundwater sources. Private and public abstraction from these sources is increasing as a result of increasing population numbers, increasing per capita demand, growing industrial and residential development and more intensive agriculture. Approval is now required for groundwater abstraction for domestic purposes in almost all of this region. However, many commercial and industrial users do not pay for the water that is used while public water supply consumers pay for their consumption.

Source control and management means that a significant number of users, particularly industrial, are not subject to active control. Further, the financial burden of water resource management is borne by all users.

It is the responsibility of all groundwater users and the community to ensure that the resource is protected for long term benefit. The community places considerable and increasing emphasis on protecting the groundwater resource, to ensure that its contribution to our economic well-being can be sustained. One of the problems associated with groundwater is the lack of adequate mechanisms for allocation and control. Where the value of water is too high, excessive water use may arise. There is a need for all users of the groundwater to contribute to the management. As with currently controlled groundwater users, this could mean the payment of a fee for use. This mechanism would contribute to the objective of water resource management and provide funding for management and improvements in our understanding of the resource.

Water pricing is becoming more important in the light of increasing demands and more intensive land uses. Programmes aimed at educating water users have been operated in the past, while water pricing is also aimed at influencing usage. Water restrictions will be a last resort in controlling consumption. It is doubtful whether water resource management will be achieved without the application of some form of price mechanism within that mechanism, incentive programmes.

## 2. Advisory Committee

The pressures on the groundwater resources, wetlands and groundwater dependent ecosystems caused by the growth of Perth led the Environmental Protection Authority to establish an Advisory Committee in November 1989. This Committee was asked to address the following tasks:

- 1 Prepare a draft Environmental Protection Policy for the protection of the groundwater resources, wetlands and associated ecosystems of the Swan Coastal Plain, which will provide a framework within which more specific local environmental protection policies can be developed.

The Swan Coastal Plain is defined as the land bounded by the Moore River, Gingin Scarp, Darling Scarp, Whicher Scarp and Indian Ocean.

- 2 Develop a policy which will seek to ensure the groundwater resources continue to sustain beneficial uses, to be identified in local environmental protection policies, and will specify the fundamental principles and objectives to be embodied in the local environmental protection policies.
- 3 Prepare a draft Environmental Protection Policy for the protection of the groundwater resources, wetlands and associated ecosystem of any area deemed necessary by the Committee.

The Advisory Committee was chaired by Mr Arthur Tonkin, a former Minister for Water Resources, and included membership drawn from the Department of Planning and Urban Development, Western Australian Farmers' Federation, Urban Development Institute of Australia, Environmental Protection Authority, Water Authority of Western Australia, CSIRO, Department of Conservation and Land Management, Australian Conservation Foundation, Conservation Council of Western Australia and the Local Government Association. The names of the members are listed in Appendix A.

This report outlines the approach and principles adopted by the Advisory Committee in the preparation of the draft Swan Coastal Plain Groundwater, Wetlands and Associated Ecosystems Environmental Protection Policy as well as explaining the details of the policy.

The policy has been prepared in accordance with the provisions of Part III of the Environmental Protection Act and, once approved by the Minister for the Environment and the Parliament, has the force of law. Actions taken under Western Australian statutes must be consistent with the provisions of the approved policy. The policy has been prepared as a statement of intent by the Advisory Committee. It will need to be subject to the scrutiny of the Crown Law Department prior to publication to ensure consistency with other statutes and will be drafted in legal form prior to implementation.

## 3. Principles and Objectives

The issues discussed above have provided the context within which this policy has been prepared. They have indicated and defined the direction for the policy. The objectives of the policy have been developed to recognise these issues.

The purpose of this policy is to ensure protection of the groundwater, wetlands and associated ecosystems of the Swan Coastal Plain from adverse effects and for specified beneficial uses.

In recent years a number of significant principles have been adopted by the community and the State Government as awareness and interest in the interaction between the environment and development has dramatically grown. Documents such as the World, National and State Conservation Strategies (IUCN 1980, AGPS 1984 and DCE 1987) have identified specific principles that need to be followed for the future. The State Government has also adopted an Environmental Charter for the State which sets out a series of environmental rights of the community, including the right to clean water.

From these documents, the Advisory Committee has taken relevant principles and included them in the policy. These principles have been used to guide and support this and related policies.

The following principles from the State Conservation Strategy and Environmental Charter overlay the details of the policy and should be used as guides to the intention of this policy:

- (a) Maintenance of essential ecological processes and life support systems.
- (b) Preservation of genetic diversity.

- (c) Ensuring the sustainable use of natural resources and ecosystems.
- (d) Maintenance and enhancement of environmental qualities.
- (e) Optimising the quality of life for Western Australians.
- (f) Management of wetlands, groundwater, lakes, rivers and estuaries to ensure a clean and healthy condition.
- (g) The polluter pays for restoration of environmental harm.
- (h) Development should:
  - (i) not exceed the environment's capacity to assimilate related adverse impacts; and
  - (ii) not jeopardise the well-being of future generations.

The Committee has recognised that these principles have significant implications on the future development on the Swan Coastal Plain. The main driving forces are increasing population pressures and related economic development. Increasing population not only requires the development of more land for housing and economic infrastructure, but also means that more water is consumed. To meet these principles and protect the environment may require that decisions are made to limit or redirect population growth. This needs to be undertaken in ways that do not simply transfer the problem to another location.

As the title of the policy suggests, there are three issues that have been specifically addressed by this policy. These relate to the need to protect the groundwater resources of the Swan Coastal Plain, to protect the remaining wetlands that exist on the Plain, and to ensure that the ecosystems that are sustained and supported by the groundwater, including the wetland related ecosystems of the region, are protected and managed appropriately.

## 4. Approach

There are many factors that influence our surroundings on the Swan Coastal Plain and their interrelationships are complex. Preparation of an Environmental Protection Policy for the groundwater, wetlands and associated ecosystems within such a setting is a major undertaking, recognising especially the existing legislative and administrative structures as well as community aspirations and expectations.

Following the definition of beneficial uses that would apply to the whole of the Swan Coastal Plain, the policy identifies a suite of detailed objectives that relate to each of the beneficial uses. It is expected that these would be used by government agencies and others to assist them in implementing the intent of the policy.

It has been clear to the Advisory Committee that a successful policy must identify the key issues, define goals related to those issues and provide a framework for the attainment of those targets. The approach adopted has been to recognise that no single policy could deal with an area and issues as complex as those raised in this policy. Therefore, the Committee proposes that there should be a set of environmental protection policies. This provides for a series of policies to be prepared to cover regional and local themes in a consistent manner, while supporting initiatives taken through other legislation. It is important that the objectives of this policy are incorporated in the decision-making processes of State Government agencies and local government authorities.

The policy raises the need to consider in different ways activities that have yet to be proposed and those that already exist. In the case of the former, the beneficial uses and objectives will be available prior to the proposal being formulated or within sufficient time for them to be incorporated in the proposal. On the other hand, land uses and developments that currently operate in the policy area have not had that advantage. Therefore, the policy proposes that existing developments and activities should be treated differently to new proposals. In essence, proposed developments will need to be consistent with the policy prior to obtaining approvals, while current activities will be allowed to continue provided that they do not lead to significant pollution or loss of wetlands. To allow these activities would clearly not be within the intent, or meet the objectives, of the policy. Where there is a need to review activities, this should be the responsibility of the government agencies which have

statutory powers over those activities. Such a task will necessarily require commitment from the government at a level consistent with the importance of this policy.

This policy defines the objectives and beneficial uses that will apply for the whole of the area of the Swan Coastal Plain. It is intended that more detailed environmental protection policies will be prepared for specific portions of the Plain. These would be consistent with this policy. A policy for the portion of the Gnangara Mound covered by Crown owned land is already well advanced and preparation of a policy for the Jandakot Mound has commenced. For these more detailed policies and others that may be prepared in the future, this policy specifies issues that should be included in them. These are:

- (a) Definition of the boundaries of the specific portion of the policy area, or nomination of the specific land use activity or specific segment of the environment to which the policy applies.
- (b) Identification of land use activities that are consistent or not consistent with this policy.
- (c) Identification of criteria that will be used to determine consistency or non-consistency.
- (d) Definition of the indicators, parameters or criteria to be used for the determination of environmental quality.
- (e) Identification or definition of the means by which the attributes of wetlands can be determined or defined.
- (f) Specification of the period or time during which the policy applies.
- (g) Specification of specific environmental quality objectives to be achieved and maintained by means of the policy.
- (h) Definition and establishment of a programme by which the environmental quality objectives are to be achieved and maintained.
- (i) Specification of programmes for improving knowledge and understanding of the relationships between land use activities, groundwater, wetlands and/or associated ecosystems.

In preparing this policy the Advisory Committee has taken the attitude that an indication of the probable compatibility of various land use activities with the designated beneficial uses is necessary. This has been undertaken and is presented in Appendix B. Clearly, there can be a range of potential significance in terms of environmental impacts associated with nominated activities or developments because of the way a proposal, activity or operation is undertaken and the environmental conditions that prevail at any particular time. However, the Committee considers that the assignment of particular levels of compatibility in Appendix B can be justified, based upon the current condition of much of the Swan Coastal Plain environment as well as the state of knowledge in relation to particular activities and their short and long term impacts. There is an urgent need to better understand these relationships, with a view to implementing actions that reduce these incompatibilities.

The community, including land users, has a responsibility to ensure that adequate knowledge of the effects of activities is understood and that sufficient funding is provided. Promotion of water related research could be facilitated through the imposition of an environmental levy being applied on all water usage. Such a levy would not only serve this research objective but would also enhance water conservation measures.

In view of the significant pressures that are being applied to the groundwater resources, existing wetlands and remnant native habitats on the Swan Coastal Plain, the Advisory Committee has determined that specific, important sites within the policy area need to be identified and afforded protection through this policy rather than subsequent local environmental protection policies. For this reason the Committee has defined groundwater protection areas (shown in Figure 1) where it is essential that the groundwater resources are protected from a range of developments and activities. These have been identified according to the foreseeable planning of the Water Authority, where the need to protect potable standard water quality at existing levels of recharge is seen as the priority. By protecting water quality in these strategic areas, a significant benefit also accrues to the wetlands located in the same areas.

## 5. Implementation

There are two aspects involved in the implementation of the policy once it becomes law. The first is to ensure that the policy is followed by government agencies, local government authorities and all other groups and individuals affected by the policy. The second issue relates to preparation of the local policies and other policies that might flow from, or coincide with, this policy.

Many agencies and individuals have responsibility for land or activities within the policy area. Some are more important, significant or relevant than others. However, the intent of this policy will not be achieved unless the community is committed to the policy and all involved or affected groups and individuals take personal responsibility for their actions. It is important that implementation of this policy is co-ordinated and the Committee believes that this should be the responsibility of the Environmental Protection Authority. Co-ordination would be expected to involve ensuring that all those affected by the provisions of the policy are aware of them and have information to assist them in either remaining consistent with the policy or altering their activities to become consistent with it. In addition, there will need to be a watching brief to ensure that only consistent activities are undertaken and this role can be undertaken by the Environmental Protection Authority with its existing statutory powers.

Additional environmental protection policies to be prepared within the policy area need not be prepared by the Environmental Protection Authority. Consideration is being given by other groups to the preparation of a number of policies. There is, however, a need to co-ordinate the development of these policies to ensure that they are consistent with each other and don't duplicate issues or areas. This is a role that should remain with the Environmental Protection Authority. Where other groups consider that a policy is warranted, the agreement of the Environmental Protection Authority should be sought before proceeding with its preparation.

It is not the intention of this policy that existing incompatible uses would need to cease on the day the policy becomes law. Unless activities are clearly causing pollution of the groundwater or leading to the loss of wetlands, they will be permitted to continue. During the preparation of a local Environmental Protection Policy, these continuing activities would be reviewed and programmes devised to allow or assist the activity to meet the beneficial uses of the policy. Where the activity does pollute or cause wetlands to be lost, they need to be reviewed as a matter of priority so that the beneficial uses are protected.

This policy is not intended to over-ride previous decisions and approvals. However, it does set out a series of rules, in the form of beneficial uses, that must be respected and applied to current and future land uses. The policy has been prepared to protect those essential parts of the surroundings of Perth and the Swan Coastal Plain upon which our lifestyles and environmental heritage depend. Fixing past problems will take time but unless strong action is taken now, it will be extremely difficult if not impossible to protect these values.

## 6. References

- Australian Government Publishing Service (1984). A National Conservation Strategy for Australia
- Atwood, D and Barber, C (1989). The Effects of Perth's Urbanisation on Groundwater Quality - A Comparison with Case Histories in the USA. In Swan Coastal Plain Groundwater Conference - Proceedings, ed G Lowe. Western Australian Water Resources Council
- Chalmers, J and Davis, J (1989). How Wetlands Work. In Swan Coastal Plain Groundwater Conference - Proceedings, ed G Lowe. Western Australian Water Resources Council
- Department of Conservation and Environment (1987). A State Conservation Strategy for Western Australia. Bulletin 270
- Environmental Protection Authority (1987). Gnangara Mound Water Resources. Report and Recommendations of the Environmental Protection Authority. Bulletin No 295
- Environmental Protection Authority (1988). Peel Inlet-Harvey Estuary Management Strategy. Stage 2 ERMP. Report and Recommendations of the Environmental Protection Authority. Bulletin No 363
- Environmental Protection Authority (1989). Nutrient Loadings and Eutrophication of North Lake, Western Australia. Technical Series No 33
- Environmental Protection Authority (1989). The Environmental Condition of the Vasse-Wonnerup Wetland System and Discussion of Management Options. Technical Series No 31
- Environmental Protection Authority (in prep). A Guide to Identifying Wetland Management Objectives in the Perth Metropolitan Area. Bulletin 374
- Hirschberg, K (1989). Groundwater Contamination in the Perth Metropolitan Region. In Swan Coastal Plain Groundwater Conference - Proceedings, ed G Lowe. Western Australian Water Resources Council
- International Union of Conservation of Nature and Natural Resources (1980). World Conservation Strategy: Living Resource Conservation for Sustainable Development
- Kinhill Engineers Pty Ltd (1988). Peel Inlet and Harvey Estuary Management Strategy: Environmental Review and Management Programme - Stage 2
- Water Authority of Western Australia (1987). Perth Urban Water Balance Study
- Western Australian Water Resource Council (1988). A Strategy for Water Allocation in the Perth-Bunbury Region

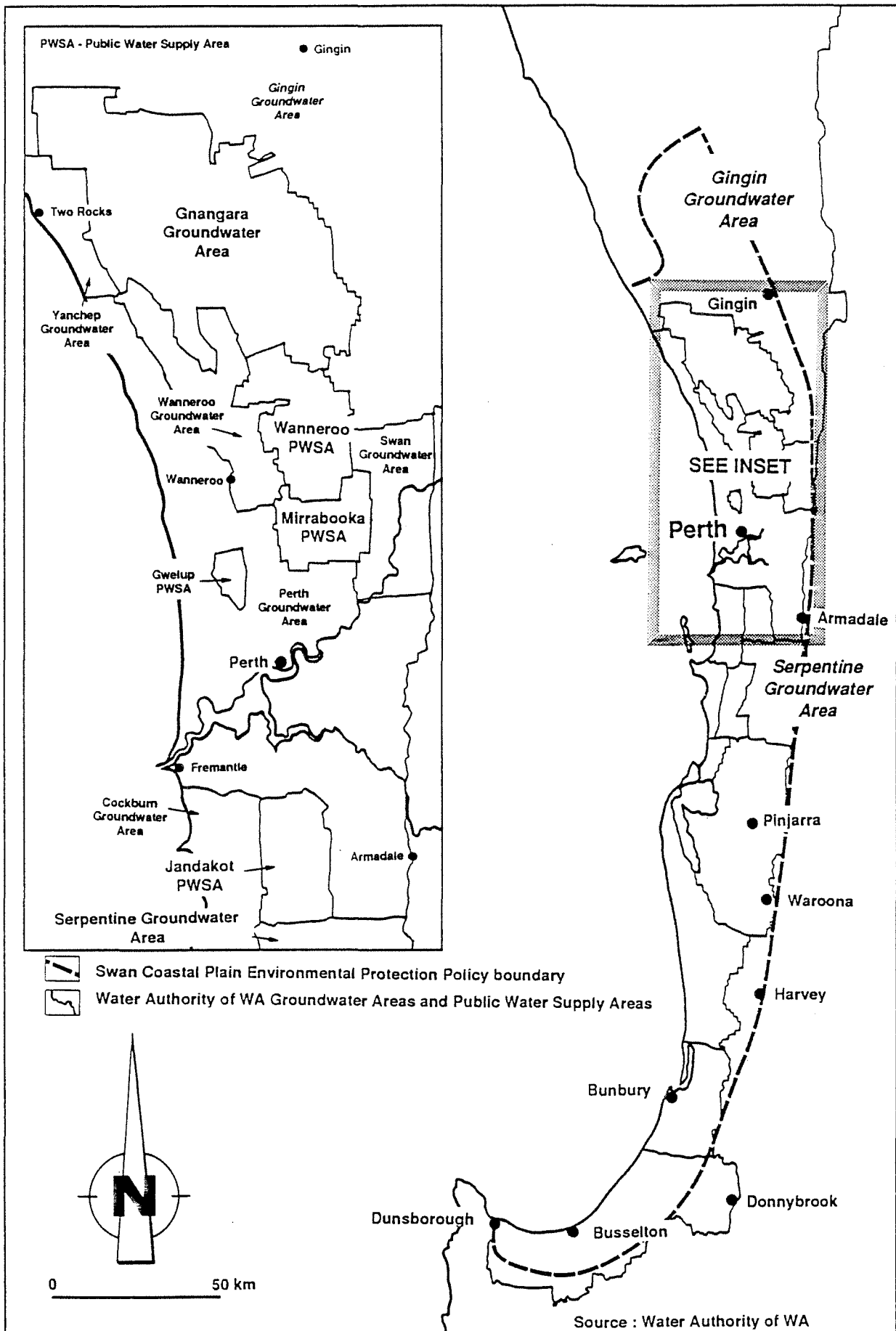


Figure 1: Groundwater protection areas of the Swan Coastal Plain defined in this policy

## Appendix A

### Membership of the Swan Coastal Plain Environmental Protection Policy Advisory Committee

Mr Arthur Tonkin	Chairman
Mr Frank Batini	Department of Conservation and Land Management
Mr Harry Ventriss	Water Authority of Western Australia
Professor Philip Jennings	Conservation Council of Western Australia
Ms Jill Harris	Australian Conservation Foundation
Mr Ken Gilbert	Urban Development Institute of Australia (Western Australian Division)
Mr Michael Ratcliffe	Department of Planning and Urban Development
Dr Chris Barber	CSIRO
Mr Graeme Major	Local Government Association
Mr Syd Cheverton	Local Government Association (observer)
Mr Gavin Drew	Western Australian Farmers' Federation
Mr Colin Murray	Environmental Protection Authority

Mr Charles Nicholson, Mr Ian Briggs and Ms Karen Brock of the Environmental Protection Authority assisted the Committee in the preparation of this report and policy.



## Appendix B

Table showing relationships between the beneficial uses and various land uses

(This table is a guide and is not intended to be definitive. It shows the potential impacts on each beneficial use of identified land use activities)

Activity		Beneficial Use		
Land Use	Category	Groundwater	Wetland	Ecosystem
Wetland protection		0	0	0
Vegetation protection		0	0	0
Agriculture	non-irrigated cropping	#	#/X	X
	irrigated	#	#/X	X
	intensive animal	X	#/X	#/X
	extensive grazing	#	X	X
	tree plantations	0/#	X	X
Urban development	urban residential	#/X	#/X	#/X
	special residential	#/X	#/X	#/X
	special rural	#/X	#	#
Water production	public	#	#/X	#
Industrial	light manufacturing	#	#	#/X
	non-effluent producing	#	#	#/X
	effluent producing	#/X	#/X	#/X
Recreation	active	#	#/X	#/X
	passive	0	0	0
	landscape amenity	0	0	0
Commercial	retail	#	#	#
	underground storage	X	X	#
Infrastructure	drainage	#/X	X	#
	septic tanks	X	X	#
	reticulated sewerage	0	0	0
	domestic waste landfill	X	X	X

### Categories:

- 0 improvement or no adverse environmental impact
- # minimal to limited adverse environmental impact
- X significant adverse environmental impact

D R A F T

# **Environmental Protection Policy for Groundwater, Wetlands and Associated Ecosystems of the Swan Coastal Plain**

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**Swan Coastal Plain Environmental  
Protection Advisory Committee**

**March 1990**

## Citation

- 1 This policy may be cited as the Environmental Protection (Swan Coastal Plain Groundwater, Wetlands and Associated Ecosystems) Policy 1990.

## Purpose of Policy

- 2 The purpose of this policy is to ensure protection of the:
  - (a) groundwater;
  - (b) wetlands; and
  - (c) associated ecosystems;within the policy area from adverse effects, including pollution, and for specified beneficial uses.

## Interpretation

- 3 In this Environmental Protection Policy, unless the contrary indication appears:
  - "Act" means the Environmental Protection Act 1986;
  - "aquifer" means a geological formation, group of geological formations or part of a geological formation capable of transmitting and yielding significant quantities of water;
  - "area of influence" of a groundwater abstraction scheme means the area within which the quality or quantity of the water abstracted by that scheme could be affected by activities undertaken within that area;
  - "attributes" of a wetland means the characteristics or qualities which distinguish a particular wetland from other wetlands or segments of the environment;
  - "Authority" means the Environmental Protection Authority constituted under the Act;
  - "beneficial use" means use of the environment, or any portion thereof, which is identified and declared under this policy to be a beneficial use to be protected;
  - "Chief Executive Officer" means Chief Executive Officer as defined under the Act;
  - "ecosystem" means a community of organisms, the interactions between them and the interactions with their surrounding environment;
  - "groundwater" means sub-surface water contained within the saturated zone of an aquifer, where saturated zone is that part of an aquifer in which all voids are filled with water under greater than atmospheric pressure;
  - "land use activity" in relation to this policy means a use, operation, development, programme, plan, scheme or proposal which may affect the groundwater quality or quantity, wetlands or ecosystems associated with aquifers;
  - "passive recreation" means recreation that does not lead to or require clearing or degradation of vegetation or wetlands or groundwater quality;
  - "policy" means this Environmental Protection Policy;
  - "policy area" means the area referred to in Section 4(b);
  - "principles" means those principles that are achieved by this policy and are defined in Section 5;
  - "relevant portion of the environment" means the portion of the environment referred to in Section 4(a);
  - "responsible authority" means the decision-making authority which has statutory responsibility for regulating or controlling land use activity;

"segment" in relation to the environment means any portion or portions of the environment expressed in terms of volume, space, area, quality or time or any combination of these;

"sustainable use", unless otherwise indicated in this policy, means use of the groundwater, wetlands and associated ecosystems which meets present needs without compromising the ability to meet future needs;

"wetlands" means lands permanently or temporarily under water or waterlogged; temporary wetlands must have surface water or waterlogging of sufficient frequency and/or duration to affect the biota and/or the soils. The occurrence at least sometimes of hydrophytic vegetation or use by water birds are necessary attributes.

## Application

- 4 This policy applies to:
- (a) that portion of the environment comprising the groundwater, the layer of land above and within the groundwater, and wetlands and groundwater dependent vegetation within the area referred to in paragraph (b);
  - (b) the area bounded by the Moore River, Gingin Scarp, Darling Scarp, Whicher Scarp and high water mark of the Indian Ocean and defined more precisely in Schedule 1; and
  - (c) all land and to land use activities undertaken by private individuals, corporations, government departments, government agencies and responsible authorities, within the area defined in accordance with paragraph (b).

## Principles to be used

- 5 The following principles shall be used as guides to the intention of this policy:
- (a) Maintenance of essential ecological processes and life support systems.
  - (b) Preservation of genetic diversity.
  - (c) Ensuring the sustainable use of natural resources and ecosystems.
  - (d) Maintenance and enhancement of environmental qualities.
  - (e) Optimising the quality of life for Western Australians.
  - (f) Management of wetlands, groundwater, lakes, rivers and estuaries to ensure a clean and healthy condition.
  - (g) The polluter should be responsible for restoration and ongoing management of environmental harm.
  - (h) Development should:
    - (i) not exceed the environment's capacity to assimilate related adverse impacts; and
    - (ii) not jeopardise the well-being of future generations.

## Beneficial uses to be protected

- 6 The following uses are identified and defined as beneficial uses under this policy:
- (a) Protection and maintenance of the quality and quantity of the groundwater resources of the Swan Coastal Plain for the purposes of:
    - (i) public water supply;
    - (ii) private domestic water supply;
    - (iii) commercial, mining and industrial water use;

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- (iv) agricultural water supply;
  - (v) recreational water use; and
  - (vi) ecosystem maintenance.
    - (i) flora and fauna habitat;
  - (b) Maintenance and management of the wetlands of the Swan Coastal Plain for the purposes of:
    - (i) scientific and educational use;
    - (iii) recreation; and
    - (iv) landscape amenity.
  - (c) Protection and management of ecosystems that are dependent on the groundwater or wetlands of the Swan Coastal Plain for the purposes of:
    - (i) ensuring the continued, viable presence of native flora and fauna;
    - (ii) scientific and educational use;
    - (iii) recreation; and
    - (iv) landscape amenity.
- 7 Protection and maintenance of the quality and quantity of the groundwater resources of the Swan Coastal Plain in accordance with Section 6(a) requires that:
- (a) the quality of the groundwater is protected from pollution resulting from current or which would result from proposed land use activities;
  - (b) the quantity of groundwater available for use is maintained at levels that are sustainable over the long term;
  - (c) where the quality does not meet standards as defined in Section 20(c) or (d), remedial action to improve that quality shall be taken;
  - (d) water conservation be encouraged through management of water consuming activities and re-use and recycling of wastewater; and
  - (e) land use activities do not reduce the recharge of the groundwater over the long term.
- 8 Maintenance and management of the wetlands of the Swan Coastal Plain in accordance with Section 6(b) requires that:
- (a) current or proposed land use activities protect and do not adversely affect the number and quality of wetlands; and
  - (b) management of wetlands and land use activities in adjacent areas are undertaken to protect the attributes of the wetlands.
- 9 Protection and management of ecosystems that are dependent on the groundwater or wetlands of the Swan Coastal Plain in accordance with Section 6(c) requires that:
- (a) vegetation dependent on the groundwater is retained;
  - (b) land use activities provide for the protection and management of these ecosystems;
  - (c) groundwater levels are maintained at levels which ensure that the dependent ecosystems are protected;
  - (d) the quality of the groundwater is protected from adverse effects resulting from current or proposed land use activities; and
  - (e) responsible agencies ensure that adequate natural vegetation buffer zones surrounding wetlands are retained .

## Groundwater, Wetland and Ecosystem Protection Areas

- 10 Without limiting the provisions of Section 18, any portion of the Swan Coastal Plain may be defined as a groundwater, wetland or ecosystem protection area, within which certain defined land use activities are not compatible and therefore not acceptable within this policy.
- 11 Groundwater protection areas shall include the following portions of the policy area:
  - (a) Gnangara Water Reserve
  - (b) Wanneroo Public Water Supply Area
  - (c) Mirrabooka Public Water Supply Area
  - (d) Jandakot Public Water Supply Area
  - (e) Serpentine Groundwater Area
  - (f) Gingin Groundwater Areaand their areas are more specifically defined in Schedule 2.
- 12 The following land use activities are considered to be compatible with the beneficial uses defined in Section 6 and shall be permitted in the groundwater protection areas:
  - (a) Native vegetation retention
  - (b) Wetland retention
  - (c) Passive recreation.
- 13 A proposed land use activity within a groundwater protection area identified in Section 11 and not specified as a compatible land use activity in Section 12 shall not be permitted unless and until it has been subject to consideration under Part IV or Part V of the Act or unless it is specified to be compatible within a policy prepared under Section 19.
- 14 Land use activities currently undertaken within the groundwater protection areas may be reviewed by the responsible authority or authorities to determine whether those activities are consistent or inconsistent with the provisions of this policy.
- 15 An existing land use activity within the groundwater protection areas identified in Section 11 shall be permitted to continue under this policy provided that:
  - (a) the land use activity does not cause pollution of the groundwater, unless that activity is licensed under the provisions of Part V of the Act;
  - (b) the land use activity does not cause loss or degradation of existing wetlands and their attributes;
  - (c) the land use activity does not cause additional removal or degradation of areas of remnant native vegetation in excess of one hectare unless authorised to do so under the provisions of the Soil and Land Conservation Act;
  - (d) alterations to the type or scale of that land use activity are subject to the provisions of Part IV of the Act; and
  - (e) the land use activity remains as a compatible land use activity within a policy prepared under Section 19.
- 16 An existing land use activity within a groundwater protection area identified in Section 11 and which is not permitted to continue under Section 15 shall be subject to review and control under the Act.
- 17 The compatibility of an existing land use activity within a groundwater protection area identified in Section 11 and which continues under Section 15 shall be determined under the provisions of a policy prepared under Section 19.
- 18 Environmental protection policies shall be prepared under Section 19 for groundwater protection areas identified in Section 11.

## Local Environmental Protection Policies

- 19 Within the policy area, environmental protection policies may be prepared which address one or more of the following:
- (a) A specific portion or portions of the area
  - (b) A specific land use activity or activities within the area, or
  - (c) A specific segment or segments of the environment of the area
- and may identify groundwater, wetland or ecosystem protection areas.
- 20 Policies prepared in accordance with Section 19 shall be consistent with this policy and shall include, but not be limited to, one or more of the following:
- (a) Definition of the boundaries of the specific portion of the policy area, or nomination of the specific land use activity or specific segment of the environment to which the policy applies.
  - (b) Identification of land use activities that are consistent or not consistent with this policy.
  - (c) Identification of criteria that will be used to determine consistency or non-consistency.
  - (d) Definition of the indicators, parameters or criteria to be used for the determination of environmental quality.
  - (e) Identification or definition of the means by which the attributes of wetlands can be determined or defined.
  - (f) Specification of the period or time during which the policy applies.
  - (g) Specification of specific environmental quality objectives to be achieved and maintained by means of the policy.
  - (h) Definition and establishment of a programme by which the environmental quality objectives are to be achieved and maintained, and/or
  - (i) Specification of programmes for improving knowledge and understanding of the relationships between land use activities, groundwater, wetlands and/or associated ecosystems.

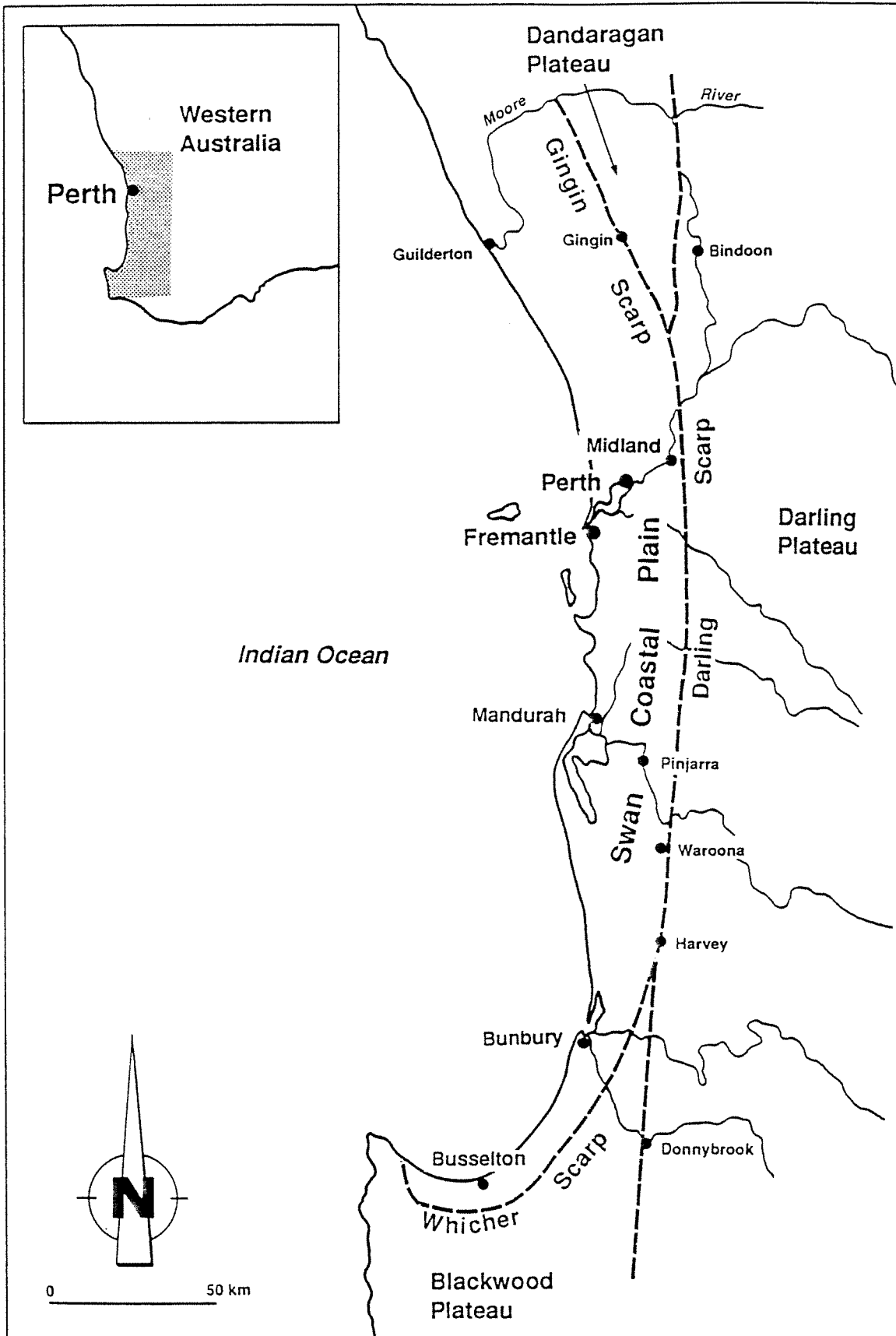
## Implementation

- 21 Land use activities undertaken within the policy area shall be consistent with this policy and any policies prepared under Section 19.
- 22 Proposals to undertake a land use activity within the policy area shall be subject to the provisions of Part IV and, where relevant, Part V of the Act.
- 23 The Authority shall determine whether an existing or proposed land use activity is compatible or incompatible with this policy or a policy prepared under Section 19 if there is any doubt in relation to compatibility.
- 24 The Minister shall ensure that approvals issued for proposals under Part IV of the Act are consistent with this policy and that existing approvals are reviewed to ensure that they are consistent with this policy.
- 25 The Chief Executive Officer shall ensure that approvals issued under Part V of the Act are consistent with this policy and existing approvals are reviewed to ensure that they are consistent with this policy.
- 26 The Authority shall identify or define the means by which the attributes of wetlands can be determined or defined, unless included as part of a policy prepared under Section 19.
- 27 The Authority shall co-ordinate the implementation of this policy.
- 28 Responsible authorities shall implement this policy in so far as it relates to their powers, duties and responsibilities.

## Review

- 29 The Authority shall review this policy within seven years of the date of approval of the policy.

Schedule 1



Map showing Policy Area



## Schedule 2

### Groundwater Protection Areas

- 1 Gngara Water Reserve;  
as defined in Government Gazette dated 27 April 1973 and 25 September 1981.
- 2 Wanneroo Public Water Supply Area;  
as defined in Government Gazette dated 12 December 1975.
- 3 Mirrabooka Public Water Supply Area;  
as defined in Government Gazette dated 18 December 1981.
- 4 Jandakot Public Water Supply Area;  
as defined in Government Gazette dated 3 October 1975.
- 5 Serpentine Groundwater Area;  
as defined in Government Gazette dated 29 June 1988.
- 6 Gingin Groundwater Area #;  
as defined in Government Gazette dated 26 September 1975, 16 July 1976, 1 July 1983,  
26 August 1988 and 23 September 1988.  
# a portion of the Gingin Groundwater Area is outside the boundary of this policy and that  
portion is therefore excluded from its provisions.