

Guidance for the Assessment of Environmental Factors

(in accordance with the
Environmental Protection
Act 1986)

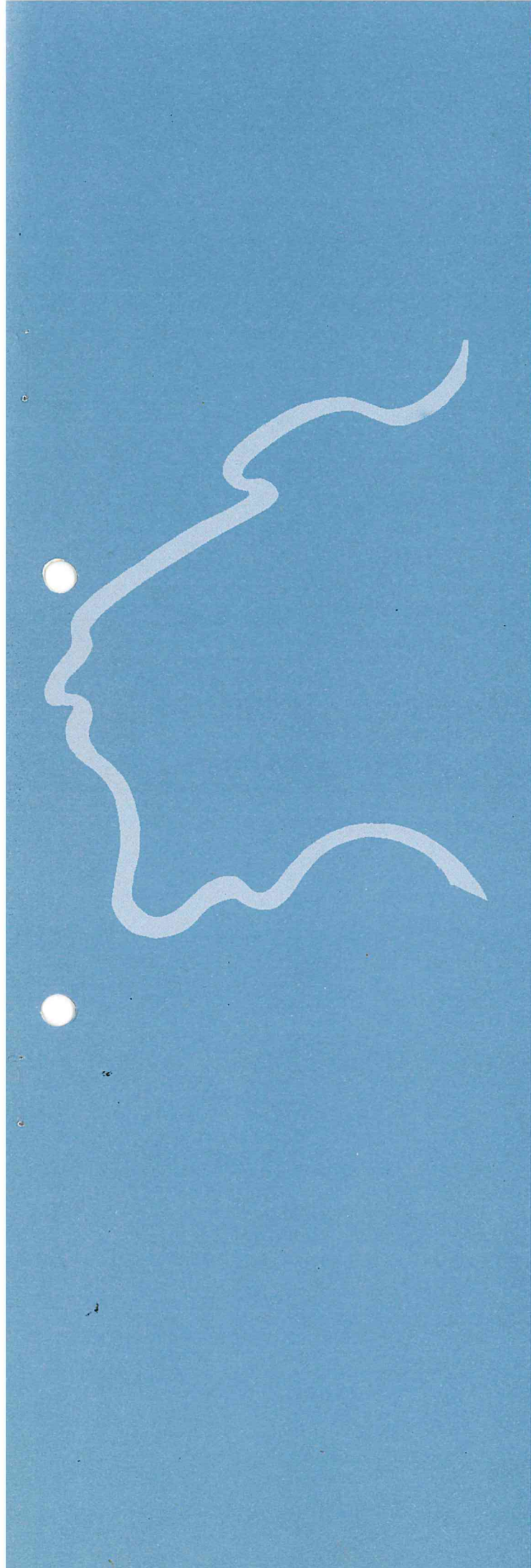
Groundwater Environmental Management Areas

No. 48

Draft

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Western Australia



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GUIDANCE TO PROPONENTS NO 48

SUMMARY

This document has been written by the EPA to assist land owners, land developers, planners and the public generally to gain additional information about the EPA's thinking in relation to aspects of the environmental impact assessment process.

Specifically, the document offers guidance with regard to the protection of groundwater dependent ecosystems containing important wetlands.

The document provides some background on the subject, guidelines in relation to assessment, and concludes with some administrative matters.

The guidelines presented in Section 4 of this document provide details of how the EPA is likely to assess new proposals which are within the catchment of environmentally significant wetlands which have their hydrology dominated by groundwater rather than surface water. These catchments are called groundwater environmental management areas or EMAs. EMA areas are defined as Schedules. This version sets out the first schedule to be developed which covers the Jandakot Mound, but the core area, coloured purple, is excluded because that area is already protected through zoning under the Metropolitan Region Scheme and Water Resource Protection Legislation.

The document is termed Draft and is out for stakeholder review until 13 February 1998. It will then be revised by the EPA and made available for public comment. In the meantime the Draft will be used by the EPA as a guide in relation to the assessment of any new proposals which are within an EMA defined in the schedule.

Bernard Bowen

EPA Chairman

Key words

Groundwater; superficial aquifer; unconfined aquifer; environmental management areas; wetlands

1. Purpose

The purpose of this document is to provide guidance to land owners, land developers and planners on: (a) environmental safeguards required on land over groundwater which is in the catchments of important wetlands; and (b) likely EPA position in relation to new proposals for land use changes on land within these areas where the EPA is providing advice to the Minister for the Environment under Section 44 (1) of the Environmental Protection Act (that is, where a proposal is subject to formal EIA).

2. General Environmental Objective

The EPA's general objective with regard to this matter is:

to ensure that where changes are proposed on land within the catchment of an important wetland those changes will not lead to unacceptable impacts on either the water quality or the hydrology of that wetland.

3. Introduction/Preamble

3.1 Defining groundwater environmental management areas

The soils of the Swan Coastal Plain are, typically, sandy with a low capacity to adsorb or assimilate chemicals applied to the soil. When water falls onto the soil through rainfall or irrigation, most passes vertically down through the soil profile and becomes part of an unconfined aquifer. As it passes through the soil it will collect any chemicals in the water or on the soil not assimilated into the organic soil structure and carry it into the aquifer.

Wetlands on the Swan Coastal Plain are, for the most part, expressions of the superficial (unconfined) groundwater. They form on low-lying land which are either at or below the water table for part of the year.

The area of land which covers the part of the superficial aquifer which eventually flows into a wetland is considered its catchment. Land uses in this area can have a significant effect on the wetland by either:

- affecting the quality of the groundwater (and, subsequently, the wetland) through the export of pollutants, especially nutrients; or
- affecting water levels in the wetland through either excessive abstraction of groundwater (lowering water levels); excessive clearing of native vegetation (raising water levels) or drainage of excess surface water directly into the wetland (raising the watertable).

Some wetland, such as those of international, national or regional significance, are so important that their catchments require special management. The catchments of these wetlands are called groundwater environmental management areas or EMAs.

3.2 Managing land uses in the EMA or managing the wetland?

This document covers the catchments of the most environmentally significant wetlands. It relates to controlling new land uses within these catchments and does not relate to the wetland itself. The management of the wetland proper is usually covered by a specific management plan. Further, in many cases wetlands on the Swan Coastal Plain are protected under the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992.

3.3 Relationship to draft and approved Environmental Protection Policies

This document recognises the role of related Environmental Protection Policies, being the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992*, the *Environmental Protection (South West Agricultural Zone Wetlands) Policy 1997*, the *Environmental Protection (Gnangara Mound Crown Land) Policy 1992* and the draft State Groundwater EPP, in particular;

- (a) the EPA recognises that wetlands underpinning EMAs should be given direct protection through the Swan Coastal Plain Lakes, South West Agricultural Zone Wetlands or other future wetland protection EPPs; and
- (b) that the draft State Groundwater EPP provides a framework for protecting groundwater quality and quantity for the maintenance of wetland ecosystems protected under (a) above. It is anticipated that environmental regulations will be prepared for the EMAs of important groundwater mounds, such as for Jandakot and Gnangara Mounds, and that this document should be read in conjunction with the EPP and any regulations prepared in accordance with that EPP.

3.4 Relationship to the National Water Quality Management Strategy

The National Water Quality Management Strategy calls for identification of groundwater environmental values and beneficial uses, with these terms applied interchangeably. For the purpose of this document, and for consistency with the State Groundwater EPP, environmental values are to be the natural values of groundwater that may directly support current or future human uses of that groundwater. In some instances therefore environmental values may only lead to indirect benefits to people, such as maintenance of the biosphere.

In accordance with the above the environmental value of groundwater for this document is to maintain wetland ecosystems in order to support the following beneficial uses, being:-

- (i) to provide a biologically productive and genetically diverse habitat for locally indigenous flora and fauna, including migratory species;
- (ii) as a habitat for the maintenance of the diversity and abundance of locally indigenous flora and fauna; and
- (iii) to maintain ecological processes, integrity and functions.

The criteria for assessing the achievement of these environmental values and beneficial uses are set out in the Draft Western Australian Water Quality Guidelines for Fresh and Marine Waters, published in 1993 by the Western Australian Environmental Protection Authority.

3.5 Categories of EMAs

This document recognises two types of wetlands, being:

- wetlands of international or national significance; and

- wetland not of international/national significance but of regional or statewide significance.

All the other wetlands - those of local-significance - are not covered in this document.

The EMAs of the wetlands of international or national significance have been termed EMA Category A and those of regional or statewide significance EMA Category B.

In some cases an array of wetlands, all of which are at least of regional significance, have been considered as a single unit due to a lack of detailed hydrological information. This broad catchment area has been defined as EMA Category G (Grouped).

3.6 Broad types of land uses

This document recognises three types of land uses, being:

- rural, including related intensive land uses like golf courses;
- rural residential; and
- urban, which includes industrial.

This document uses a matrix approach showing EMA Category vs broad land use detailing the types of controls required to manage the land use to meet the overall objective of the wetland.

4. Policy

4.1 The specific environmental objectives

To achieve the overall environmental objective described above, a specific environmental objective is required for each EMA Category.

The specific objective for EMA Category A is:

to ensure that water quality in the wetland is maintained or enhanced and the existing hydrological regime is maintained.

The specific objective for EMA Category B is:

to ensure that changes to water quality and water levels in the wetland do not lead to unacceptable impacts.

There is no specific objective for EMA Category G as this is a temporary category until the extent of the catchment is better defined. Once this has been done, the objective would depend on the significance of the wetland as defined above.

4.2 Assessing new proposals within EMA Category A

4.2.1 Introduction

Different strategies are adopted for each of the three types of land uses identified above.

4.2.2 Rural land uses

In general, new land uses which use large quantities of chemicals (in particular, fertilizers, pesticides and herbicides) or groundwater should not be permitted.

The EPA will seek advice from the Water and Rivers Commission on what is a sustainable abstraction rate on a catchment-by-catchment basis. The EPA will also seek advice from Agriculture Western Australia, the Water and Rivers Commission and the DEP on what would be sustainable fertilizer application rates. These rates will be based, in part, on the type of soil and depth-to-groundwater.

As a general rule, intensive horticulture, including turf farms and golf courses, would not be seen as appropriate in most of the EMA Category A catchments.

4.2.3 Rural residential land uses

Intensification of land use through subdivision to allow for rural-residential developments introduces more people into the catchment. These rural-residential developments introduce activities which, at a high enough level, could pose a risk to the wetland through impacts on groundwater.

These impacts include:

- loss of water quality through disposal of human effluent;
- loss of water quality through the use of chemicals on domestic gardens and the activities of domestic animals (horses, cats and dogs);
- altered groundwater levels through abstraction for human purposes; and
- risk of acute pollution events occurring where, for example, an individual disposes of chemicals on-site (hydrocarbons, domestic chemicals etc).

The greater the number of people in a catchment the greater will be the amount of human effluent disposed of on-site, the greater the number of domestic gardens, the greater the number of domestic animals and the greater the risk of acute pollution events occurring.

To restrict the number of people living in a catchment, the EPA will recommend minimum average lot size for rural-residential developments.

A minimum lot size of 2 ha has been set in Priority 2 Underground Water Pollution Control Areas (UWPCAs) where groundwater is to be protected for human use. In most cases, 2 ha minimum lot size would be acceptable for EMA Category A areas. In some special cases, it could be set as higher: for example in Lake Clifton average lot size for new subdivisions has been set at 5 ha with a minimum of 2 ha.

4.2.4 Urban and industrial land uses

In general, there will a presumption against further urbanisation of these catchments. Urbanisation represents a significant risk to both water quality and water levels in these important wetlands. There is also a general presumption against new industrial land uses in these catchments.

4.3 Assessing new proposals within EMA Category B

4.3.1 Introduction

Different strategies are adopted for each of the three types of land uses identified above.

4.3.2 Rural land uses

In general, new land uses which use large quantities of groundwater or chemicals, in particular, fertilizers, pesticides and herbicides, should be managed so as to minimise nutrient and chemical export to the groundwater.

As with EMA Category A catchments, the EPA will seek advice from the Water and Rivers Commission, Agriculture, Western Australia and the DEP as to what is a sustainable abstraction rate on a catchment by catchment basis and on what would be sustainable fertilizer application rates and practices.

As a general rule, intensive horticulture, including turf farms and golf courses, would require special management in these catchments.

4.3.3 Rural residential land uses

A minimum lot size of 2 ha for these types of developments is acceptable in EMA Category B catchments.

4.2.4 Urban and industrial land uses

In general, further urbanisation of these catchments would be acceptable provided that appropriate water management measures are adopted which would meet the EPA objective. Each new development would need to be assessed on a case-by-case basis so that (a) the appropriate design measures are put in place during development; and (b) appropriate on-going management is put in place.

5. Limitations Clause

This policy, guidelines and criteria for environmental impact assessment document has been prepared by the Environmental Protection Authority to assist proponents and the public. While it represents the contemporary views of the Environmental Protection Authority, each proposal which comes before the Environmental Protection Authority for environmental impact assessment will be judged on its merits. Proponents who wish to deviate from the 'principles' or contents of this document should therefore provide justification for the proposed departure.

6. Geographic Extent to Which this Document Applies

This document applies generally to areas throughout the State of Western Australia where environmentally significant wetlands exist which have their hydrology dominated by groundwater. These areas tend to be on the sandy coastal plains, for example the Swan and Scott River plains. The specific catchments, or EMAs, will be shown as schedules to this document. Currently, only one schedule has been developed. This is in relation to Jandakot Mound, as set in Schedule 1 which shows Category A and Category B EMAs.

7. Duration and Review of the Policy

The duration of this policy is for five years unless some unforeseen circumstance requires it to be revised. After 5 years the policy will be reviewed and updated.

8. Definitions

Draft - means the EIA Guidance document is being actively progressed/formulated by the EPA following advice from the DEP. At this stage stakeholders will be invited to comment.

EMA - means the groundwater catchment area of environmentally significant wetlands whose hydrology is dominated by groundwater and not surface water.

Environment - living things, their physical, biological and social surroundings, and interactions between all of these.

EP Act 1986 - the Environmental Protection Act 1986 and amended in 1992, 1995 and 1996.

EPA - the Environmental Protection Authority.

Government operating conditions

Licence - means licence granted and in force under Part V of the Act.

Ministerial Conditions - means restriction or limitation under which a proposal can operate following assessment under Part IV of the Act, as set by the Minister for the environment.

Works approval - means works approval granted and in force under Part V of the Act.

Guideline - means a guideline that gives guidance on possible means for achieving desired environmental outcomes. National Environment Protection Council (Western Australia) Bill 1996.

Interim - means that the public comment period has taken place, appropriate amendments have been made and the EIA Guidance document is now being used for a 12 month test period.

Planning - refers to both statutory and strategic planning as carried out by Western Australian Planning Commission and local government.

Preliminary - means the EIA Guidance document has been reviewed by the stakeholders and is sufficiently far advanced in its formulation that it can be sent out for public comment.

Quality Assurance - means that each step of the processes, procedures and method used for producing and publishing an EIA Guidance document has been identified, responsibly assigned and will be audited by an external auditor.

Rural - means land uses typical in non-metropolitan areas and includes broad acre farming activities as well as intensive land uses, for example horticulture, turf farms and golf courses.

Rural residential - means land uses which involve primarily residential uses on larger lots in rural and semi-rural settings. Lot sizes generally range from 4000m² to 5 ha.

Sign-off - means that the EPA Committee or a minuted delegate has endorsed the EIA Guidance document at one of its four stages of formulation (eg before stakeholder circulation, public review, testing and publication (see Appendix 3 of the dossier of policies for EIA))

The EIA Guidance - means the EPA has signed-off and published its final position which is being implemented now. This position has been developed in accordance with the Quality Assurance process agreed to between the EPA and DEP and approved in accordance with the delegated responsibility under the EP Act 1986.

Urban - means a normal residential development including facilities where people live on-site temporarily (hotels and caravan parks). Industrial development is also included for the purposes of this document.

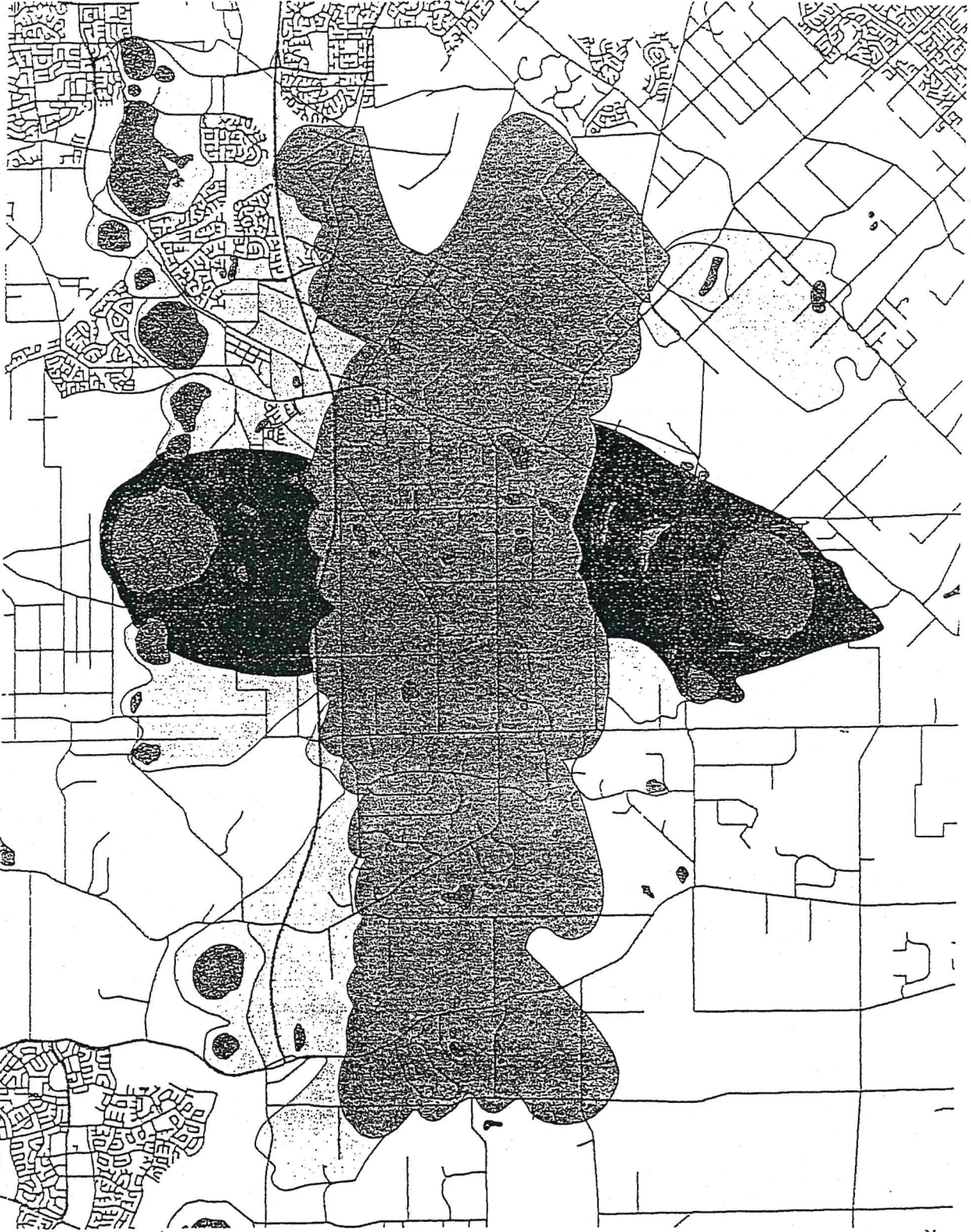
9. References

Select Committee on Metropolitan Development and Groundwater, 1994. Report. Western Australian Legislative Assembly, Perth, Western Australia.

Dames & Moore, 1996. Review of Groundwater Protection Priority Area Boundaries Jandakot Mound. Report for the Water and Rivers Commission of Western Australia.







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Draft EIA Guidance Document December 1997					
Preliminary EIA Guidance Document					
Interim EIA Guidance Document					
The EIA Guidance Document					
Status	Signed off by the EPA at this stage for stakeholder circulation				
Citation	This draft EPA EIA Guidance document can be cited at this time and is used by the EPA for the purposes of environmental impact assessment (EIA).				
Acknowledgments	None at this stage				
Contact Officer	Garry Middle, Evaluation Division, Telephone 08 9222 7069				

Schedule 1 - EMA associated with the Jandakot Mound



Jandakot Mound EMA

0 3 6 Kilometers

-  Roads (Perth Metropolitan)
-  Local Government Authority Boundaries
-  Jandakot Groundwater Wellhead Protection Area Boundary - Core Area
- Jandakot Groundwater Maintenance Areas**
-  EMA Category A
-  EMA Category B
-  EPP Lakes

