

WRP 9



JURIEN WATER RESERVE  
WATER SOURCE PROTECTION PLAN  
Jurien Town Water Supply



WATER RESOURCE PROTECTION SERIES

WATER AND RIVERS COMMISSION REPORT WRP 9  
1999

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*Cover Photograph: Jurien Wellfield*



# JURIEN WATER RESERVE WATER SOURCE PROTECTION PLAN

Jurien Town Water Supply

Water and Rivers Commission  
Policy and Planning Division

WATER AND RIVERS COMMISSION  
WATER RESOURCE PROTECTION SERIES  
REPORT NO. WRP. 9  
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# Foreword

## Water source protection plans

Water Source Protection Plans establish the level of protection required within Water Reserves. The plans identify sources of contamination that should be investigated and set out programs for management of the resource. Water Source Protection Plans are developed in consultation with affected landowners and industry groups and relevant government agencies.

Proclaiming Water Reserves under the *Country Areas Water Supply Act 1947*, protects the quality of water sources in country Western Australia. The Act's by-laws enable the Water and Rivers Commission to control potentially polluting activities, to regulate land use, inspect premises and to take steps to prevent or clean up pollution.

The Water and Rivers Commission aims to work pro-actively with planning agencies to incorporate water protection in the land planning process. Decisions on land use zoning and subdivision applications have a significant impact on the protection of water sources. The Commission supports the amendment of Town Planning Schemes and Development Strategies that reflect land use compatible with Water Source Protection Plans.

This Water Source Protection Plan provides a basis for establishing compatible land uses within the Water Reserve at Jurien and is a mechanism for practical implementation of the Commission's protection strategies. Local government decision-makers, State planning authorities and operational staff are encouraged to recognise this document as a basis for ensuring the long term protection of this groundwater resource for generations to come.

## Water quality protection framework

The Water and Rivers Commission is responsible for managing and protecting Western Australia's water resources. The Commission has developed policies for the protection of public drinking water source areas that include three levels of priority classification of lands

within Priority drinking Water Source Areas (PDWSAs).

**Priority 1 (P1)** source protection areas are defined to ensure that there is no degradation of the water source. P1 areas are declared over land where the provision of the highest quality public drinking water is the prime beneficial land use. P1 areas would typically include land under Crown ownership. P1 areas are managed in accordance with the principle of risk avoidance and so land development is generally not permitted.

**Priority 2 (P2)** source protection areas are defined to ensure that there is no increased risk of pollution to the water source. P2 areas are declared over land where low intensity development (such as rural) already exists. Protection of public water supply sources is a high priority in these areas. P2 areas are managed in accordance with the principle of risk minimisation and so some development is allowed under specific guidelines.

**Priority 3 (P3)** source protection areas are defined to minimise the risk of pollution to the water source. P3 areas are declared over land where water supply sources need to co-exist with other land uses such as residential, commercial and light industrial developments. Protection of P3 areas is achieved through management guidelines rather than restrictions on land use. If the water source does become contaminated, then water may need to be treated or an alternative water source found.

In addition to priority classifications, wellhead protection zones and reservoir protection zones are defined to protect the water source from contamination in the immediate vicinity of production wells and reservoirs. Wellhead protection zones are usually circular, with a radius of 500 metres in P1 areas and 300 metres in P2 and P3 areas. Reservoir protection zones usually consist of a 2 kilometre buffer area around the top water level of a reservoir and include the reservoir itself. These zones do not extend outside water reserves. Special restrictions apply within these zones.



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# Summary

The Jurien Town Water Supply is obtained from a Water Corporation wellfield, which draws groundwater from the shallow deposits of the Tamala Limestone.

A Water Reserve under the *Country Areas Water Supply Act 1947*, is proposed to protect the vulnerable Tamala Limestone aquifer from contamination. The reserve encompasses the recharge areas to the east of the wellfield.

The area of the proposed Jurien Water Reserve located on the north side of the Jurien road including a southern area of the Drovers Cave National Park should be classified a Priority 1 source protection area. The remaining area should be classified as a Priority 2 source protection area.

The Water Reserve should be managed to minimise the risk of the pollution to the water source. Therefore, signs indicating the location of the reserve should be erected, and any development proposals within the reserve should be assessed for their impact on water quality.

Extensive consultation has occurred throughout the development of this plan. A draft plan was released for comment to all key stakeholders including the Water Corporation, Ministry for Planning, Department of Environmental Protection, Department of Land Administration, Department of Conservation and Land Management, Shire of Dandaragan and the Conservation Council. These comments have been addressed in the preparation of this plan.



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## 1. Introduction

The purpose of this report is to provide a plan to protect the groundwater resource, which is used to supply the town of Jurien, from contamination.

Jurien is located about 266 kilometres north of Perth and it is the largest of the towns in the Shire of Dandaragan (Figure 1). Jurien is a fishing and holiday town and its importance as a recreational centre has been growing in recent years.

The existing water scheme supplying Jurien consists of four shallow bores located about 4 kilometres north east of the town. The wellfield, operated by the Water Corporation, is located within Reserve 29453 which is vested in the Minister for Water Resources.

The Jurien region experiences a temperate climate with a winter rainfall pattern. Average rainfall is about 560 millimetres per annum.

## 2. Hydrogeology

The Jurien area is located in the northern part of the Perth Basin.

Existing production bores have been drilled into the Pleistocene Tamala Limestone, a relatively hard limestone interbedded with minor sandy limestone. The Tamala Limestone extends about 10-15 kilometres inland from the coast. The thickness of the sandy, calcarenite limestone ranges from 17 metres near the coast, to 40 metres about 5 kilometres inland. In the vicinity of the coast, dunes of the Safety Bay Sand overlie the Tamala Limestone. The remaining area is overlain by quartz sand.

In the neighbourhood of the Jurien wellfield the Tamala Limestone is underlain by the relatively impermeable

Triassic Wodada Formation, which overlies the Kockatea Shale. East of the Beagle Fault, the Tamala Limestone is underlain by coarse-grained sand of the Triassic Lesueur Sandstone.

The depth to the water table in the Jurien area varies from 3 to 8 metres below ground level.

Groundwater flow is generally from the east and north east. Groundwater recharge is both by direct rainfall infiltration through the thin sand veneer overlying the Tamala Limestone, and by runoff from the laterite capped areas to the east. Discharge of the groundwater is to the ocean.

The aquifer is shallow and unconfined, therefore it is considered to be vulnerable to contamination.

## 3. Scheme description

The existing Jurien water supply scheme consists of four production bores (1/66, 2/66, 1/75 and 2/75) spaced approximately 100 metres apart in a northerly direction (Plate 1). The wellfield is located about 4 kilometres north east of the town. These bores are shallow and screened between 8-12 metres below the ground level. The wellfield operates on a duty/standby basis with abstraction levels in 1994-95 recorded 309,886 kilolitres.

Salinity in production bores has remained stable (between 589 and 710 milligrams per litre Total Dissolved Salts) throughout the period of record. All chemical components of the reticulated supply meet the current Australian Drinking Water Guidelines (NH&MRC and ARMCANZ, 1996).

Expansion of the wellfield is likely to be to the north of bore 2/75, when additional supplies are required.



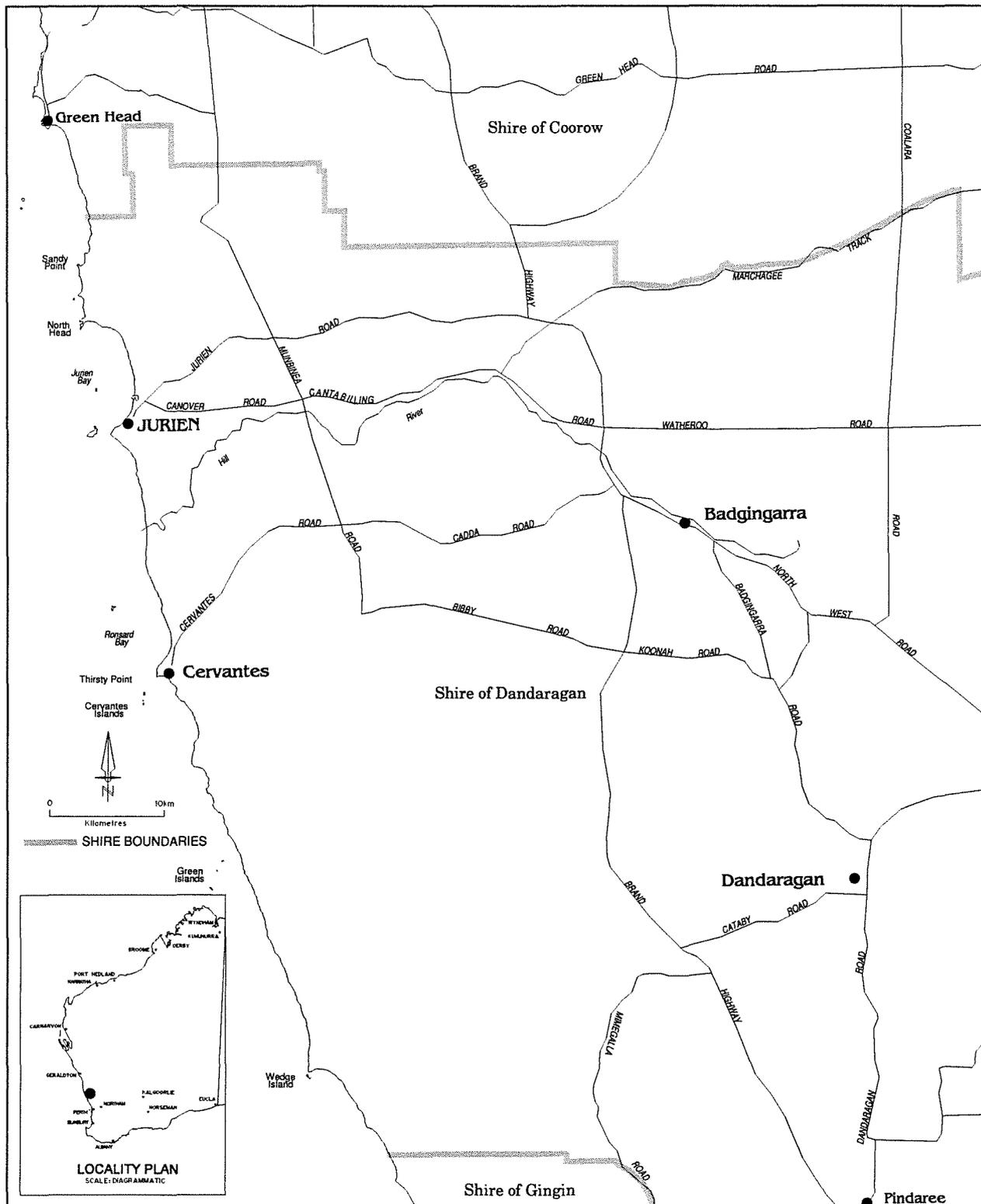


Figure 1. Jurien locality map



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#### 4. Existing and proposed land use

The Jurien wellfield is located within Reserve 29453, which is vested in the Minister for Water Resources for water supply purposes. This reserve is surrounded by a larger reserve, number 18865, which is exempt from sale and controlled by the Department of Land Administration.

The Land Act Reserve 25471 is classified for the purpose of a 'sanitary site and rubbish depot', is located close to bore 2/75 and would be in the recharge area of future drinking water supply bores. The site is not currently being used and is not required for future rubbish disposal by the Shire of Dandaragan.

These reserves are covered with undisturbed native vegetation (Plate 2). The Department of Land Administration has no plans for future development of these reserves.

Drovers Cave National Park (Reserve 31302) encroaches on the north eastern side of Jurien road. This area is mostly covered by undisturbed native vegetation.

The Jurien wellfield lies downgradient of Victoria Locations 10602, 10600 and 10599. Location 10602 is zoned special rural. Locations 10600 and 10599 are used for extensive agriculture, mainly grazing. The reserves and locations are shown in Figure 2.

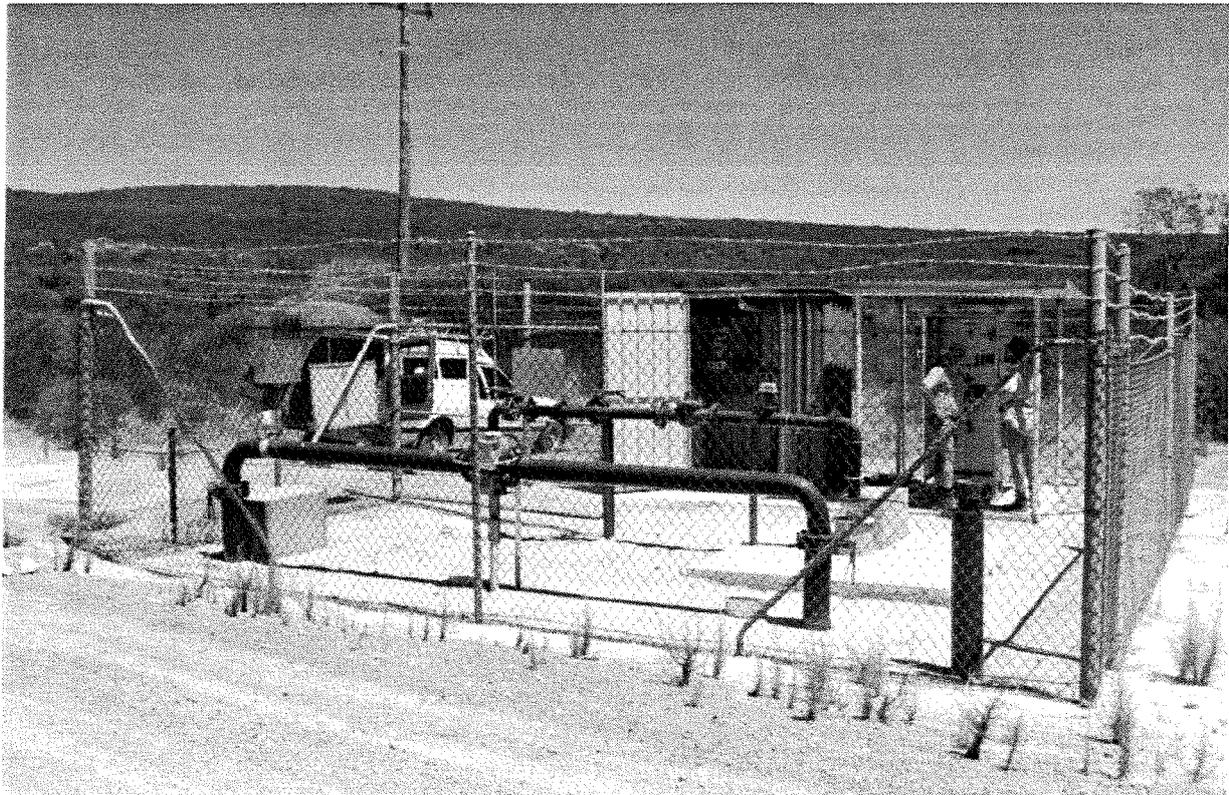


Plate 1. Production bore 2/66.



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## 5. Potential for contamination

There are no existing groundwater contaminant threats in the immediate vicinity of the Jurien wellfield. The area of the wellfield is covered with undisturbed native vegetation.

There may be some potential for contamination associated with the Special Rural development of Victoria Location 10602. However, strict limitations on lot sizes, keeping of livestock, land use activities and the installation of recognised on-site effluent disposal systems would minimise the potential contamination risks.

The existing extensive agricultural land uses on Locations 10599, 10602 and 10600 do not pose a contamination risk to the town water supply.

The proposed purpose of 'sanitary site and rubbish depot' for the Land Act Reserve 25471 is not compatible with the objectives for water quality protection. If it is used for this purpose then the land use would pose an unacceptable risk of contamination to the groundwater. The contamination would come from leaching of nutrients, heavy metals and other toxic substances.



**Plate 2. The Jurien wellfield is located within Reserve 29453.**



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## 6. Proposed proclaimed area

The proposed Water Reserve boundaries are established to protect the immediate recharge areas of the current wellfield and likely extension to the scheme.

Crown Land in the proposed Jurien Water Reserve should be classified for Priority 1 source protection according to the following criteria:

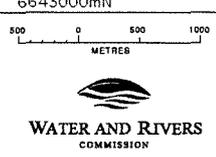
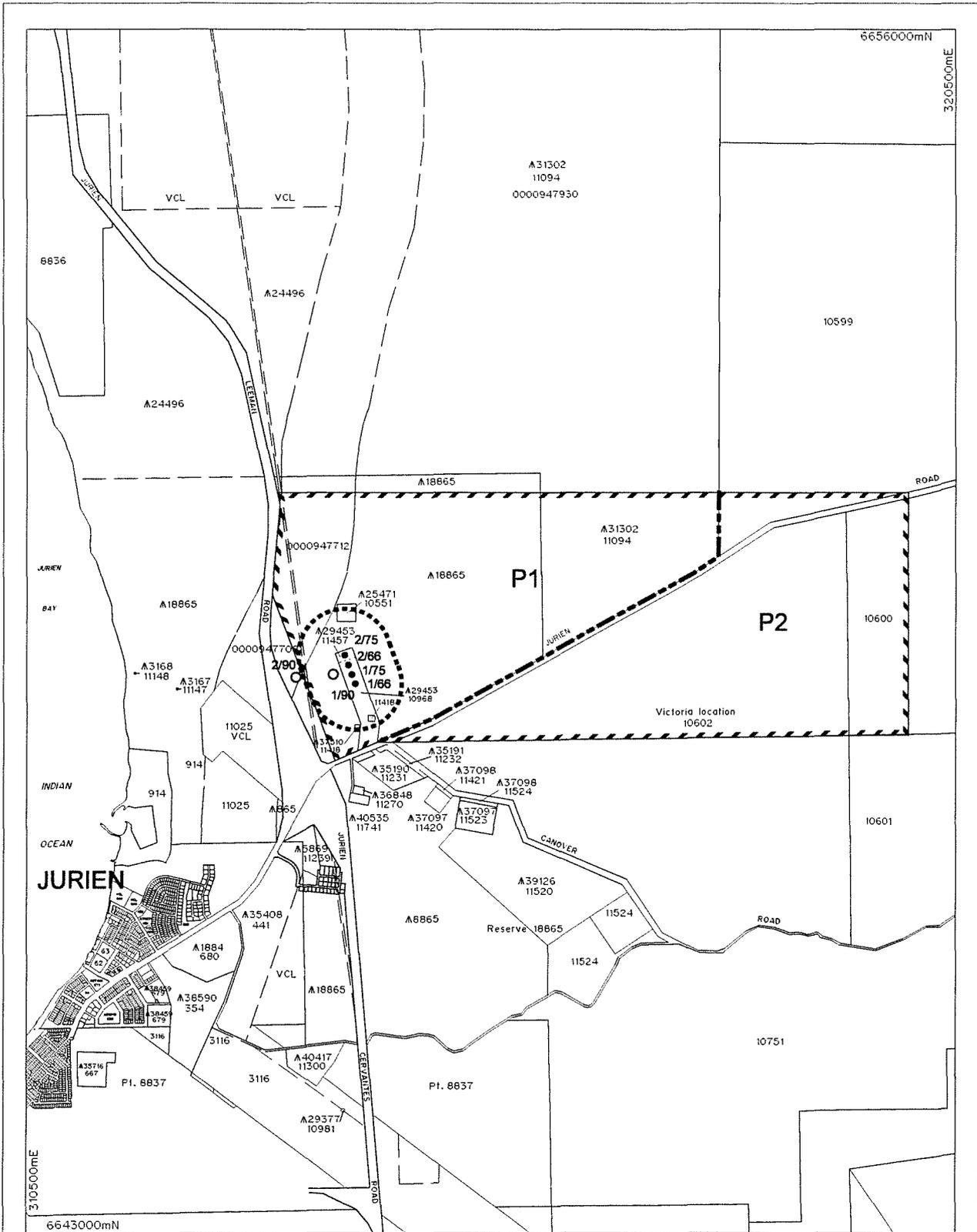
- The water source is of strategic importance to the community at Jurien;
- The aquifer is highly vulnerable to contamination from inappropriate land uses;
- The area covers the immediate recharge zone for the current and future wellfield;
- The land is in Crown ownership;
- Development can be directed to other less sensitive areas.

Circular wellhead protection zones of 500 metres radius should be established around each production bore as shown in Figure 2.

The remaining part of the proposed Jurien Water Reserve should be classified for Priority 2 source protection according to the following criteria:

- The groundwater is vulnerable to contamination in this area. The soil conditions and depth to water are such that any intensive development would lead to a degradation of groundwater quality;
- The land is privately owned and zoned rural or special rural;
- The area forms an important recharge area to the shallow aquifer system;
- Future planning for the area is compatible with water quality protection objectives.





- LEGEND:**
- ● Observation, Production Well
  - ▤ Proposed water reserve boundary
  - ▬ P1, P2 Priority source protection area
  - ⋯ 500 metre Wellhead protection zone

INDEX TO ADJOINING 1:10000 MAPS		
1838	1938	2038
1837	1937	2037
1836	1936	2036

**Figure 2. PROPOSED JURIEAN WATER RESERVE**

Drawn by N.J.A Date 08/10/98

Policy and Planning Division  
Water Quality Protection Branch



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# Recommendations

1. The proposed Jurien Water Reserve should be gazetted under the *Country Areas Water Supply Act 1947*.
2. Planning strategies should incorporate the management principles outlined in the Water and Rivers Commission's *Land use compatibility in Public Drinking Water Source Areas* (Appendix 1) and reflect the Priority 1 and Priority 2 classifications given to the Water Reserve.
3. All development proposals in the proposed Water Reserve which are likely to impact on water quality should be referred to the Water and Rivers Commission.
4. When proclaimed, signs should be erected along the boundaries of the Water Reserve to define the reserve and promote public awareness of the need to protect water quality.
5. A process should be put in place to address any spillage of pollutants within the proposed Water Reserve.
6. A surveillance program should be established to identify any incompatible land uses or potential contaminant threats within the proposed Water Reserve.
7. The portion of the Land Act Reserve 18865 within the proposed Country Areas Water Supply Act Water Reserve should be reserved for water supply protection purposes and consideration given to vesting with the Water and Rivers Commission.
8. The purpose of the Land Act Reserve 25471 should be changed to 'Water Supply Protection Purposes' and consideration given to vesting with the Water and Rivers Commission.
9. Implementation of these recommendations should be reviewed one year after this plan is endorsed. A full review of this protection plan should be undertaken approximately every five years.



## Implementation strategy

No.	Description	Implemented by	Timing
1.	Gazettal of Water Reserve.	Program Manager, Protection Planning (WRC).	1999-2000
2.	Incorporation into land planning strategies.	Shire of Dandaragan.	Ongoing
3.	Referral of development proposals: (i) WRC to provide the Shire of Dandaragan with guidelines for referral of development proposals. (ii) referral of development proposals.	(i) Program Manager, Assessment and Advice (WRC)  (ii) Shire of Dandaragan, Ministry for Planning and Department of Environmental Protection.	(i) 1999-2000  (ii) Ongoing
4.	Erection of signs: (i) development of guidelines for signage. (ii) determine number and location of signs required.  (iii) erect signs.	(i) Program Manager, Protection Planning (WRC). (ii) Regional Manager (WRC) in consultation with Water Corporation. (iii) Regional Manager (WRC) in consultation with the Water Corporation.	(i) 1999-2000 (ii) 1999-2000  (iii) 2000-2001
5.	Surveillance Program (i) develop guidelines for the surveillance of Water Reserves	(i) Program Manager, Assessment and Advice (WRC) (ii) Regional Manager (WRC) in consultation with the Water Corporation	(i) 2000-2001 (ii) 2000-2001

(continued)

6.	<p>Incidents covered by WESTPLAN – HAZMAT in the Jurien Water Reserve should be addressed through the following measures:</p> <p>(i) The Dandaragan Local Emergency Management Advisory Committee (through the Northam Emergency Management District) being familiar with the location and purpose of the Jurien Water Reserve.</p> <p>(ii) The locality plan for the Jurien Water Reserve being provided to the Fire and Rescue Services headquarters for the HAZMAT Emergency Advisory.</p> <p>(iii) The Water Corporation advising the HAZMAT Emergency Advisory Team during incidents in the Jurien Water Reserve.</p> <p>(iv) Personnel dealing with WESTPLAN - HAZMAT incidents in the area given ready access to a locality map of the Water Reserve and training to understand the potential impacts of spills on the groundwater resource.</p>	<p>(i) Dandaragan Local Emergency Management Advisory Committee through WRC (Swan-Goldfields-Agricultural region)</p> <p>(ii) WRC (Swan-Goldfields-Agricultural region)</p> <p>(iii) Water Corporation</p> <p>(iv) Dandaragan Local Emergency Management Advisory Committee</p>	<p>(i) 2000-2001</p> <p>(ii) 2000-2001</p> <p>(iii) 2000-2001</p> <p>(iv) 2000-2001</p>
7.	<p>Land Act Reserve 18865:</p> <p>(i) initiate action on purpose and vesting.</p> <p>(ii) consideration of purpose and vesting.</p>	<p>(i) Program Manager, Protection Planning (WRC).</p> <p>(ii) Department of Land Administration (DOLA).</p>	<p>(i) 2000-2001</p>
8.	<p>Land Act Reserve 25471:</p> <p>(i) initiate action on purpose and vesting.</p> <p>(ii) consideration of purpose and vesting.</p>	<p>(i) Program Manager, Protection Planning (WRC).</p> <p>(ii) Department of Land Administration (DOLA).</p>	<p>(i) 2000-2001</p>
9.	<p>Review of this plan and recommendations.</p>	<p>Water Quality Protection Branch (WRC).</p>	<p>(i) Initial review-2000-2001.</p> <p>(ii) Full review-2004-2005</p>

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Water Authority of Western Australia 1995, *Jurien Groundwater Area Management Plan*. Report No. WG 202, August 1995.

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# Glossary

<b>Abstraction</b>	Pumping groundwater from an aquifer.
<b>Allocation</b>	The quantity of groundwater permitted to be abstracted by a well licence, usually specified in kilolitres/year (kL/a).
<b>Alluvium (alluvial)</b>	Detrital material which is transported by streams and rivers and deposited.
<b>Aquifer</b>	A geological formation or group of formations capable of receiving, storing and transmitting significant quantities of water.
<b>Bore</b>	A narrow, lined hole drilled to monitor or withdraw groundwater.
<b>Borefield</b>	A group of bores to monitor or withdraw groundwater.
<b>Catchment</b>	The area of land which intercepts rainfall and contributes the collected water to surface water (streams, rivers, wetlands) or groundwater.
<b>Diffuse source pollution</b>	Pollution originating from a widespread area (e.g. urban stormwater runoff, agricultural runoff). The opposite of point source.
<b>Effluent</b>	The liquid, solid or gaseous wastes discharged by a process, treated or untreated.
<b>Groundwater</b>	Water which occupies the pores and crevices of rock or soil.
<b>Hydrogeology</b>	The study of groundwater, especially relating to the distribution of aquifers, groundwater flow and groundwater quality.
<b>Leaching/ leachate</b>	The process by which materials such as organic matter and mineral salts are washed out of a layer of soil or dumped material by being dissolved or suspended in percolating rainwater; the material washed out is known as leachate. Leachate can pollute groundwater and waterways.
<b>mAHD</b>	Australian Height Datum. Height in metres above Mean Sea Level +0.026 m at Fremantle.
<b>Nutrients</b>	Minerals dissolved in water, particularly inorganic compounds of nitrogen (nitrate and ammonia) and phosphorus (phosphate) which provide nutrition (food) for plant growth. Total nutrient levels include the inorganic forms of an element plus any bound in organic molecules.
<b>Nutrient load</b>	The amount of nutrient reaching the waterway over a given time (usually per year) from its catchment area.
<b>Pesticides</b>	Collective name for a variety of insecticides, fungicides, herbicides, algicides, fumigants and rodenticides used to kill organisms.
<b>Point source pollution</b>	Specific localised source of pollution (e.g. sewage or effluent discharge, industrial waste discharge).
<b>Pollution</b>	Water pollution occurs when waste products or other substances (e.g. effluent, litter, refuse, sewage or contaminated runoff) change the physical, chemical, biological or thermal properties of the water, adversely affecting water quality, living species and beneficial uses.



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<b>Public Water Supply Area</b>	(PWSA) As for UWPCA but allowing the taking of groundwater for public supplies.
<b>Recharge</b>	Water infiltrating to replenish an aquifer.
<b>Recharge area (recharge zone)</b>	An area through which water from groundwater catchment percolates to replenish (recharge) an aquifer. An unconfined aquifer is recharged by rainfall throughout its distribution.
<b>Runoff</b>	Water that flows over the surface from a catchment area, including streams.
<b>Saltwater intrusion</b>	The inland intrusion of saltwater into a layer of fresh groundwater.
<b>Scheme supply</b>	Water diverted from a source (or sources) by a water authority or private company and supplied via a distribution network to customers for urban, industrial or irrigation use.
<b>Treatment</b>	Application of techniques such as settlement, filtration and chlorination, to render water suitable for specific purposes including drinking and discharge to the environment.
<b>Unconfined aquifer</b>	An aquifer containing water, the upper surface of which is lower than the top of the aquifer. The upper surface of the groundwater within the aquifer is called the water table. An aquifer containing water with no upper non-porous material to limit its volume or exert pressure (see aquifer).
<b>Underground Water Pollution Control Area</b>	(UWPCA) An area defined under the Metropolitan Water Supply, Sewerage and Drainage Act, in which restrictions are put on activities that may pollute the groundwater.
<b>Wastewater</b>	Water that has been used for some purpose and would normally be treated and discarded. Wastewater usually contains significant quantities of pollutant.
<b>Water quality</b>	The physical, chemical and biological measures of water.
<b>Watertable</b>	The upper saturated level of the unconfined groundwater.
<b>Well</b>	A narrow lined hole drilled to enable the withdrawal of groundwater.
<b>Wellfield</b>	A group of wells used to abstract groundwater.



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# Appendix 1

Land use compatibility in Public Drinking Water Source Areas



## LAND USE COMPATIBILITY IN PUBLIC DRINKING WATER SOURCE AREAS

### Purpose

To provide information for activities that may impact on the quality of the State's water resources.

These notes provide a basis for developing formal guidelines in consultation with key stakeholders.

### Scope

These notes apply to existing and proposed activities within Public Drinking Water Source Areas (PDWSAs).

PDWSAs include Underground Water Pollution Control Areas, Water Reserves and public water supply catchment areas declared under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909*, and the *Country Areas Water Supply Act 1947*.

### General requirements

The following notes reflect the Commission's current position. They are recommendations only, and may be varied at the discretion of the Commission.

### Overview of Protection Framework

The Water and Rivers Commission is responsible for managing and protecting Western Australia's water resources. The Commission has developed policies for the protection of public drinking water source areas, which are based on three levels of priority classification.

**Priority 1 (P1)** source protection areas are defined to ensure that there is **no degradation** of the water source. P1 areas are declared over land where the provision of the highest quality public drinking water is the prime beneficial land use. P1 areas would typically include land under Crown ownership. P1 areas are managed in accordance with the principle of **risk avoidance** and so land development is generally not permitted.

**Priority 2 (P2)** source protection areas are defined to ensure that there is **no increased risk of pollution** to the water source. P2 areas are declared over land where low intensity development (such as rural) already exists. Protection of public water supply sources is a high priority in these areas. P2 areas are managed in accordance with the principle of **risk minimisation** and so some development is allowed under specific guidelines.

**Priority 3 (P3)** source protection areas are defined to **minimise the risk of pollution** to the water source. P3 areas are declared over land where water supply sources need to co-exist with other land uses such as residential, commercial and light industrial developments. Protection of P3 areas is achieved through



**management guidelines** rather than restrictions on land use. If the water source does become contaminated, then water may need to be treated or an alternative water source found.

In addition to priority classifications, **well-head protection zones** and **reservoir protection zones** are defined to protect the water source from contamination in the immediate vicinity of production wells and reservoirs. Well-head protection zones are usually circular, with a radius of 500 metres in P1 areas and 300 metres in P2 and P3 areas. Reservoir protection zones usually consist of a 2 kilometre area around the top water level of a reservoir and include the reservoir itself. These zones do not extend outside water reserves. Additional restrictions apply within these zones.

### **Land Use Compatibility Tables**

These tables should be used as a guideline only. Further information relating to land use and developments within PDWSAs including those not listed in the table, can be obtained from the Commission's Water Quality Protection Branch.

These tables do not replace the need for assessment by the Commission. Please consult the Commission regarding any land use proposals in Public Drinking Water Source Areas that may impact on water resources.

### **Definitions Used In The Following Tables**

<i>Compatible</i>	The development / land use is compatible with the management objectives of the priority classification.
<i>Incompatible</i>	The development / land use is incompatible with the management objectives of the priority classification.
<i>Restricted</i>	<p>The development / land use may be compatible with the management objectives of the priority classification, with appropriate site management practices.</p> <p>Restricted activities should be referred to the Commission for assessment on a case specific basis.</p>
<i>Extensive</i>	Where limited additional inputs are required to the land to support the desired land use. eg supplementary feed during seasonal dry periods.
<i>Intensive</i>	Where regular additional inputs are required to support the desired land use. eg irrigation, additional feed, fertilisers.



## More information

We welcome your comment on these notes. They will be updated from time to time as comments are received or industry standards change.

If you wish to comment on the notes or require more information, please contact the Commission's Water Quality Protection Branch at the Hyatt Centre in East Perth.

Phone: (08) 9278 0300 (business hours) or Fax:(08) 9278 0585

## Land Use Compatibility Tables

### AGRICULTURE - ANIMALS

Development	Priority 1	Priority 2	Priority 3
Apiary	Restricted	Restricted	Restricted
Aquaculture eg. marron farms, fish farms, algae culture	Incompatible	Restricted	Restricted
Dairy Farming	Incompatible	Restricted	Restricted
Feedlots	Incompatible	Incompatible	Restricted
Livestock grazing (extensive)	Restricted	Compatible	Compatible
Livestock grazing (intensive)	Incompatible	Incompatible	Restricted <sup>11</sup>
Piggeries	Incompatible	Incompatible	Incompatible
Poultry farming (housed)	Incompatible	Restricted	Restricted
Stables	Incompatible	Restricted	Compatible
Stockholding and saleyards	Incompatible	Incompatible <sup>7</sup>	Restricted <sup>7</sup>

### AGRICULTURE - PLANTS

Development	Priority 1	Priority 2	Priority 3
Broad acre cropping i.e. non-irrigated	Incompatible	Restricted <sup>1</sup>	Compatible
Floriculture (extensive)	Incompatible	Restricted	Compatible
Floriculture (intensive)	Incompatible	Incompatible	Restricted
Field horticulture	Incompatible	Incompatible	Restricted
Hydroponic horticulture	Incompatible	Restricted	Restricted
Orchards	Incompatible	Restricted	Compatible
Potted Nurseries	Incompatible	Restricted	Compatible
Silviculture (tree farming)	Restricted	Restricted	Compatible
Turf Farms	Incompatible	Incompatible	Restricted
Viticulture ( wine & table grapes)	Incompatible	Restricted	Compatible



**DEVELOPMENT - COMMERCIAL**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Aircraft Servicing	Incompatible	Incompatible	Restricted <sup>6</sup>
Amusement Centres	Incompatible	Incompatible	Compatible <sup>6</sup>
Automotive businesses	Incompatible	Incompatible	Restricted <sup>6</sup>
Boat Servicing	Incompatible	Incompatible	Restricted <sup>6</sup>
Caravan and trailer hire	Incompatible	Incompatible	Restricted <sup>6</sup>
Vehicle parking (commercial)	Incompatible	Incompatible	Compatible
Consulting rooms	Incompatible	Incompatible <sup>7</sup>	Compatible <sup>6</sup>
Cottage Industries	Restricted	Restricted	Compatible
Drive in / take-away food shops	Incompatible	Incompatible	Compatible <sup>6</sup>
Drive -in theatres	Incompatible	Incompatible	Compatible <sup>6</sup>
Dry Cleaning Premises	Incompatible	Incompatible	Restricted <sup>6</sup>
Farm supply centres	Incompatible	Incompatible <sup>7</sup>	Restricted
Fuel depots	Incompatible	Incompatible	Restricted
Garden Centres	Incompatible	Incompatible	Compatible
Local shops	Incompatible	Incompatible <sup>7</sup>	Compatible
Markets	Incompatible	Incompatible	Compatible <sup>6</sup>
Milk depots	Incompatible	Incompatible	Restricted
Restaurants	Incompatible	Incompatible	Compatible
Service Stations	Incompatible	Incompatible	Restricted
Transport Depots	Incompatible	Incompatible	Restricted
Veterinary Clinics / hospitals	Incompatible	Incompatible <sup>7</sup>	Restricted
Vehicle wrecking and machinery	Incompatible	Incompatible	Restricted

**DEVELOPMENT - INDUSTRIAL**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
General Industry	Incompatible	Incompatible	Restricted <sup>6</sup>
Heavy Industry	Incompatible	Incompatible	Incompatible
Light Industry	Incompatible	Incompatible	Restricted <sup>6</sup>
Power Stations	Incompatible	Incompatible	Incompatible

**DEVELOPMENT - URBAN**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Aged and dependent persons	Incompatible	Incompatible	Compatible <sup>6</sup>
Amenity buildings	Incompatible	Restricted	Compatible
Airports or landing grounds	Incompatible	Incompatible	Restricted <sup>6</sup>
Cemeteries	Incompatible	Incompatible	Restricted
Civic buildings	Incompatible	Restricted	Compatible <sup>6</sup>
Clubs -sporting, recreation or community	Restricted	Restricted	Compatible <sup>6</sup>
Community halls	Restricted	Restricted	Compatible
Family Day Care Centres	Incompatible	Restricted	Compatible <sup>6</sup>
Funeral parlours	Incompatible	Incompatible	Compatible <sup>6</sup>
Health Centres	Incompatible	Incompatible	Compatible <sup>6</sup>
Hospitals	Incompatible	Incompatible	Restricted <sup>6</sup>
Medical centres	Incompatible	Incompatible	Compatible <sup>6</sup>



## **EDUCATION / RESEARCH**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Education centres	Restricted	Restricted	Compatible <sup>6</sup>
Primary / Secondary Schools	Incompatible	Incompatible	Compatible <sup>6</sup>
Scientific Research Institutions	Restricted	Restricted	Compatible
Universities	Incompatible	Incompatible	Restricted <sup>6</sup>

## **MINING AND MINERAL PROCESSING**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Extractive Industries	Restricted <sup>2</sup>	Restricted <sup>2</sup>	Restricted <sup>2</sup>
Mineral Exploration	Restricted <sup>4</sup>	Restricted <sup>4</sup>	Restricted <sup>4</sup>
Mining and mineral processing	Restricted <sup>4</sup>	Restricted <sup>4</sup>	Restricted <sup>4</sup>
Tailings Dams	Incompatible	Incompatible	Restricted

## **PROCESSING OF ANIMALS / ANIMAL PRODUCTS**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Abattoirs	Incompatible	Incompatible	Incompatible
Cheese / butter factories	Incompatible	Incompatible	Restricted <sup>6</sup>
Food Processing	Incompatible	Incompatible	Restricted <sup>6</sup>
Tanneries	Incompatible	Incompatible	Incompatible
Wool-scours	Incompatible	Incompatible	Incompatible

## **PROCESSING OF PLANTS / PLANT PRODUCTS**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Breweries	Incompatible	Incompatible	Restricted <sup>6</sup>
Composting / soil blending (commercial)	Incompatible	Incompatible	Restricted
Vegetable / food processing	Incompatible	Incompatible	Restricted <sup>6</sup>
Wineries	Incompatible	Incompatible	Restricted

## **SUBDIVISION**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Dog Kennel Subdivisions	Incompatible	Restricted	Restricted
Rural - minimum lot size = 4 hectares (un-sewered)	Incompatible	Compatible	Compatible
Rural - minimum lot size = 1 hectare (un-sewered)	Incompatible	Incompatible	Compatible
Special rural - minimum lot size = 2 hectares (un-sewered) <sup>5</sup>	Incompatible	Restricted <sup>8</sup>	Restricted <sup>8</sup>
Special rural - minimum lot size = 1 hectare (un-sewered) <sup>5</sup>	Incompatible	Incompatible	Restricted <sup>8</sup>
Urban residential	Incompatible	Incompatible	Compatible <sup>6</sup>

**Note: Subdivision of land to lots of any size is incompatible within Priority 1 areas.**



## **SPORT AND RECREATION**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Equestrian centres	Incompatible	Incompatible	Compatible
Golf courses	Incompatible	Incompatible	Restricted
Irrigated recreational parks	Incompatible	Restricted	Restricted
Motor sports i.e permanent racing facilities	Incompatible	Incompatible	Restricted
Public Swimming Pools	Incompatible	Restricted	Restricted
Rifle Ranges	Restricted	Restricted	Compatible
Temporary recreational activities (active) eg four wheel driving, car rallies	Incompatible	Restricted <sup>3</sup>	Restricted <sup>3</sup>
Temporary recreational activities (passive) eg. horse riding, bush walking	Restricted	Restricted	Restricted

## **STORAGE OF TOXIC AND HAZARDOUS SUBSTANCES (THS)**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Above ground storage of THS	Restricted <sup>13</sup>	Restricted <sup>13</sup>	Restricted <sup>13</sup>
Bulk Storage Facilities for THS	Incompatible	Incompatible	Restricted <sup>12</sup>
Underground storage tanks for THS	Incompatible	Incompatible	Restricted

## **TOURISM ACCOMMODATION**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Bed and Breakfast accommodation	Incompatible	Restricted	Compatible
Caravan Parks	Incompatible	Incompatible	Restricted <sup>6</sup>
Holiday accommodation eg farm chalets	Incompatible	Restricted <sup>9</sup>	Compatible <sup>6</sup>
Motels, lodging houses, hostels	Incompatible	Incompatible	Compatible <sup>6</sup>

## **WASTE TREATMENT AND MANAGEMENT**

<b>Development</b>	<b>Priority 1</b>	<b>Priority 2</b>	<b>Priority 3</b>
Deep well injection of liquid wastes	Incompatible	Incompatible	Incompatible
Class I, II and III Landfills	Incompatible	Incompatible	Restricted
Class IV and V Landfills	Incompatible	Incompatible	Incompatible
Recycling depots	Incompatible	Incompatible	Restricted
Refuse transfer stations	Incompatible	Incompatible	Restricted
Sewers (Gravity)	Incompatible	Incompatible	Compatible
Sewers (Pressure Mains)	Incompatible	Restricted	Compatible
Sewage pump station	Incompatible	Restricted <sup>13</sup>	Restricted
Used tyre storage facilities (wholesale)	Incompatible	Incompatible	Incompatible
Wastewater treatment plants	Incompatible	Incompatible	Restricted
Water treatment plants	Restricted	Restricted	Restricted



## OTHER DEVELOPMENTS

Development	Priority 1	Priority 2	Priority 3
Caretaker's housing	Restricted	Restricted	Compatible
Construction projects	Restricted	Restricted	Restricted
Forestry	Restricted <sup>1</sup>	Compatible	Compatible
National Parks	Compatible	Compatible	Compatible
Nature Reserves	Compatible	Compatible	Compatible
Communications receivers/ transmitters	Restricted	Restricted	Restricted
Major Transport Routes	Incompatible	Restricted <sup>10</sup>	Compatible

### Reference notes:

1. Restrictions apply to fertiliser application rates, with strict controls on the application of pesticides and field operations.
2. Restrictions apply to the storage of fuels and chemicals, with strict guidelines for rehabilitation.
3. Restrictions on the use of fuel and chemicals apply.
4. Subject to conditions placed on lease.
5. Special rural development requires appropriate planning justification, including provisions in the town planning scheme text.
6. Must be connected to deep sewerage, where practical, or otherwise to an approved waste disposal system that meets water quality protection objectives.
7. May be permitted if this use is incidental to the overall land use in the area and consistent with planning strategies.
8. Restrictions apply to siting of effluent disposal systems in areas with poor land capability and a shallow depth to groundwater.
9. Restrictions apply on density of accommodation.
10. Restrictions apply on road design and construction and the types of goods that may be carried.
11. Restrictions apply to stocking levels.
12. May be permitted if the type, volume and storage mechanisms for chemicals are compatible with water quality protection objectives.
13. Activity is incompatible in a wellhead protection zone.

