GOVERNMENT OF WESTERN AUSTRALIA

LEDGE POINT WATER RESERVE
WATER SOURCE PROTECTION PLAN

Ledge Point Town Water Supply

WATER RESOURCE PROTECTION SERIES

WATER AND RIVERS COMMISSION REPORT WRP 25

2000

WATER AND RIVERS
COMMISSION

WATER AND RIVERS COMMISSION
HYATT CENTRE
3 PLAIN STREET
EAST PERTH
WESTERN AUSTRALIA 6004

TELEPHONE (08) 9278 0300
FACSIMILE (08) 9278 0301
WEBSITE: http://www.wrc.wa.gov.au

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[Taken by John Bush, Auswest Ecology Consultant Services]

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Water and Rivers Commission
Policy and Planning Division

WATER AND RIVERS COMMISSION
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Acknowledgments

Contribution	Personnel	Title	Organisation
Program Direction	David Boyd	Manager, Water Quality Protection	Water and Rivers Commission
Supervision	Ross Sheridan	Program Manager, Protection Planning	Water and Rivers Commission
Report Preparation (draft)	David Holmes	Hydrogeologist	Water Authority of Western Australia
Report Preparation	John Bush	Consultant Environmental Scientist	Auswest Ecology Consultant Services
	Jade Coleman	Water Resources Planner	Water and Rivers Commission
Drafting	Dianne Abbott	Drafting Assistant	Water and Rivers Commission
	Nigel Atkinson	Mapping Consultant	McErry Digital Mapping Pty Ltd

For more information contact:

Program Manager, Protection Planning
Water Quality Protection Branch
Water and Rivers Commission
3 Plain Street
EAST PERTH WA 6004

Telephone: (08) 9278 0300
Facsimile: (08) 9278 0585

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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 Ledge Point 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 (PDWSAs) that include 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 manage 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 are defined to protect the water source from contamination in the immediate vicinity of production wells. Wellhead protection zones are usually circular, with a radius of 500 metres in P1 areas and 300 metres in P2 and P3 areas. These zones do not extend outside Water Reserves. Special conditions apply within these zones.

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Summary

Ledge Point is a coastal fishing and holiday village located in the Shire of Gingin. The town water supply is obtained from Water Corporation bores which draw from the watertable aquifer which overlies the relatively impermeable Lancelin Formation. The unconfined aquifer is vulnerable to contamination from inappropriate land uses. Groundwater recharge is mostly by direct rainfall infiltration.

Potential risks to this water source include spills from road accidents and inappropriate materials stored or used in the light industrial area. The impact of the light industrial area adjacent to the wellfield on future water quality needs to be monitored.

It is recommended that the proposed Water Reserve be gazetted and appropriate signage erected. Any development proposals within the proposed Water Reserve that may impact on the water quality of the water source need to be referred to the Water and Rivers Commission. A circular wellhead protection zone of 500 metre radius should be established around each bore, truncated by the eastern boundary of Old Ledge Point Road and truncated to 300 metre radius within the Priority 3 area.

This plan has undergone extensive consultation during the development process. Prior to the preparation of the draft plan, discussions were held with key stakeholders. The draft plan was released for comment to 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 Gingin and affected landowners. Comments received were considered and have been addressed in the preparation of this plan.

1. Introduction

Ledge Point is a coastal fishing and holiday village located about 120 kilometres north of Perth in the Shire of Gingin (see **Figure 1**). The town's public drinking water supply is obtained from the Water Corporation wellfield north east of town. The wellfield draws water from a watertable aquifer.

Groundwater in the Ledge Point area is mainly used for fodder production, market gardening and the town water supply. A new marina-fishing industry site may be developed in the light industrial area. Rural residential developments and urban developments are expected to increase substantially in the area in the next decade. These developments will require the present water supply system to be expanded significantly to meet the demand.

2. Physiography

Ledge Point forms part of the coastal belt of sand dunes, extending along the coast from Perth to Lancelin. The eolian and beach lime sand found in the region is known as Safety Bay Sand.

The climate of the region is described as Mediterranean with hot, dry summers and mild, wet winters. Ledge Point does not have an official weather monitoring station but the long term average annual rainfall for Lancelin, located on the coast about 10 kilometres to the north of Ledge Point, is 652 millimetres. Most rainfall occurs during the winter months from May through to October.

3. Hydrogeology

Ledge Point is located within the Perth Sedimentary Basin. The superficial formations in the Ledge Point area comprise the Tamala Limestone, the Ascot Formation and the Safety Bay Sand. These sediments overlie the Cretaceous chalk and calcareous mudstones of the Lancelin Formation. The saturated thickness of the superficial formations is about 26 metres at Ledge Point.

Groundwater recharge is by direct rainfall infiltration. There is also some recharge from the Moore River between Karakin and Bidaminna (12 kilometres east of Ledge Point). The direction of groundwater flow is to the south west. Groundwater discharge is to the ocean along the shoreline above a salt-water wedge.

The Ledge Point wellfield consists of two bores (1/89 and 2/89) located to the north east of the town site (see **Figure 2**).

The depth to the watertable in the Ledge Point area ranges from 12 metres below ground level in the west to 26 metres below ground level in the east. These levels reflect changes in the surface elevation.

The watertable aquifer from which the town water supply is obtained, is relatively shallow and is directly recharged by rainfall. It is therefore vulnerable to contamination from inappropriate land use activities.

4. Existing and proposed land use

The recharge area for the existing Ledge Point wellfield is generally covered in native coastal scrub and zoned for Parks and Recreation in the Shire of Gingin Town Planning Scheme. This includes Reserve 11747, Reserve 36447, Reserve 11919 and Reserve 39542.

The bores are immediately adjacent to the main access road to Ledge Point. Numerous tracks used by off road vehicles and motorcycles are located in the general recharge area of the wellfield.

Residential development exists to the south west of the proposed Water Reserve. The Shire of Gingin views the north-south alignment of Old Ledge Point Road as the preferred boundary for the eastern extent of urban development along the coast.

A new light industrial subdivision has been established in the area bounded by Old Ledge Point Road and Ledge Point Road, opposite production bores 1/89 and 2/89 (see **Plate 1**). A part of the subdivision is about 50 - 60 metres from the nearest bore. Currently, a few general storage facilities for the local fishing industry are established in the subdivision. The Central Coast Planning Study Steering Committee identified the assessment of potential environmental impacts of the industrial area as an issue for the future development of Ledge Point (DPUD, 1991).

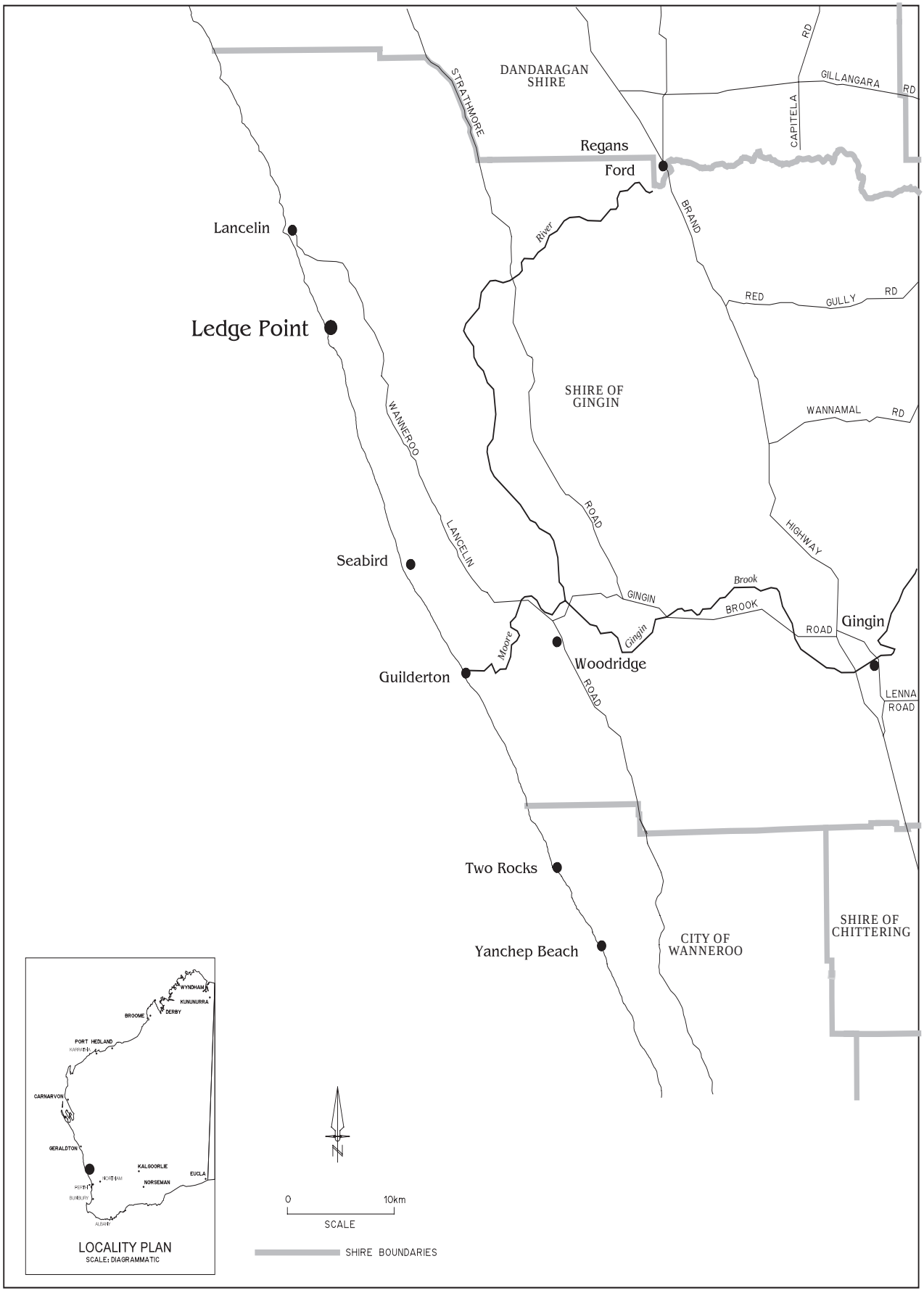

Figure 1. Ledge Point locality map

Future extension of the wellfield is likely to continue from bore 2/89 in a northerly direction, although there is also potential for development to the south.

5. Potential for contamination

The potential threat for groundwater contamination from the light industrial subdivision will depend on the types of industry that eventually establishes in this area. The Water and Rivers Commission accepts that the industrial zone has been established and will not be connected to deep sewerage. The Water Corporation has indicated that relocation of bore 2/89 will be the appropriate option in the event of a contamination threat to the water source in the area. The Water and Rivers Commission will accept the industrial development with appropriate risk management measures. Therefore, future production bores should be located at least 300 metres east of Old Ledge Point Road, providing a buffer from future urban and commercial development to the west.

The location of septic waste disposal should be considered with regard to the location of nearby production bores. Newer residential blocks are connected to sewerage, which reduces the contamination risk. Future urban developments should also be connected to sewerage to reduce any further contamination threat to the water source.

5.1 Emergencies

Escape of chemicals during unforeseen incidents and use of chemicals during emergency response can cause groundwater contamination. The Shire of Gingin Local Emergency Management Advisory Committee, through the Northam Emergency Management District, should be familiar with the location and purpose of the Ledge Point Water Reserve. A locality plan should be provided to the Fire and Rescue Services headquarters for the HAZMAT Emergency Advisory Team. The Regional Manager Water and Rivers Commission should have an advisory role to any HAZMAT incident in the Ledge Point Water Reserve.

Personnel who deal with WESTPLAN - HAZMAT incidents within the area should be given ready access to a locality map of the Water Reserve. They should receive training to ensure an understanding of the potential impacts of spills on the groundwater resource.

6. Proposed proclaimed area

The proposed Ledge Point Water Reserve boundaries have been drawn to protect the immediate wellfield area and the key recharge areas. It also allows for some potential future wellfield extension (see **Figure 2**).

Ministry for Planning has undertaken to develop a Structure Plan for the Gingin Coast. Through this process, the Commission will ensure protection of sources for the longer term public water supply needs for the region.

Given the range of land uses and zoning of the land, the Water Reserve should be classified for Priority 1 and Priority 3 source protection.

A Priority 1 classification over Crown reserved land (see **Appendix 1**) is justified based on the following criteria:

- The land is zoned for Parks and Recreation;
- The water resource is of critical importance to Ledge Point as it forms the only drinking water supply for the town;
- The Water Reserve covers important recharge areas for the wellfield;
- The Water Reserve allows for protection of the water resource for wellfield expansion to meet some increased demand for public water supply in the future;
- There will inevitably be urban expansion and an increased demand for public water supply in the future; and
- More intensive development could lead to further degradation of the water quality owing to the nature of the soils in the area.

A Priority 3 classification over the light industrial area (see **Appendix 1**) is justified based on the following criteria:

- The area has been approved for industrial development and the associated land use activities need to be managed for water source protection; and
- Water quality may be degraded given the land use in the area.

A circular wellhead protection zone of 500 metre radius should be established around each bore, truncated by the eastern boundary of Old Ledge Point Road and truncated to 300 metre radius within the Priority 3 area. The wellhead protection zones do not extend outside the Water Reserve.

The detailed definition of the Water Reserve boundary is as follows.

The western boundary extends south along the eastern side of Old Ledge Point Road from the intersection of the eastern side of Old Ledge Point Road with the northern boundary of Reserve 36447, until the boundary is 300 metres from bore 2/89. The boundary follows a radius of 300 metres from bore 2/89 anticlockwise until intersection with the southern side of Ledge Point Road. The boundary follows the southern side of Ledge Point Road until 500 metres from bore 1/89. The boundary follows a radius of 500 metres from bore 1/89 anticlockwise until intersection with the northern side of Ledge Point Road. The southern boundary extends along the northern side of Ledge Point Road until intersection with Lancelin Road. The northern boundary extends west along the northern boundary of Reserve 36447 until intersection with Old Ledge Point Road.

Plate 1. Light industrial subdivision at Ledge Point with wellfield on near side of road

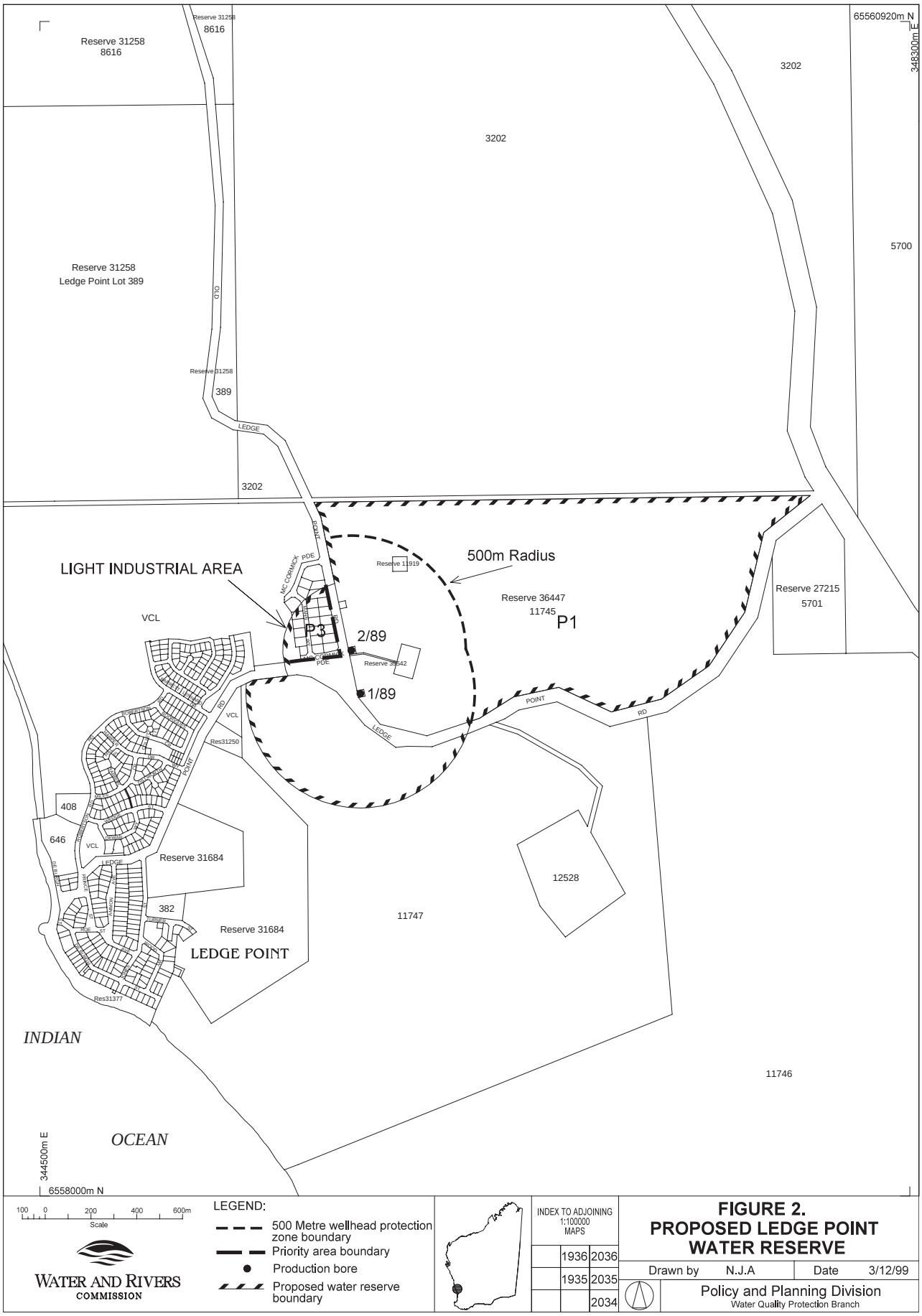

Figure 2. Proposed Ledge Point Water Reserve

Recommendations

1. The proposed Ledge Point 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* (see **Appendix 1**) and reflect the Priority 1 and Priority 3 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 the Water Reserve is proclaimed, signs should be erected along the boundaries to define the reserve and promote public awareness of the need to protect water quality.

5. Incidents covered by WESTPLAN – HAZMAT in the Ledge Point Water Reserve should be addressed through the following measures:

- The Gingin Local Emergency Management Advisory Committee (through the Northam Emergency Management District) being familiar with the location and purpose of the Ledge Point Water Reserve.
- The locality plan for the Ledge Point Water Reserve being provided to the Fire and Rescue Services headquarters for the HAZMAT Emergency Advisory Team.
- The Water and Rivers Commission advising the HAZMAT Emergency Advisory Team during incidents in the Ledge Point Water Reserve.
- Personnel dealing with WESTPLAN - HAZMAT incidents in the area being given ready access to a locality map of the Water Reserve and training to understand the potential impacts of spills on the groundwater resource.

6. A surveillance program should be established to identify any incompatible land uses or potential contaminant threats within the proposed Water Reserve.

7. A monitoring program should be established to detect any contamination to bore 2/89 from the further establishment of industries within the industrial subdivision.

8. Future extension of the wellfield should allow a 300 metre upgradient separation from the existing industrial subdivision and a 300 metre buffer zone east of Old Ledge Point Road.

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).	2000-01
2.	Incorporation into land planning strategies.	Shire of Gingin, Ministry for Planning.	ongoing
3.	Referral of development proposals: (i) WRC to provide the Shire of Gingin with guidelines for referral of development proposals. (ii) referral of development proposals.	(i) Program Manager, Protection Planning (WRC). (ii) Shire of Gingin, Ministry for Planning and Department of Environmental Protection.	(i) 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, Swan-Goldfields-Agricultural region (WRC), Regional Business Manager, Midwest – Avon (WC). (iii) Regional Manager, Swan-Goldfields-Agricultural region (WRC), Regional Business Manager, Midwest – Avon (WC).	(i) 1999-00 (ii) 2000 (iii) to be determined.

(contd)

5.	Incidents covered by WESTPLAN – HAZMAT in the Ledge Point Water Reserve should be addressed through the following measures: (i) The Shire of Gingin Local Emergency Management Advisory Committee (through the Northam Emergency Management District) being familiar with the location and purpose of the Ledge Point Water Reserve. (ii) The locality plan for the Ledge Point Water Reserve being provided to the Fire and Rescue Services headquarters for the HAZMAT Emergency Advisory Team. (iii) The Water and Rivers Commission advising the HAZMAT Emergency Advisory Team during incidents in the Ledge Point Water Reserve. (iv) Personnel dealing with WESTPLAN - HAZMAT incidents in the area being given ready access to a locality map of the Water Reserve and training to understand the potential impacts of spills on the groundwater resource.	(i) Shire of Gingin Local Emergency Management Advisory Committee (through WRC Swan-Goldfields-Agricultural region). (ii) WRC (Swan-Goldfields-Agricultural region). (iii) WRC (Swan-Goldfields-Agricultural region). (iv) Shire of Gingin Local Emergency Management Advisory Committee.	(i) 2000-01 (ii) 2000-01 (iii) ongoing (iv) 2000-01
6.	Surveillance program: (i) develop guidelines for the surveillance of Water Reserves. (ii) implement the surveillance program.	(i) Program Manager, Protection Planning (WRC). (ii) Regional Manager, Swan-Goldfields-Agricultural region (WRC), Regional Business Manager, Midwest – Avon (WC).	(i) 2000-01 (ii) on completion of surveillance guidelines.

(contd)

7.	Industrial subdivision: (i) monitor production bores for nutrients and hydrocarbons. (ii) consideration of establishment of monitoring network consisting of: • a pair of monitoring bores between industrial subdivision and production bore 2/89 located: • at the base of the Safety Bay Sands slotted to a minimum 1 metre above the water table. • within the Tamala Limestone slotted over the same interval as production bore 1/89. • parameters monitored should be based on the impacts of land use activities within the subdivision (i.e. septic tanks, chemical storage, fuel storage).	(i) Water Corporation. (ii) Water and Rivers Commission/Water Corporation.	(i) ongoing (ii) 2001-02
8.	Future wellfield expansion: (i) future bores should be located at least 300 metres from the existing industrial subdivision and at least 300 metres east of Old Ledge Point Road.	(i) Water Corporation.	(i) ongoing
9.	Review of this plan and recommendations: (i) review implementation strategy annually. (ii) full review after 5 years.	Water Quality Protection Branch (WRC).	(i) initial review – 2001/02 (ii) full review – 2006/07

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Glossary

Aquifer	A geological formation or group of formations able to receive, store and transmit significant quantities of water.
Bore	A narrow, lined hole drilled to monitor or withdraw groundwater.
Groundwater	Water which occupies the pores and crevices of rock or soil.
Hydrogeology	The study of groundwater, especially relating to the distribution of aquifers, groundwater flow and groundwater quality.
Nutrients	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.
Pollution	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.
Recharge	Water infiltrating to replenish an aquifer.
Recharge Area	An area through which water from a groundwater catchment percolates to replenish (recharge) an aquifer. An unconfined aquifer is recharged by rainfall throughout its distribution. Confined aquifers are recharged in specific areas where water leaks from overlying aquifers, or where the aquifer rises to meet the surface.
Unconfined Aquifer	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 watertable.
Water Quality	The physical, chemical and biological measures of water.
Watertable	The upper saturated level of the unconfined groundwater.
Wellfield	A group of bores to monitor or withdraw groundwater.

Appendices

Appendix 1: Land Use Compatibility in Public Drinking Water Source Areas

LAND USE COMPATIBILITY IN PUBLIC DRINKING WATER SOURCE AREAS

Purpose

To provide information on land use and 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 proposed and existing land use 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*.

Preamble

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 policies for the protection of public drinking water source areas that include three levels of priority classification of lands within 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 conditional development is allowed.

Priority 3 (P3) source protection areas are defined to **manage 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** for land use activities. 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 buffer area around the top water level of a reservoir and include the reservoir itself. These zones do not extend outside water reserves. Special conditions apply within these zones.

Tables showing Land Use Compatibility with the Commission's PDWSA protection strategy

These tables should be used as a guideline only. More detailed information on the Commission's requirements in the form of activity guidelines or notes is available for some land uses. These can be found on the 'Protecting Water' web page on the Commission's Internet site (www.wrc.wa.gov.au). Alternatively, information relating to land use and development within PDWSAs including those not listed in the tables, can be obtained from the Commission's Water Quality Protection Branch.

The Commission recognises that many activities were established before the introduction of these tables. The Commission will negotiate with the operators of such activities to develop appropriate management practices to minimise the impact on water resources.

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

Definitions used in the following tables

Compatible	The land use is compatible with the management objectives of the priority classification.
Incompatible	The land use is incompatible with the management objectives of the priority classification.
Conditional	The land use can be compatible with the management objectives of the priority classification, with appropriate site management practices. All conditional developments / activities should be referred to the Commission for assessment on a case specific basis.
Extensive	Where limited additional inputs are required to support the desired land use. eg supplementary animal feed only during seasonal dry periods.
Intensive	Where regular additional inputs are required to support the desired land use. eg irrigation, fertilisers and non forage animal feed dominates.

More information

We welcome your comment on these notes. They will be updated from time to time as comments are received or activity standards change. The Commission is progressively developing Water Quality Protection Notes and Guidelines covering land uses described in the attached tables. Advice on available guidance documents may be obtained by contacting the Commission.

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.
E-mail: use the {feedback} section at our Internet address (http://www.wrc.wa.gov.au) citing the topic and version.

Tables showing Land use compatibility with PDWSA protection objectives

AGRICULTURE - ANIMALS

Land use	Priority 1	Priority 2	Priority 3
Animal saleyards and stockyards[14]	Incompatible	Incompatible[7]	Conditional[7]
Apiaries on Crown land	Conditional	Conditional	Conditional
Aquaculture eg. crustaceans, fish, algae farms	Incompatible	Conditional	Conditional
Dairy sheds	Incompatible	Incompatible[11,15]	Conditional[15]
Feedlots	Incompatible	Incompatible	Conditional
Livestock grazing - pastoral leases	Conditional	Compatible	Compatible
Livestock grazing - broad acre (extensive)	Incompatible	Conditional[11]	Compatible
Livestock grazing (intensive)	Incompatible	Incompatible	Conditional[11]
Piggeries	Incompatible	Incompatible	Incompatible
Poultry farming (housed)	Incompatible	Conditional	Conditional
Stables	Incompatible	Conditional	Compatible

AGRICULTURE - PLANTS

Land use	Priority 1	Priority 2	Priority 3
Broad acre cropping i.e. non-irrigated	Incompatible	Conditional[1]	Compatible
Floriculture (extensive)	Incompatible	Conditional	Compatible
Floriculture (intensive)	Incompatible	Incompatible	Conditional
Horticulture- hydroponics	Incompatible	Conditional	Conditional
Horticulture - market gardens	Incompatible	Incompatible	Conditional
Orchards	Incompatible	Conditional	Compatible
Nurseries (potted plants)	Incompatible	Conditional	Compatible
Silviculture (tree farming)	Conditional	Conditional	Compatible
Turf farms	Incompatible	Incompatible	Conditional
Viticulture (wine & table grapes)	Incompatible	Conditional	Compatible

DEVELOPMENT - COMMERCIAL

Land use	Priority 1	Priority 2	Priority 3
Aircraft servicing	Incompatible	Incompatible	Conditional[6]
Airports or landing grounds	Incompatible	Incompatible	Conditional[6]
Amusement centres	Incompatible	Incompatible	Compatible[6]
Automotive businesses	Incompatible	Incompatible	Conditional[6]
Boat servicing	Incompatible	Incompatible	Conditional[6]
Catteries	Incompatible	Compatible	Compatible
Caravan and trailer hire	Incompatible	Incompatible	Conditional[6]
Consulting rooms	Incompatible	Incompatible[7]	Compatible[6]
Concrete batching and cement products	Incompatible	Incompatible	Conditional
Cottage Industries	Conditional	Conditional	Compatible
Dog kennels	Incompatible	Conditional	Conditional
Drive in / take-away food shops	Incompatible	Incompatible	Compatible[6]
Drive -in theatres	Incompatible	Incompatible	Compatible[6]
Dry cleaning premises	Incompatible	Incompatible	Conditional[6]
Farm supply centres	Incompatible	Incompatible[7]	Conditional
Fuel depots	Incompatible	Incompatible	Conditional
Garden centres	Incompatible	Incompatible	Compatible
Laboratories (analytical , photographic)	Incompatible	Incompatible	Conditional[6]
Markets	Incompatible	Incompatible	Compatible[6]
Mechanical servicing	Incompatible	Incompatible	Conditional[6]
Metal production / finishing	Incompatible	Incompatible	Incompatible
Milk transfer depots	Incompatible	Incompatible	Conditional
Pesticide operator depots	Incompatible	Incompatible	Incompatible
Restaurants and taverns	Incompatible	Incompatible	Compatible[6]
Service stations	Incompatible	Incompatible	Conditional[6]
Shops and shopping centres	Incompatible	Incompatible[7]	Compatible[6]
Transport depots	Incompatible	Incompatible	Conditional
Vehicle parking (commercial)	Incompatible	Incompatible	Compatible
Vehicle wrecking and machinery	Incompatible	Incompatible	Conditional
Veterinary clinics / hospitals	Incompatible	Incompatible[7]	Conditional[6]

DEVELOPMENT - INDUSTRIAL

Land use	Priority 1	Priority 2	Priority 3
Heavy Industry	Incompatible	Incompatible	Incompatible
Light or general Industry	Incompatible	Incompatible	Conditional[6]
Power Stations	Incompatible	Incompatible	Incompatible

DEVELOPMENT - URBAN

Land use	Priority 1	Priority 2	Priority 3
Aged and dependent persons group dwellings	Incompatible	Incompatible	Compatible[6]
Cemeteries	Incompatible	Incompatible	Conditional
Civic buildings	Incompatible	Conditional[7]	Compatible[6]
Clubs -sporting or recreation	Incompatible	Conditional	Compatible[6]
Community halls	Incompatible	Conditional[7]	Compatible
Family day care centres	Incompatible	Incompatible[7]	Compatible[6]
Funeral parlours	Incompatible	Incompatible	Compatible[6]
Health centres	Incompatible	Incompatible	Compatible[6]
Hospitals	Incompatible	Incompatible	Conditional[6]
Medical centres	Incompatible	Incompatible	Compatible[6]
Toilet blocks and change rooms	Incompatible[7]	Conditional	Compatible

EDUCATION / RESEARCH

Land use	Priority 1	Priority 2	Priority 3
Community education centres	Conditional[7]	Conditional[7]	Compatible[6]
Primary / Secondary Schools	Incompatible	Incompatible	Compatible[6]
Scientific Research	Conditional	Conditional	Compatible
Tertiary Education Facilities	Incompatible	Incompatible	Conditional[6]

MINING AND MINERAL PROCESSING

Land use	Priority 1	Priority 2	Priority 3
Extractive industries (sand mining, quarries)	Conditional[2]	Conditional[2]	Conditional[2]
Mineral exploration	Conditional[4]	Conditional[4]	Conditional[4]
Mining	Conditional[4]	Conditional[4]	Conditional[4]
Mineral processing	Incompatible	Incompatible	Conditional[4]
Tailings dams	Incompatible	Incompatible	Conditional[4]

PROCESSING OF ANIMALS / ANIMAL PRODUCTS

Land use	Priority 1	Priority 2	Priority 3
Animal product rendering works	Incompatible	Incompatible	Incompatible
Abattoirs	Incompatible	Incompatible	Incompatible
Dairy product factories	Incompatible	Incompatible	Conditional[6]
Food Processing	Incompatible	Incompatible	Conditional[6]
Tanneries	Incompatible	Incompatible	Incompatible
Wool-scourers	Incompatible	Incompatible	Incompatible

PROCESSING OF PLANTS / PLANT PRODUCTS

Land use	Priority 1	Priority 2	Priority 3
Breweries	Incompatible	Incompatible	Conditional[6]
Composting / soil blending (commercial)	Incompatible	Incompatible	Conditional
Vegetable / food processing	Incompatible	Incompatible	Conditional[6]
Wineries	Incompatible	Incompatible	Conditional

SUBDIVISION

Land use	Priority 1	Priority 2	Priority 3
Rural subdivision to a minimum lot size of 4 ha	Incompatible	Compatible	Compatible
Rural subdivision to a lot size less than 4 ha	Incompatible	Incompatible	Incompatible
Special rural subdivision to a minimum lot size of 2 ha	Incompatible	Conditional[8,9]	Conditional[8]
Special rural subdivision to a lot size between 1 and 2 ha	Incompatible	Incompatible	Conditional[8,9]
Special rural subdivision to a lot size less than 1 ha	Incompatible	Incompatible	Incompatible
Urban subdivision	Incompatible	Incompatible	Compatible[6]
Industrial subdivision	Incompatible	Incompatible	Conditional[6]

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

SPORT AND RECREATION

Land use	Priority 1	Priority 2	Priority 3
Equestrian centres	Incompatible	Incompatible	Compatible
Golf courses	Incompatible	Incompatible	Conditional[1]
Motor sports ie permanent racing facilities	Incompatible	Incompatible	Conditional
Public swimming pools	Incompatible	Incompatible	Conditional
Recreational parks -irrigated	Incompatible	Incompatible	Conditional[1]
Rifle ranges	Incompatible	Conditional	Compatible

STORAGE/ PROCESSING OF TOXIC AND HAZARDOUS SUBSTANCES (THS)

Land use	Priority 1	Priority 2	Priority 3
Above ground storage of THS	Conditional	Conditional	Conditional
Underground storage tanks for THS	Incompatible	Incompatible	Conditional

TOURISM ACCOMMODATION.

Land use	Priority 1	Priority 2	Priority 3
Bed and breakfast accommodation	Incompatible	Conditional[16]	Compatible
Caravan parks	Incompatible	Incompatible	Conditional[6]
Farm stay accommodation	Incompatible	Conditional[16]	Compatible
Motels, hotels, lodging houses, hostels	Incompatible	Incompatible	Compatible[6]

WASTE TREATMENT AND MANAGEMENT

Land use	Priority 1	Priority 2	Priority 3
Injection of liquid wastes into ground water	Incompatible	Incompatible	Incompatible
Landfills -Class I, II or III	Incompatible	Incompatible	Conditional
Landfills -Class IV and V	Incompatible	Incompatible	Incompatible
Recycling depots	Incompatible	Incompatible	Conditional
Refuse transfer stations	Incompatible	Incompatible	Conditional
Sewers (gravity)	Incompatible	Incompatible	Compatible
Sewers (pressure mains)	Incompatible	Conditional	Compatible
Sewage pump stations	Incompatible	Conditional	Conditional
Used tyre storage / disposal facilities	Incompatible	Incompatible	Incompatible
Wastewater treatment plants	Incompatible	Incompatible	Conditional
Wastewater application to land	Incompatible	Incompatible[17]	Conditional

OTHER DEVELOPMENTS

Land use	Priority 1	Priority 2	Priority 3
Caretaker's housing	Incompatible[7]	Conditional	Compatible
Drinking water treatment plants	Conditional	Conditional	Conditional
Communications receivers / transmitters	Conditional	Conditional	Conditional
Construction projects (not shown elsewhere)	Conditional	Conditional	Conditional
Forestry	Conditional[1]	Compatible	Compatible
Major transport routes	Incompatible	Conditional[10]	Compatible
National and Regional Parks[13]	Compatible	Compatible	Compatible
Nature reserves	Compatible	Compatible	Compatible

Table reference notes:

1. Conditions may limit fertiliser and pesticide application.
2. Conditions cover the storage of fuels and chemicals, the depth of mining in relation to the water table with strict guidelines for rehabilitation.
3. Conditions cover the storage and use of fuel and other chemicals.
4. Conditions placed via the mining lease and / or environmental approval.
5. Special rural development must have appropriate provisions under the Town Planning Scheme, to prevent introduction of land uses and practices that pose an unacceptable risk to water resources.
6. Must be connected to deep sewerage, except where exemptions apply under the current Government Sewerage Policy.
7. Only permitted if this use is incidental to the overall land use in the area and consistent with planning strategies.
8. Lots should only be created where land capability allows effective on-site soakage disposal of treated wastewater. Conditions apply to siting of wastewater disposal systems in areas with poor land capability and / or a shallow depth to groundwater, animals are held or fertiliser is applied. Alternative wastewater treatment systems, where approved by the Health Department, may be accepted with maintenance requirements.
9. An average rather than minimum lot size may be acceptable if the proponent can demonstrate that the water quality objectives of the source protection area are met, and caveats are placed on titles of larger blocks stating that further subdivision cannot occur.
10. Conditions cover road design, construction and the types of goods that may be carried.

11. May be permitted if animal stocking levels (number of animals per hectare) are consistent with source protection objectives.
12. May be permitted if the type, volume and storage mechanisms for chemicals are compatible with water quality protection objectives.
13. Visitor and management infrastructure and facilities must be appropriately sited and maintained.
14. This does not include on-farm / pastoral lease stock-yards used for animal husbandry
15. Waste management practices must be compatible with source protection objectives.
16. Conditions apply on density of accommodation in Priority 2 areas
17. May be permitted if the quantity and quality are compatible with water quality protection objectives.

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Publications Coordinator
Water and Rivers Commission
Level 2, Hyatt Centre
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