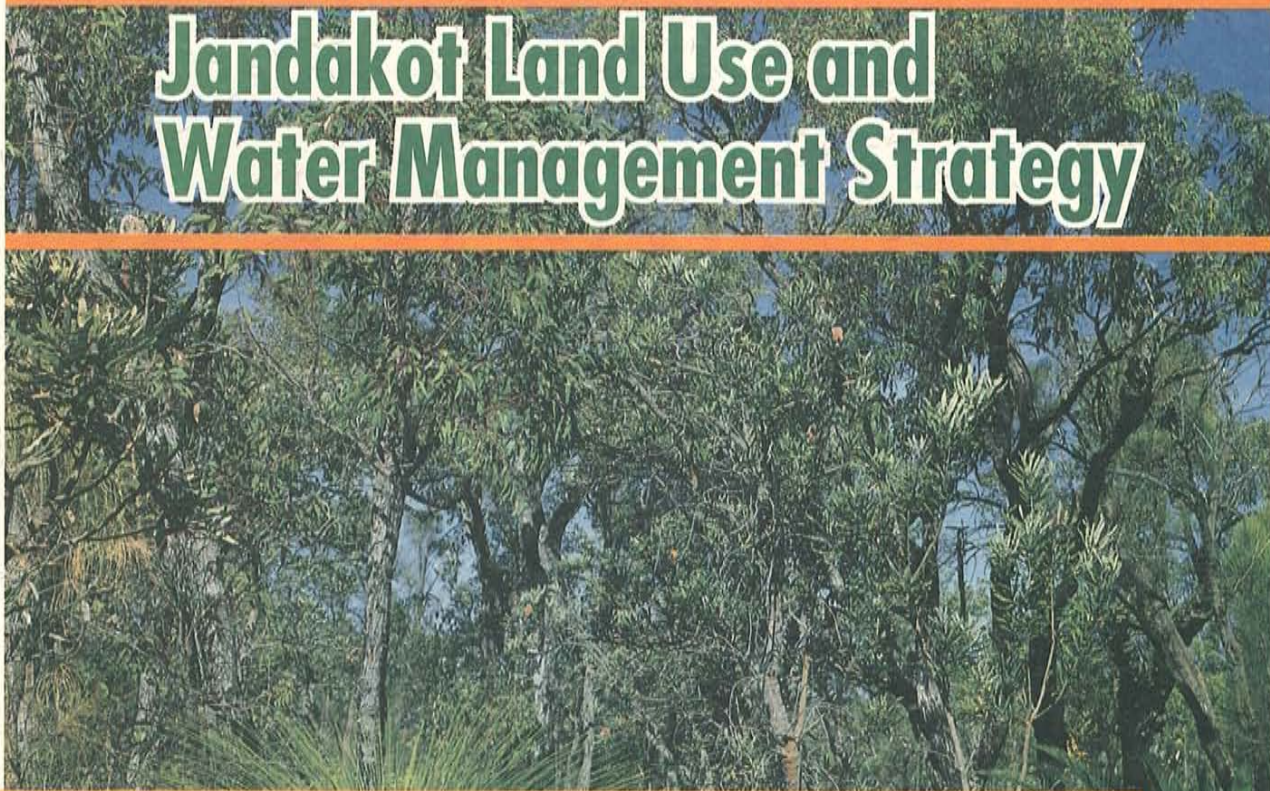


MARCH 1995

Jandakot Land Use and Water Management Strategy



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Jandakot Land Use and Water Management Strategy



Prepared for the Western Australian Planning Commission
by the Ministry for Planning
Albert Facey House
469-489 Wellington Street
Perth Western Australia 6000



Ministry for Planning
WESTERN AUSTRALIA

MARCH 1995

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FOREWORD



The rural wedge between Perth's south-east and south-west urban corridors overlies a groundwater resource commonly known as the Jandakot Mound.

This shallow groundwater mound is an important source of public and private water supply and supports significant wetlands and vegetation.

The area also contains valuable natural resources, recreational opportunities and various agricultural and horticultural activities.

The importance of the water resource and associated environmental concerns need to be recognised in future planning and development in the area.

This strategy focuses on the public water supply area and determines appropriate land use policies and controls to protect the water resource and conservation values of the area.

The strategy is generally consistent with the findings of the Select Committee on Development over Groundwater Areas in the Metropolitan Region which reported to Parliament in December 1994.

One of the key recommendations in the Select Committee's report requires the Water Authority of WA, in consultation with other relevant government agencies, to review its priority groundwater area boundaries to ensure they are based on rigorous scientific evidence.

A requirement of the review is to recognise land which is already committed for urban and commercial development.

The Urban land use category in the Jandakot Land Use and Water Management Strategy is restricted within Priority 2 areas to land which is already zoned Urban or Urban Deferred in the Metropolitan Region Scheme. Similarly the Industrial category within the Priority 2 area is zoned and largely developed.

The strategy has been prepared with considerable public input and has been modified to reflect public submissions received on the draft report and recent amendments to the Metropolitan Region Scheme.

RICHARD LEWIS JP MLA
Minister for Planning



EXECUTIVE SUMMARY

The Jandakot Land Use and Water Management Strategy covers an area roughly corresponding to the existing and proposed Jandakot Public Water Supply Area (JPWSA). It includes the land generally between (including part of) the South-East and South-West Corridors (figure 2).

The strategy was prepared in recognition of increasing pressure for development within and surrounding the JPWSA.

The strategy contains a land use plan to complement the structure planning being undertaken for the adjacent urban corridors, and recommends policy and statutory mechanisms to protect and manage the groundwater resource and environmental values in the area over the next 20-30 years.

Features of the strategy:

- urban development to generally reflect those areas identified in the *Urban Expansion Policy Statement* and to be fully serviced;
- development of urban and special rural areas to be subject to detailed surveys designed to establish the significance of wetlands and vegetation within these areas, to minimise disturbance to these features;
- development in areas identified for possible future urban development to be subject to further groundwater and/or environmental assessments to determine the nature and extent of urban development;
- consolidation of Special Rural zones subject to land use and management controls (e.g. clearing controls);
- establishment of the Jandakot Botanic Park to protect the groundwater, significant wetlands and vegetation and for recreation purposes;
- designation of Rural areas to support continued rural activities which are compatible with the protection of groundwater and encourage the protection and enhancement of landscape features and conservation values associated with these areas;
- reclassification of the existing Jandakot noxious industry area for general and light industry with a requirement for connection to reticulated sewerage; and
- relocation of the Jandakot Wool Scouring Company adjacent to Yangebup Lake.

The public consultation process resulted in a number of changes to the draft strategy. These are outlined in appendix 1.

The conclusions and land use recommendations in the strategy generally support the zones and reservations in the Metropolitan Region Scheme.

Actions to implement the strategy:

- prepare and assess town planning scheme, subdivision and development proposals in accordance with the strategy (LAs & MFP);
- proclaim the southern extension of the Jandakot Underground Water Pollution Control Area as soon as practical and extend by-law controls over this area (WAWA);
- prepare an Environmental Protection Policy (EPP) for the protection of wetlands, vegetation and groundwater within the study area to support the *Swan Coastal Plain Lakes EPP* (EPA);



- promote community awareness programs through relevant State government agencies and local authorities to address the issues listed in table 2 (LAs, MFP, WAWA, CALM, DAWA, APB, Bush Fires Board & Health Dept);
- establish an advisory committee to provide input to review aspects of the strategy as required. The advisory committee should include representatives from relevant State and local government authorities including the Ministry for Planning, Water Authority of Western Australia, Department of Environmental Protection, Department of Conservation and Land Management, Department of Agriculture Western Australia and the Health Department of Western Australia (MFP); and
- establish a monitoring system to record the changes in the quality and quantity of groundwater, wetlands and woodlands (and associated fauna) within the study area (WAWA & CALM).



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1. THE STRATEGY

1.1 INTRODUCTION

The strategy establishes the physical and policy framework for the long-term planning, management and development of the study area. The allocation of land uses addresses possible land use and groundwater or environmental conflicts in the 20-30 year time span of the strategy. Appropriate land uses have been determined according to their level of impact on the groundwater system and environmental features within the study area, while recognising existing commitments and priorities. The land uses are accompanied by appropriate groundwater and environmental management policies and controls. The strategy is consistent with the Parliamentary Select Committee report on Development Over Groundwater areas in the Metropolitan Region (December 1994).

The strategy was carried out under the direction of a steering committee comprised of representatives of relevant government agencies and local authorities within the study area. The draft strategy was prepared in consultation with the Water Authority of Western Australia and released for public comment between 9 November 1992 and 30 April 1993. The submissions are analysed in detail in a separate report which is available from the Ministry for Planning.

The draft strategy incorporates comprehensive background information on land use, the environment, water management and infrastructure and provides the basis upon which the final strategy was formulated. The draft strategy should be consulted for a more complete discussion of the planning proposals.

The conclusions and recommendations in the strategy for Urban and Industrial land, the Jandakot Botanic Park, Beeliar Regional Park and other Parks and Recreation areas have regard to the submissions received for the South-West Corridor (Stage A) Major Amendment (which was effective in the Metropolitan Region Scheme (MRS) from December 1994) and generally support the zones and reserves in the MRS. The report on the submissions to the major amendment is available from the Ministry for Planning.

The consideration of transportation issues is beyond the scope of the Jandakot Land Use and

Water Management Strategy. Accordingly, major transportation routes have been omitted from the strategy.

1.2 AIMS

The overall aims of the strategy are to:

- promote appropriate development which is consistent with the protection and management of the groundwater system and key environmental features;
- provide opportunities for consolidated urban growth close to existing services in the Perth metropolitan region; and
- preserve significant wetlands and remnant vegetation while providing for compatible economic and recreational activities.

1.3 LAND USE AND MANAGEMENT

The strategy includes land use and management controls designed to protect both the groundwater and environmental resources in the area. These controls involve State and local government agencies responsible for environmental protection, water resource management and land use planning. They apply to the planning, development and on-going use by:

- maintaining or re-establishing environmentally preferable water and nutrient regimes (water sensitive design);
- protecting significant wetlands and remnant vegetation and enhancing landscape features;
- providing guidance for environmental assessment;
- restricting the extraction of groundwater;
- managing activities to prevent pollution; and
- allocating land uses.

The allocation of land uses in the study area is addressed using a number of land use categories which are described below and depicted in figure 2. Each land use category has a series of objectives and is accompanied by specific recommendations.



1.3.1 URBAN AREAS

Objectives

- To accommodate housing needs in this part of the region.
- To promote urban development close to existing urban services to maximise the use of existing infrastructure.
- To minimise the impact of urban development on the groundwater resource and environmental features.
- To retain significant vegetation and wetlands.

Discussion

Proposed Urban land, including Possible Future Urban land, is concentrated on the north-east and western sides of the study area. It generally includes all the land designated as future urban in the *Urban Expansion Policy* (excluding the land which does not have environmental approval on the north side of Rowley Road generally between Lyon and Kinley Roads, Banjup). This comprises land generally east of the Beeliar Regional Park (South Lake and Jandakot) as well as land at Mandogalup (excluding the land affected by the *Kwinana Air Quality Environmental Protection Policy*) and Canning Vale. It also includes land east of the Kwinana townsite, up to the Freeway alignment, and south as far as Bollard Bullrush Swamp.

A number of submissions on the draft strategy sought to include additional land in the Urban or Possible Future Urban land use categories in Forrestdale, Jandakot, Banjup, Wandi and Wellard. Except for some additional land in Banjup and Wandi which is included in the Rural category but may have some urban potential in the future, these proposals are considered to present an unacceptable risk to the protection of groundwater and the environmental values of the area and/or are a major departure from METROPLAN and the *Urban Expansion Policy* for which there is no demonstrated need at this time.

The land near Alcoa's residue disposal area (red mud lakes) may be affected by dust and other impacts associated with the mining of this area (e.g. noise and fumes) which are constraints to

urbanisation. There are also unresolved water and environmental management issues which require further assessment within the Possible Future Urban category between the Thomsons Lake Nature Reserve and Hammond Road.

The total area set aside for additional urban development within the study area (in all categories, outside of the existing Urban and Urban Deferred Zones in the Metropolitan Region Scheme) is about 500 hectares, having the potential for 4,500 dwellings (9 dwellings per gross hectare), giving a population of approximately 13,500 (3 persons per dwelling).

Recommendations

1. The nature and extent of urban development within the Possible Future Urban category should be dependent upon further drainage and environmental assessments of the impact of urban development on the Thomsons Lake Nature Reserve.
2. Priority should be given to Alcoa's rights for residue disposal in accordance with the *Alumina Refinery Agreement Act 1961* (as amended) when determining the nature, extent and timeframe for urban development in Mandogolup.
3. Urban development should be connected to reticulated sewerage.
4. The detailed planning of the urban areas should include measures to protect significant wetlands and vegetation (including rare and endangered flora). These measures may include the protection of significant wetlands and vegetation within areas of open space and in the grounds of public facilities. Botanical surveys should be undertaken to identify rare and endangered flora.
5. Environmental and engineering investigations should be undertaken to determine the nutrient and water management requirements for urban development. These investigations should include drainage and nutrient management plans to:



- minimise fertiliser sources and incorporate nutrient-stripping features into drainage systems;
- control stormwater by creating artificial wetlands and maximising local recharge;
- control groundwater levels through sub-soil drainage and other mechanisms (e.g. plantation scale tree planting); and
- dispose of surplus drainage water to areas where no adverse effects will result, either by ocean outfall or redirecting to areas where additional groundwater is acceptable.

1.3.2 RURAL LIVING AREAS

Objectives

- To provide opportunities for rural-residential living while, at the same time, limiting this form of development so there is minimal conflict with the groundwater resource, the natural environment, other forms of development and broader metropolitan objectives.
- To consolidate existing Special Rural zones within the existing and proposed JPWSA.
- To apply criteria to the existing small rural lots not zoned Special Rural, appropriate to protect groundwater quality, rural amenity and the environmental values of the area.
- To require that demand for rural-residential development be demonstrated before the initiation of rezonings for Special Rural purposes.
- To protect significant wetlands and vegetation of high value.
- To control subdivision and development of land consistent with the maintenance of groundwater quality and landscape protection.
- To provide appropriate fire control measures.

Discussion

Rural Living areas in the strategy include land already designated as Special Rural zones and land which has the potential for new Special Rural zones. It also includes the extensive areas in the southern part of the study area where land has been subdivided into small lots (predominantly 4 ha lots), even though they are currently not zoned Special Rural (zoned Rural).

New Special Rural zones should generally be restricted to parts of Wellard, Casuarina and Anketell as well as a small area in Banjup to effectively round off existing special rural areas.

In the Rural Living areas it is important to ensure that land use and management controls and subdivision restrictions are applied to ensure that the continuation of existing land use and new development does not pose an increased threat to either the environmental values of the area or the quality and quantity of the groundwater resource.

Recommendations

1. Special Rural zones should incorporate land use and development controls regarding clearing and revegetation and restrictions on potentially polluting land uses. Lot size in the Special Rural zones should be determined to suit local conditions having regard to prevailing lot size (subject to a minimum lot size of 2 ha) and be based upon a detailed assessment of land capability and suitability.
2. Where new Special Rural zones are permitted, subdivision and lot size should be designed/determined in a manner which will minimise impact on the landscape.
3. Local authorities should review the zoning of the existing small rural lots (predominantly 4 ha lots) currently not zoned Special Rural when preparing and reviewing their local rural strategies to ensure compliance with the following criteria:
 - protection of rural amenity;
 - protection of landscape features;



- restrictions on potentially polluting activities; and
- nutrient management controls.

This may require the inclusion of these areas in a separate zone for rural smallholdings with specific land use and development controls. Except for minor rounding-off to reflect the prevailing lot size, no further subdivision should be permitted.

4. The use of new technology in the treatment of domestic effluent (e.g. aerobic treatment units) should be supported subject to approval from the Health Department.
5. Environmental and engineering investigations should be undertaken for new Special Rural zones to determine the environmental significance of vegetation and the nutrient and water management requirements. These investigations should:
 - identify significant remnant vegetation (e.g. via botanical surveys);
 - evaluate the impact of any proposed removal of native vegetation and the need for planting, replanting, landscape protection or other treatment of any part of the land including adequate (ecology-sensitive) fire management measures;
 - assess the likely extent of contamination from on-site effluent disposal and proposed means for limiting contamination including the use of aerobic treatment units (subject to approval from the Health Department); and
 - assess the need for drainage mechanisms which minimise the outflow of nutrients.

1.3.3 RURAL AREAS

Objectives

- To minimise the impact of rural uses on the quality and quantity of groundwater.
- To allow the continuation of rural uses where these do not adversely affect significant environmental considerations

and the implementation of other land use commitments.

- To protect the rural landscape and areas which have specific landscape or conservation value.

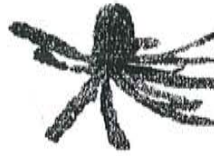
Discussion

The study area contains tracts of land where rural character plays an important part in the regional landscape. These areas also contain specific characteristics such as wetlands and remnant vegetation which form part of the regional landscape. In addition to fostering suitable agricultural activities, the protection of these values has been a significant function of rural areas in planning for the Perth metropolitan region.

The main areas included in the Rural category are parts of Forrestdale and Banjup to the north and parts of Anketell and Wellard to the south. In addition, this area encompasses substantial land holdings in the south-east of the study area, within Oakford and the Peel Estate in the Shire of Serpentine-Jarrahdale.

Rural activities can have a low to high impact upon groundwater depending on whether they are extensive or intensive and how they are managed. Rural activities in these areas will generally be supported where they are compatible with the protection of groundwater. At the same time the maintenance and enhancement of the landscape and conservation values is encouraged (e.g. Bollard Bullrush Swamp). However, given the limited financial viability of many rural activities within the study area there may be limited scope for alternative uses within parts of the area subject to stringent criteria.

The land on the north side of Rowley Road and east of Lyon Road in the vicinity of Kinley Road and the land on the south side of Rowley Road between the freeway and Lyon Road, Wandri may have some urban potential in the future pending further assessments of the groundwater and environmental issues.



Recommendations

1. Rural activities should generally be supported where the uses are compatible with the protection of groundwater. Other land use options may be acceptable but priority is placed on maintaining rural activity, protecting rural (countryside) character and the environmental values of the area and groundwater. Other development would only be considered acceptable on a limited basis and where justified in a local rural strategy.
2. Agricultural activity should be given priority in the south-east portion of the study area, in the Shire of Serpentine-Jarrahdale.
3. Local authorities should provide for landscape protection and enhancement where necessary based upon detailed assessments of the landscape as part of their local rural strategies. This protection should be provided through town planning schemes and/or policy controls.
4. The following land may have potential for urban development in the future if development constraints can be overcome:
 - (i) land located on the north side of Rowley Road abutting both sides of Kinley Road and extending west to Lyon Road, Banjup; and
 - (ii) land located on the south side of Rowley Road between the freeway, Lyon Road and Hope Valley Road, Wandii.

Possible urban development of this land should be assessed in light of the findings of the Select Committee on Development over Groundwater areas in the Metropolitan Region (which reported to Parliament in December 1994) and an assessment of environmental and drainage management issues.
5. Land management should be encouraged to minimise the application of fertilisers and other chemicals which may adversely affect the water quality. Surface drainage will need to be closely monitored to minimise the outflow of nutrients

particularly via the Birrega Drain, which flows into the Serpentine River and the Peel-Harvey Estuary.

6. Development proposals should incorporate drainage mechanisms and on-site effluent disposal systems to minimise the outflow of nutrients. Aerobic treatment units may be more suitable than conventional systems in some locations subject to approval from the Health Department.

1.3.4 SAND MINING - PRIORITY RESOURCE AREAS

Objectives

- To ensure the continuation of supply of minerals and basic raw materials.
- To coordinate extraction of basic raw materials and rehabilitation programs.
- To provide guidance regarding end uses for the land.

Discussion

Sand mining in the study area is regionally significant because of the quality of the resource. The strategy recognises this importance by protecting the resource, in accordance with the *Basic Raw Materials Policy*. The Sand Mining-Priority Resource Areas include parts of Banjup, Forrestdale and Jandakot.

The extent of the sand resource, and the fact that it is being mined by a number of different operators, creates difficulties in coordinating the long-term use of the land. The various operations have different estimated life spans, and the final use of some of the land is likely to be beyond the timeframe of this strategy. However, it is important that some guidance be established for the final preferred use in order to direct the extraction and rehabilitation programs towards a common end.

End uses for the designated sand mining areas should be restricted due to a number of factors including: the effects of sand mining on the condition of the land; the effects of aviation activities; the potential impacts of various land uses upon groundwater; the effect on the



integrity of the rural wedge between the two corridors; and the need for a suitably located reserve of land for uses which require large land areas in close proximity to the urban corridors.

Some sand mining may be acceptable within the Jandakot Airport depending on the conservation value of vegetation within the area.

A number of properties adjacent to the sand mining areas (fronting Mason and Solomon Roads) will retain their current Rural zoning due to the incompatibilities between alternative land uses and sand mining. Moreover, part of the affected area itself contains a sand mining operation. Long-term uses for these properties can be defined once sand mining in this locality is nearer to completion.

Recommendations

1. The use of this land should not preclude mining of basic raw materials in accordance with the *Basic Raw Materials Policy 1992*.
2. Acceptable end uses should include institutional, public purposes, private and public recreation (subject to controls over impacts on groundwater and adequate separation distances from residential areas), broadacre farming and other uses which require large land areas, providing such uses are consistent with the protection of groundwater and the environmental values of the area. Residential, industrial and commercial (e.g. service commercial) activities are unacceptable end uses for which there is no demonstrated need at this time.
3. A detailed assessment should be undertaken within the Jandakot Airport to determine the acceptable extent of sand mining operations. This will depend on a suitable balance being maintained between sand extraction and the conservation of vegetation.
4. Sand mining proposals should:
 - be in accordance with the *Basic Raw Materials Policy Statement*;
 - be assessed on the basis of the likely end use for the area; and

- incorporate appropriate rehabilitation/ revegetation programs.

1.3.5 INDUSTRIAL AND COMMERCIAL AREAS

Objectives

- To exclude industrial development which is incompatible with the protection of groundwater.
- To contain the extent of industrial uses and minimise the environmental impact of these uses.
- To provide opportunities for commercial development commensurate with the needs of residential development within the study area.
- To improve the appearance of industrial areas.

Discussion

Industry is restricted to two industrial areas in Jandakot. A noxious industrial area is located adjacent to the east side of the freeway and the Jandakot Industrial Area is on the west side, adjacent to Hammond Road.

The land uses currently permitted in the noxious industrial area are inappropriate within a groundwater resource area and should be modified to eliminate those with the greatest potential for pollution. Protection of the groundwater resource will require redirection of this industrial area towards general and light industry land uses with proper servicing.

Noxious industry located in the Jandakot Industrial Area should be relocated due to the extent of pollution to the groundwater and adjacent wetlands. There is an opportunity to further reduce the potential impact of the Jandakot Industrial Area by rezoning the undeveloped portion, generally on the southern side of Cooper Road, to Urban. This will require further investigation of industrial land needs/availability in the area and the suitability of the land for urban development. This includes defining the extent of the midge buffer zone as well as suitable transitional uses between the developed industrial land north of Cooper Road and any future residential land to the south.



Commercial land uses can have a moderate to high impact on groundwater quality, depending on the types of activities permitted. Commercial activities permitted in the study area should be carefully controlled and should generally reflect the requirements of residential development within the area.

The type and extent of commercial development at the Jandakot Airport should be restricted in recognition of the environmental and groundwater values of the area and to avoid undermining the role of planned commercial centres. Also any development proposals should be required to undergo detailed environmental and planning assessments.

Recommendations

1. The existing noxious industrial area (adjacent to the east side of the Kwinana Freeway) should be redirected towards general and light industrial land uses by rezoning the land to General and Light Industrial zonings in the district town planning scheme.
2. The Jandakot Wool Scouring Company adjacent to Yangebup Lake should be relocated and redevelopment of the site restricted to uses such as service/commercial. In addition, investigations should be undertaken to determine the suitability of the undeveloped portion of the Jandakot Industrial Area (in the area generally south of Cooper Road) for urban land uses.
3. The type and extent of commercial development at Jandakot Airport should be restricted and future development proposals should be required to undergo detailed environmental and planning assessments. Industries which are not directly related to aviation should not be permitted while those which are aviation related and which are likely to result in pollution of the groundwater should not be located over the Priority 2 Source Protection Area.
4. New industries or commercial businesses which handle or process noxious, toxic or polluting substances or require underground storage tanks within Priority 2

Source Protection Areas should be prohibited.

5. Buffers should be provided around industrial and commercial areas to provide an adequate separation from residential areas.
6. The extent and location of commercial development should be commensurate with the needs of residential development within the study area.
7. Environmental and engineering investigations should be undertaken to determine the nutrient and water management requirements for industrial development. These investigations should:
 - minimise off-site impacts;
 - provide adequate stormwater and drainage collection and disposal mechanisms; and
 - address the need for connection to reticulated sewerage.

1.3.6 PARKS AND RECREATION AREAS (INCLUDING THE BEELIAR REGIONAL PARK AND JANDAKOT BOTANIC PARK)

Objectives

- To conserve and enhance significant environmental resources of the area, particularly wetlands and remnant Banksia woodlands.
- To protect rare and endangered flora.
- To protect habitats for native fauna in the area.
- To accommodate regional recreational facilities.

Discussion

To achieve these objectives, the strategy proposes protection of significant areas by the creation of Parks and Recreation reserves. Significant areas include existing reserves for Parks and Recreation, nature reserves for areas covered by System 6 recommendations and



other environmentally sensitive land identified by the study as being regionally important.

Parks and Recreation areas within this strategy are designed to accommodate three main functions as follows:

- (i) **Wetland Protection** is well advanced through the existing reserves and management guidelines for the eastern Beeliar wetland chain (*Beeliar Regional Park final report, 1992*), and also through the reserve around Forrestdale Lake. A link is also provided between significant wetland areas and to protect both declared rare flora and declared threatened fauna (along the Tramway and drainage reserves and Peel Estate locations 1200, 1205 and 1217 Johnson Rd - vacant Crown land). Some minor wetlands have been protected through inclusion within open space reserves in Special Rural zones. The Thomsons Lake urban area includes similar provisions, while recognising that urbanisation requires drainage measures which may affect some of the smaller, seasonal wetlands. The Jandakot Botanic Park will also significantly enhance protection of wetland qualities.
- (ii) **Vegetation Protection** is one of the main objectives of both the Beeliar Regional Park and particularly the Jandakot Botanic Park. Initial vegetation surveys undertaken for the latter identified a number of distinct areas of remnant vegetation in the Jandakot area which were considered to be worthy of inclusion in the park. The strategy provides for land uses adjacent to the parks to complement the natural environmental values.
- (iii) **Regional Recreation Facilities** are provided for within the area adjacent to the Kwinana Freeway/Forrest Road intersection which is the site of proposed major regional sporting facilities. Additional land located to the north of Forrestdale Lake includes existing recreational facilities. Further land is reserved at Canning Vale (within the local authority town planning scheme) and to the east of Forrestdale Lake for recreational use. These areas could be supplemented in the longer term with land within the Priority Resource Areas upon

completion of sand mining activities. The land identified for Parks and Recreation in Canning Vale is currently under review by the City of Canning.

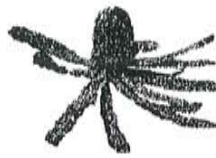
Jandakot Botanic Park

The Jandakot Botanic Park incorporates approximately 3,800 ha of land. It comprises six estates spanning the strategy area, generally in a north-south direction from Jandakot Airport to Casuarina Prison (figure 1). The estates are named according to location as follows:

1. Canning Vale Estate (1,400 ha)
2. Anstey Estate (360 ha)
3. Banjup Estate (550 ha)
4. Anketell Estate (1,020 ha)
5. Sandy Lake Estate (95 ha)
6. Casuarina Estate (330 ha)

The estates collectively incorporate nature reserves and all System 6 areas within the area (except for locality M95 Forrestdale Lake, which is a nature reserve in its own right). Future planning will be aimed at providing a series of ecological, landscape and recreational linkages between Jandakot Airport, Forrestdale Lake and the Beeliar Regional Park. The linkages, as indicated in figure 1, will be established using roadways and planning measures such as encouraging vegetation protection through local town planning schemes.

Current ownership of the park is shown in table 1. Approximately 2,400 ha of the park is reserved for Parks and Recreation in the Metropolitan Region Scheme. The remaining 1,400 ha of land (not proposed for inclusion in the Parks and Recreation reservation) is used mainly for institutional purposes (e.g. prisons, airport). It supports vegetation of significant value and should be managed through management plans to complement the park and consolidate vegetation systems, provide fauna links and protect landscape values. It is not intended to disrupt current use or vestings of this land.



The 842 ha of private land is not available to the public and will not be subject to public management. The purpose of the Parks and Recreation reservation in the Metropolitan Region Scheme is to protect the land for a regional park. Landowners can continue to use and enjoy the land in accordance with their usual lifestyle which in most cases is attuned to the conservation objectives of the park until the land is required for public purposes.

Consolidation of the park will occur gradually and full establishment will take many years. In the interim, access to the park will be restricted to appropriate areas in public ownership. Most of the public land will be managed on a 'caretaker' basis until it is vested in the end manager and funding is available for appropriate development in accordance with an overall management plan for the park.

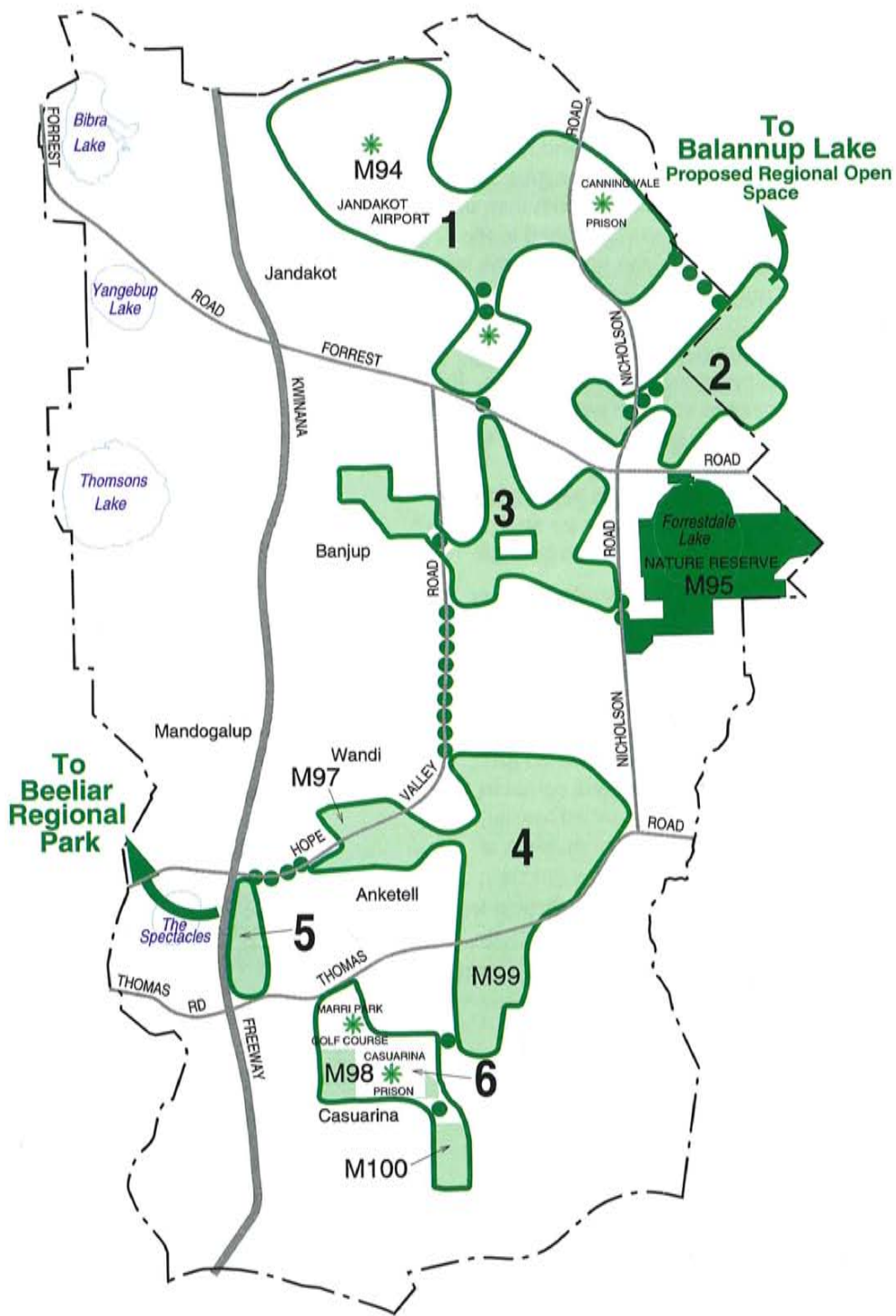
A separate report explaining in further detail the rationale for the Jandakot Botanic Park and management guidelines is available from the Ministry for Planning.

Recommendation

1. The Jandakot Botanic Park should be established by acquiring designated land reserved for Parks and Recreation in the Metropolitan Region Scheme as requested by landowners and in accordance with ecological priorities.

Table 1 Land Ownership Within the Jandakot Botanic Park

LAND RESERVED FOR PARKS AND RECREATION	AREA (HA)
<ul style="list-style-type: none">• Private Land	842 ha
<ul style="list-style-type: none">• Homeswest	67 ha
<ul style="list-style-type: none">• Department of Conservation and Land Management (including vested land)	268 ha
<ul style="list-style-type: none">• Crown Land (including vested land)	374 ha
<ul style="list-style-type: none">• Western Australian Planning Commission	805 ha
TOTAL	2,356 ha
Land not reserved for Parks and Recreation	1,400 ha
GRAND TOTAL	3,756 ha

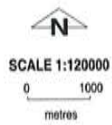


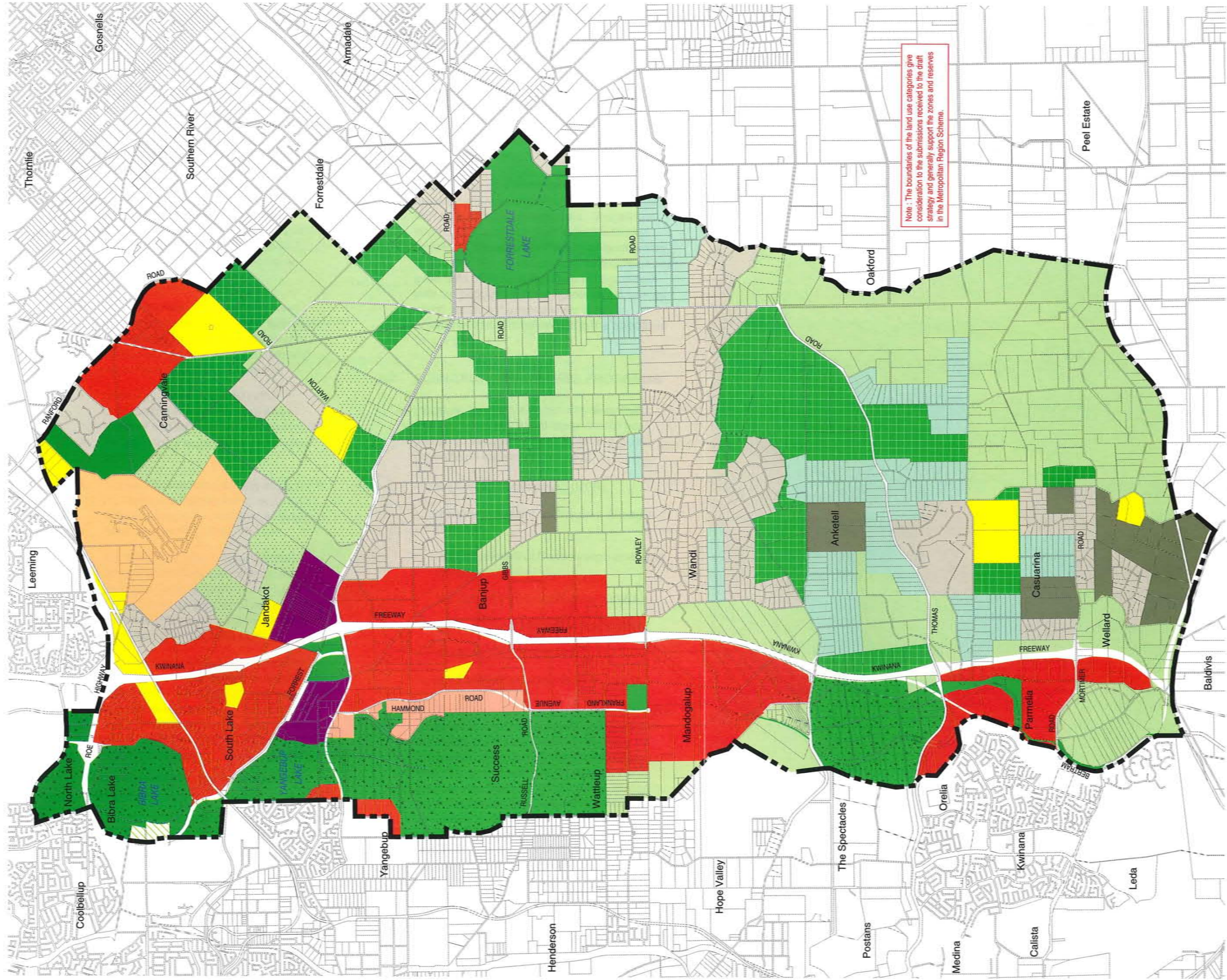
LEGEND

- Potential for Vegetation Protection
- Existing and Possible Future Linkages
- Parks and Recreation Reserve
- Jandakot Land use and Water Management Strategy Area Boundary

M94 - M100 System 6 Areas

- | | | | |
|----------|--------------------------------------|----------|------------------------------------|
| 1 | Canning Vale Estate (1400ha approx.) | 4 | Anketell Estate (1020ha approx.) |
| 2 | Anstey Estate (360ha approx.) | 5 | Sandy Lake Estate (95ha approx.) |
| 3 | Banjup Estate (550ha approx.) | 6 | Casuarina Estate (330ha approx.) |





Note: The boundaries of the land use categories give consideration to the submissions received to the draft strategy and generally support the zones and reserves in the Metropolitan Region Scheme.

LEGEND

	Parks & Recreation		Urban (Existing and Proposed)
	Bellar Regional Park		Rural
	Jandakot Botanic Park		Rural Living - Existing Special Rural Zones
	Private Recreation Areas		Rural Living - Existing Small Rural Lots Not Zoned Special Rural
			Rural Living - Possible New Special Rural Zones
			General Industrial Zones
			Jandakot Airport
			Other State and Local Government Reserves
			Sand Mining - Priority Resource Area
			Rural Living - Existing Special Rural Zones
			Possible Future Urban
			Study Boundary

SCALE 1 : 70 000
0 500 1000 metres

Complied by Project Mapping Section, Land Information Branch, Metropolitan Region Scheme, Perth, Western Australia, March 1995.
Digital cadastral data supplied by Department of Land Administration, Western Australia.



2. IMPLEMENTING THE STRATEGY

2.1 LAND USE AND MANAGEMENT

Local authority town planning schemes will be the principal mechanism to implement the strategy. The success of the strategy will depend on the adoption of the specific recommendations by relevant State government agencies and the six local authorities within the study area. The implementation of the strategy also requires relevant State government agencies to undertake specific actions. The process requires:

- local authorities to amend their town planning schemes and review their local rural strategies (where appropriate) to incorporate the specific objectives and recommendations of the strategy;
- rezoning or reserving land in the Metropolitan Region Scheme when required and subsequent reservation and zoning in local authority town planning schemes;
- gradual consolidation of land designated for Parks and Recreation by acquisition, including land within the Beelihar Regional Park and Jandakot Botanic Park;
- the Water Authority to proclaim the proposed southern extension of the Jandakot Underground Water Pollution Control Area as soon as practical to extend by-law and licensing controls for private extraction over this area; and
- the Environmental Protection Authority to prepare an Environmental Protection Policy for the protection of wetlands, vegetation and groundwater within the study area to support the *Swan Coastal Plain Lakes Environmental Protection Policy*.

Consolidation of Land for Parks and Recreation

While owners of private land designated for Parks and Recreation in the strategy can continue to enjoy their present lifestyle, which in most cases is attuned to the objectives of the reservation, over time private land owners may wish to sell their land. When the land is reserved, landowners may approach the Western Australian Planning Commission

regarding purchase of their land for the park. Purchases will be in accordance with an acquisition strategy currently being formulated to accommodate requests from landowners and ecological priorities.

A landowner may prefer land to be purchased by the Western Australian Planning Commission with a lease-back arrangement. This allows landowners to realise their assets without a significant disruption to lifestyle as landowners continue to live on the property even after it has been sold. The land would be amalgamated with the park and a lease agreement drawn up which satisfies the landowners lifestyle objectives and is consistent with the objectives for the park.

2.2 COMMUNITY AWARENESS PROGRAMS

Initiatives to improve community awareness and acceptance of the strategy should be promoted through relevant State and local government authorities including:

- the Ministry for Planning (MFP);
- the Water Authority of Western Australia (WAWA);
- the Department of Conservation and Land Management (CALM);
- the Department of Agriculture (DAWA);
- the Agricultural Protection Board (APB);
- the Bush Fires Board; and
- the Health Department of WA.

The community awareness programs should be designed to assist landowners and operators within the study area to recognise the importance of protecting the groundwater, wetlands and vegetation. They should also promote mechanisms which can be applied to minimise the conflicts between rural land use and groundwater quality including appropriate land management as well as innovative forms of land use. Issues that should be part of the programs are listed in table 2.



Table 2 Issues for Community Awareness Programs

ZONES	ISSUES	RESPONSIBLE AGENCIES
Rural Smallholdings (Incl Special Rural)	Control of fire	Bush Fires Board, LAs
	Control of weeds	APB, DAWA, LAs
	Control of feral animals	APB, LAs
	Restriction of livestock numbers and protection of ground cover	LAs, DAWA
	Management of fertiliser application	WAWA, DAWA
	Restrictive use of pesticides and chemicals	WAWA, Health Dept
Rural	Management of fertiliser application	WAWA, DAWA
	Restrictive use of pesticides and chemicals	WAWA, Health Dept
	Innovative forms of land use	MFP, LAs
Urban	Management of fertiliser application	WAWA
	Disposal of household chemicals	WAWA, LAs, Health Dept
Environmental Protection Areas	Control of feral animals	APB, CALM, LAs,
	Control of vehicle and pedestrian access	CALM, LAs, MFP
	Control of plant pathogens	CALM
Commercial and Industrial	Management of waste disposal	WAWA, Health Dept
	Restrictions on the storage and handling of noxious, toxic and polluting substances	WAWA
	Restrictions on the establishment of underground and above-ground storage tanks	WAWA

2.3 MONITORING AND REVIEW

The strategy covers a 20-30 year timeframe and should not be viewed as static. Various aspects of the strategy will require review from time to time to reflect updated research findings of the impact of development on groundwater and the environmental values of the area and to accommodate changes in technology and improved management practices. The establishment of an advisory committee would provide input to review aspects of the strategy as required. The advisory committee should include representatives from relevant State and local government authorities including Ministry for Planning, Water Authority of Western Auastralia, Department of Environmental

Protection, Department of Conservation and Land Management, Department of Agriculture Western Australia and the Health Department of Western Australia.

There is also a need for the constant monitoring of groundwater and surface water quality and quantity as well as significant wetlands and woodlands. The establishment of a monitoring system should be undertaken using the combined resources of the Department of Conservation and Land Management and the Water Authority to record the changes in the quality and quantity of groundwater, wetlands and woodlands (and associated fauna) within the study area.



APPENDIX 1

CHANGES TO THE STRATEGY RESULTING FROM PUBLIC SUBMISSIONS

CHANGES RESULTING FROM THE SUBMISSIONS ON THE DRAFT STRATEGY

1. Modification of the study area boundaries to exclude lot 184 Clifton Road, Leeming from the study area.
2. Modification of the southern boundary of the study area to follow cadastral boundaries.
3. Inclusion of portion of lot 768 Branch Circus within the 'Beeliar Regional Park' land use category.
4. Deletion of the Urban land use category east of Lyon Rd, in the vicinity of Kinley Rd (the portion not previously given environmental approval), and inclusion within the Rural category. The possible future urban development of this land should be reviewed in light of the findings of the Select Committee established by the Government to investigate land use impacts over groundwater areas and an assessment of environmental and drainage issues.
5. Deletion of the Urban land use category from lot 615 Mandogalup Road and portion of the Transmission Line Corridor which is affected by the Kwinana Air Quality Environmental Protection Policy and inclusion of this land within the Rural category.
6. Priority given to Alcoa's rights for residue disposal in accordance with the *Alumina Refinery Agreement Act 1961* (as amended) when determining the nature, extent and timeframe for urban development in Mandogolup.
7. Deletion of the Rural Landscape and Conservation category and inclusion of these areas in the Rural category, except for lots 651 and 6 Anketell Road, Anketell, lots 55, 56 and 123 Mortimer Road, Casuarina and lots 386 and 387 Coffey Road, Banjup which should be included within the Rural Living - Possible New Special Rural Zones category. Modification of the description of the Rural category to encourage the continuation of existing rural activities, where compatible with the protection of groundwater, landscape protection and enhancement and the provision of limited scope for additional development options where priority is placed on maintaining rural activity, protecting rural (countryside) character and the environmental values of the area and groundwater. Other development would only be considered acceptable on a limited basis and where justified in a local rural strategy.
8. Deletion of reference to a minimum average lot size of 4 ha and replacement with a requirement that lot size in the Special Rural zones should be determined to suit local conditions having regard to prevailing lot size (subject to a minimum lot size of 2 ha) and based upon a detailed assessment of land capability and suitability.
9. Deletion of the Rural Living - Existing Small Lots which should be Rezoned to Special Rural category and replacement with the category Rural Living - Existing Small Rural Lots not Zoned Special Rural. Modification of the description of this category to require local authorities to review the zoning of the existing small lots (predominantly 4 ha lots) currently zoned for rural purposes when preparing and reviewing their local rural strategies to ensure compliance with the following criteria:
 - protection of rural amenity;
 - protection of landscape features;
 - restrictions on potentially polluting activities; and
 - nutrient management controls.

This may require the inclusion of these areas in a separate zone for rural smallholdings with specific land use and development controls. Except for minor rounding-off to reflect prevailing lot size, no further subdivision should be permitted.
10. Deletion of the land between the Freeway, Lyon Rd, Rowley Rd and Hope Valley Rd from the Rural living - Possible Future Special Rural Zones category and inclusion in the Rural category. The description of this land use category is to indicate that possible future urban development of this land should be considered in light of the findings of the Select Committee and an assessment of the environmental and drainage management issues in the area.
11. Deletion of lots 1 and 2 Millar Road, Wellard from the Rural category and inclusion in the Rural Living - Possible New Special Rural Zones category.



12. Modification of the Sand Mining - Priority Resource Area category to be shown as an overlay over the Rural category. Modification of the description of this land use category to add broadacre farming and other end uses, which require large land areas, to be considered on their merits, providing such uses are consistent with the protection of the groundwater and environmental values in the area. In addition, the strategy should clarify that urban, commercial and industrial uses are not acceptable end uses.
13. Recognition of the value of the woodlands within the System 6 Area M94 for potential protection.
14. Inclusion of reference in support of the use of new technology in the treatment of domestic effluent (aerobic treatment units) subject to approval from the Health Department.
15. Provision for rezoning/subdivision applications within the Rural Living - Possible New Special Rural Zones category to be considered on their merits rather than only within the context of a local rural strategy.
16. Modification of the boundaries of the Jandakot Botanic Park as follows:

Deletions

- Portion of lot 34 Forrest Road, Forrestdale
- Portion of lot 9 Nicholson Road, Forrestdale
- Portion of lot 37 Taylor Road, Forrestdale
- Lots 35 and portion of lot 36 Taylor Road, Forrestdale
- Lots 27 and portion of lot 29 Oxley Road, Forrestdale
- Portion of lots 101, 102, 103 and 1 Anketell Road, Oakford
- Portion of lot 48 Leslie Road, Wandii
- Reduction of the proposed Parks and Recreation category surrounding Casuarina Prison in order to accord with the current MRS reserve

Additions

- Linkage from Forrestdale Lake to the proposed Ballanup Regional Open Space (outside study area)
 - Reserve 1820 corner Forrest and Warton Roads, Banjup
 - Linkage from lot 40 Forrest Road to lot 38 Taylor Road, Forrestdale
 - Lot 4 and portion of lot 3 Nicholson Road, Forrestdale
 - Crown Reserve 40090, Peel Location 795, lot 16 and locations 111 and 112 Thomas Road, Oakford
 - Crown Reserve 36759 and lot 33 Liddelow Road, Wandii
 - Sandy Lake adjacent to Kwinana Freeway and Thomas Road, Mandogolup.
17. Expansion of the Parks and Recreation category to include all of Peel Estate locations 1200, 1205 and 1217 (vacant Crown land) Johnson Road, Parmelia.
 18. Deletion of the Parks and Recreation category from portion of lot 2 Rowley Road, Forrestdale.

CHANGES RESULTING FROM THE SUBMISSIONS ON THE SOUTH WEST CORRIDOR (STAGE A) MAJOR AMENDMENT

1. Modification of the boundaries of the Jandakot Botanic Park as follows:

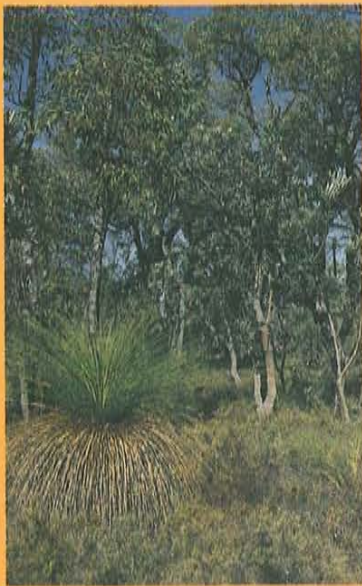
Deletions

- Portion of lot 12 Forrest Road, Forrestdale
- Portion of lot 2 Rowley Road, Forrestdale (pine plantation)
- Portion of lot 36 Taylor Road, Forrestdale (reducing the southern Parks and Recreation boundary from 100 m to 60 m)
- Lot 33 Liddelow Road, Wandii
- Portion of lot 40 Forrest Road, Forrestdale



- Portion of lot 33 Gibbs Road,
Forrestdale
 - Portion of lot 34 Forrest Road,
Forrestdale (the dry land south of lot 9
Nicholson Road).
2. Deletion of the Tramway Parks and Recreation
category between Thomsons Lake and
Mandogalup Road.

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WESTRALIA SQUARE
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**Jandakot Land Use and
Water Management Strategy**

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