

Executive Summary

Introduction

The draft Peel Region Scheme ("the Scheme") has been prepared by the Western Australian Planning Commission (WAPC) as part of a program to provide greater certainty in the allocation of strategic land uses, conservation areas and transport infrastructure to key regions. Commitment to this program of region schemes is set out in the *State Planning Strategy* (WAPC, 1997).

The Peel Region Scheme is the first statutory region scheme to be prepared outside the Perth metropolitan region. A major purpose of the Scheme is to give statutory effect to the land use recommendations of the final *Inner Peel Region Structure Plan* (WAPC, 1997).

The Scheme covers the whole of the City of Mandurah and the Shires of Murray and Waroona. The draft Scheme map is shown on Figure 1.

Environmental Assessment of the Scheme

Environmental assessment of planning schemes is enabled by Division 3 of the *Environmental Protection Act, 1986*, as amended by the *Planning Legislation Amendment Act, 1996*.

The WAPC referred the proposed Peel Region Scheme to the Environmental Protection Authority in August 1996. The EPA determined that the Scheme should be formally assessed and in October 1996 issued instructions as to the scope and form of the assessment. The EPA Instructions are reproduced in Appendix A.

In accordance with the EPA Instructions, this Environmental Review focuses on those areas where the zonings proposed under the Region Scheme differ significantly (in environmental terms) from the existing zonings under the local government town planning schemes.

This Review is available for public comment until 2 July 1999 alongside the draft Scheme map and text. Following the receipt and consideration of public submissions and consultation with other government agencies by the EPA, the Minister for the Environment (in consultation with the Minister for Planning) will set conditions under which the Scheme may be implemented.

These conditions will consist of general and possibly specific provisions to ensure that land uses permitted under the Scheme (and subsidiary local government schemes) are carried out in an environmentally acceptable manner. The conditions will apply both to the Region Scheme and to the subsidiary local government schemes.

Environmental Impacts and Management

In considering the environmental implications of the Scheme, the EPA identified a number of environmental factors that were relevant to the assessment. These factors and their proposed management under the Scheme are described in detail in Chapter 3 of this Review.

In addition to these relevant factors, the EPA identified three environmental factors which, although significant, cannot be properly addressed at the regional level. These "deferred environmental factors" and their proposed management under the Scheme are discussed in Chapter 4 of this Review.

Table A1 presents a summary of the relevant and deferred environmental factors. For each factor, the table details the potential impacts of the Scheme, the EPA's stated management objectives, the management strategy adopted by the Scheme, relevant policies and regulations and, where appropriate, specific environmental management measures as set out in Chapter 5.

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
ENVIRONMENTAL FACTORS RELEVANT TO THE SCHEME						
Vegetation, Fauna and Habitat in the Existing and Proposed Conservation Estate.	Changes to the boundaries of System 6 Area M107.	Vegetation in the existing and proposed Conservation Estate should not be adversely affected.	88ha and 50ha of M107 to be rezoned from Rural to Urban Deferred respectively. 6ha reserved as Regional Open Space.	Small areas of M107 near the coast to be included within proposed ROS foreshore. Sand ridge north of Madora Beach Road to be retained within the Rural zone.	Mandurah Coastal Strategy (1996).	1
	Peel Regional Park.		Peel Regional Park proposals progressively implemented by the Scheme.	Areas vested and managed in accordance with Inner Peel Region Structure Plan (1997).	Inner Peel Region Structure Plan (1997). CALM and PIMA management plans.	1
	Fauna in the Existing and Proposed Conservation Estate.	Fauna and habitat in the existing Conservation Estate should not be adversely impacted.	Minimal – Scheme reserves all significant fauna habitat in the Conservation Estate as Regional Open Space.	ROS vested in and managed by relevant agencies in accordance with structure plans and government policies.	CALM management plans.	1
	Interface impacts/ Edge Effects.		New Urban areas about System 6 areas at Madora and Yunderup.	Appropriate management of interface to be addressed in Environmental Management Plans to the satisfaction of the responsible authority.		1
Regionally Significant Vegetation.	Areas "Pinjarra I" and "Clifton I"	Ensure the abundance, diversity, geographical distribution and productivity of vegetation communities is maintained. Protect Declared Rare Flora (DRF) and Priority Flora consistent with the provisions of the Wildlife Conservation Act, 1950.	Western Pinjarra Bypass road encroaches on degraded part of Pinjarra I. No impact on Clifton I.	The portion of Pinjarra I that is reserved as for Public Recreation/ Conservation in the local scheme to be reserved as Regional Open Space. Edge effects on Pinjarra I managed as above.	Urban Bushland Strategy (1995).	1

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
	Riparian Vegetation.	Ensure riparian vegetation on substantial streamlines is adequately protected.	Minimal – New zonings do not impinge on riparian vegetation.	Riparian vegetation around Peel-Harvey Estuary and lower reaches of Serpentine, Murray and Harvey Rivers managed by PIMA as part of Peel Regional Park. Prior to any rezoning of land in the Region Scheme upon which there is riparian vegetation, a vegetation survey may be required. Upper reaches of rivers managed by local governments.	<i>Inner Peel Region Structure Plan (1997).</i>	1, 4
Regionally Significant Fauna and Habitat.	Migratory Waterbirds.	Biological diversity should be protected and essential ecological processes and life support systems maintained. Important habitat areas for waterbirds should be identified in accordance with international treaties and published advice from the Australian Nature Conservation Agency (ANCA), and be protected from adverse impacts.	Minimal direct impact – Little new Urban zoning proposed close to the Peel-Harvey Estuary. Indirect impacts from increased population in the region (eg boats, foot traffic, domestic animals).	Significant waterbird habitats are reserved in ROS and managed by PIMA, CALM or local governments. Management of impacts on wetlands and waterways due to stormwater drainage systems for proposed developments will be addressed through the preparation of Drainage and Nutrient Management Plans.	<i>Inner Peel Region Structure Plan (1997).</i> PIMA and CALM management plans.	1, 2
Regionally Significant Wetlands.	Lakes protected by the Lakes EPP 1992, <i>Wetlands of International Importance</i> and important wetlands identified by ANCA.	Key ecological functions of these wetlands should be protected and maintained through appropriate planning mechanisms.	Potential water balance and water quality changes caused by nearby Urban and Industrial development.	All regionally significant wetlands within or immediately adjacent to new Urban and Industry zonings are reserved in ROS. Development setbacks and/or other interface management measures determined on a site-specific basis by the responsible authority having due regard to advice from relevant government agencies.	CALM and local government management plans.	1

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
	Paganoni Swamps.	Key ecological functions of Paganoni Swamp should be protected and maintained through appropriate planning mechanisms, with a particular emphasis on water balance.	Minimal potential for water balance and water quality changes caused by nearby Urban development.	Hydrological assessment and Drainage and Nutrient Management Plans required before subdivision approval near Paganoni Swamp. All residential lots to be sewerred. Water Sensitive Design employed for developments within the catchment.	<i>Planning & Management Guidelines for Water Sensitive Urban (Residential) Design</i> (Whelans et al, 1993). <i>Urban Stormwater Quality Management Manual</i> (WRC).	1,2,3
Estuaries	Water Quality in the Peel-Harvey Estuary.	Environmental quality objectives for the Peel Inlet-Harvey Estuary specified in the Peel-Harvey EPP 1992 and water quality guidelines specified in EPA Bulletin 711 for protection of aquatic ecosystems should be met.	Phosphorus exported in drainage from new Urban and Industry zones on palusplain.	Implement Water Sensitive Urban Design. Drainage and Nutrient Management Plans to be prepared prior to subdivision on palusplain. Generally lots in new Industry zones and residential lots in new Urban zones to be connected to reticulated sewerage as per the requirements of the Peel-Harvey SPP No.2.	Peel-Harvey EPP. SPP No. 2. EPA Bulletin 711.	2,3
Foreshore Stability and Dune Protection.		Coastal processes should be maintained to ensure that the physical stability and ecological integrity of the coastline are not affected.	New Urban zonings near the coast at Madora and San Remo. Increased population in coastal areas.	Foreshore reserved in Regional Open Space and managed by City of Mandurah generally in accordance with the <i>Mandurah Coastal Strategy</i> .	<i>Mandurah Coastal Strategy</i> (1996). WAPC Policy DC6.1. <i>Coastal Planning and Development in WA</i> (1996). <i>Coastal and Lakelands Planning Strategy</i> (1999).	1
Groundwater Quality in Future Public Water Supply Areas.		Groundwater quality and quantity in the proposed public water supply area at Karnup should be protected.	None – No new land uses proposed in Karnup-Dandalup Groundwater Scheme study area.	Provision in Scheme for declaration of Special Control Area over groundwater resource when boundaries are defined by WRC.	<i>Country Areas Water Supply Act, 1947</i> . Region Scheme provisions.	

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
Surface Water Quality – Existing Water Supply Catchment Areas.		Surface water quality and quantity in existing and proposed water supply catchment areas should be protected.	None – No new land uses proposed in public water supply catchments.	Areas proclaimed as Water Reserves by WRC will be declared Special Control Areas under the Scheme. Development applications assessed in consultation with WRC.	Country Areas Water Supply Act, 1947. Region Scheme provisions.	
Surface Water Quality – Cumulative Impacts.	Peel-Harvey Estuary.	The cumulative impact of diffuse sources of water quality contaminants should not result in pollution. Sedimentation should not occur beyond natural levels in waterways.	Increased population in catchment may contribute increased nutrient, sediment and other pollutant loads to estuary and rivers.	Implement Water Sensitive Design in new developments.	Liveable Neighbourhoods: Community Design Code (1997).	2
	Marine Waters.	Nutrient export (particularly nitrogen) from the Peel Region (including the Peel-Harvey catchment) into the nearshore waters should be minimised and reduced.	Estimated 300% increase by 2021 in volume of sewage requiring treatment and disposal.	Water Corporation to investigate options for effluent disposal including land irrigation, deep ocean outfall, effluent reuse and improved nitrogen reduction in Wastewater treatment plants (WWTPs).	Licensing provisions of the <i>Environmental Protection Act, 1986</i> .	
Odour	WWTPs, poultry farms and areas where Industrial zones are adjacent to or near residential zones.	Ensure that odours from new odour-producing land uses do not adversely affect the welfare and amenity of residents in nearby existing and proposed future residential areas. Ensure that, where there is an existing odour-producing land use, new residential areas are located so that the welfare and amenity of those new residents are not adversely affected.	None – no conflict between existing or proposed odour producers and rezonings proposed by the Scheme.	Apply existing EPA and WAPC policies and procedures regarding buffer zones.	EPA draft EIA Policy No. 3. SPP No. 4: <i>State Industrial Buffer Policy</i> . SPP No. 5: <i>Poultry Farms Policy</i> .	
Air Quality	Gaseous Emissions from the Industrial zone	Gaseous emissions from Industrial zones should not adversely affect the health, welfare and amenity of nearby land users.	New Industrial zone south of Amarillo. Expanded industry zone at Pinjarra.	Implement existing policies and procedures regarding setting of air quality buffers.	EPA draft EIA Policy No. 3. SPP No. 4: <i>State Industrial Buffer Policy</i> .	

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
	Regional Air Quality – Smog and Haze.	Criteria in DEP Technical Series 86 should be met.	Increased population may produce more smog and haze from vehicles, industry, fires. Evidence suggests no significant problem by 2021.	Design urban areas to minimise vehicle travel.	<i>Liveable Neighbourhoods: Community Design Code</i> (1997). Proposed EPP based on final National Environmental Protection Measure.	
Solid Waste Disposal.		There should be a reduction of 50% [per capita] in waste going to landfills achieved by waste avoidance, reuse and recycling strategies. The remaining waste should be disposed of in an environmentally acceptable manner, including landfill.	Expected 120% increase in population by 2021 could lead to increase in waste requiring disposal.	Local governments to implement waste reduction and recycling schemes. The need for a regional landfill site in the Peel Region to be monitored.	State Waste Reduction and Recycling Policy (in preparation).	
Risk and Hazard.	Industrial Areas.	Risk levels should be as low as reasonably achievable and comply with acceptable standards.	New Industrial zone south of Amarillo. Expanded industry zone at Pinjarra.	Implement existing policies and procedures regarding setting of buffers.	EPA draft EIA Policy No. 3. SPP No. 4: <i>State Industrial Buffer Policy</i> .	
Urban Bushland (Local).		Protect where possible through the planning system.	Bushland at Madora, Lakelands, Melros and Point Morfitt plus smaller remnants elsewhere rezoned to Urban and Industry, to be cleared for development.	Reserve bushland assessed as regionally significant in Regional Open Space. (Note: Other remnant vegetation areas over 1ha are to be assessed prior to future Region Scheme rezonings.)	<i>Urban Bushland Strategy</i> (1995).	
DEFERRED ENVIRONMENTAL FACTORS						
Noise and Vibration from the Rapid Transit Corridor.		Noise and vibration in residential areas near land uses generating significant levels of noise should meet statutory requirements and acceptable standards.	Noise and vibration impacts from trains in new and existing residential areas near the Railways Reserve.	Assess noise and vibration impacts at pre-development stage.	EPA EIA Guidance Note for road and rail noise (in preparation).	

Table A1 Summary of Environmental Impacts and Management

Environmental Factor	Site-Specific Factor(s)	EPA Objective(s)	Impact(s) of the Scheme	Proposed Management Strategy	Relevant Policies, Published Management Plans and Legislation	Relevant Specific Environmental Management Measure(s) (see Chapter 5)
Regionally Significant Vegetation in the Rural Zone.		Ensure the abundance, diversity, geographical distribution and productivity of vegetation communities is maintained. Protect DRF and Priority Flora consistent with the provisions of the <i>Wildlife Conservation Act, 1950</i>. Ensure riparian vegetation on substantial streamlines is adequately protected.	None. However, future agricultural clearing (not requiring rezoning) could affect significant vegetation.	All Rural zone clearing in excess of 1 ha assessed through Memorandum of Understanding process under provisions of Soil and Land Conservation Act, 1945, with DEP input. Other remnant vegetation areas over 1 ha are to be assessed prior to future Region Scheme rezonings. All activities requiring rezoning referred to EPA.	<i>Soil and Land Conservation Act, 1945.</i> <i>Memorandum of Understanding (1997).</i> <i>Environmental Protection Act, 1986.</i>	
Regionally Significant Wetlands in the Rural Zone.		Key ecological functions of these wetlands should be protected and maintained through appropriate planning mechanisms.	None. However, future rural activities including water abstraction, clearing, drainage and fertiliser use may affect wetlands.	Future rezonings and subsequent subdivision and development subject to measures 1,2,3,4. All bores (other than private domestic bores) require licensing by WRC. Clearing governed by <i>Soil and Land Conservation Act, 1945</i>. Drainage prevented by Drainage Moratorium imposed by Minister for the Environment. Nutrient-intensive land uses subject to planning approval by local governments. Gazetted wetlands protected by <i>Lakes EPP</i>.	<i>Rights in Water and Irrigation Act, 1914.</i> <i>Soil and Land Conservation Act, 1945.</i> <i>Memorandum of Understanding (1997).</i> Peel-Harvey catchment Drainage Moratorium (Minister for the Environment). Mandurah, Murray and Waroona local planning schemes.	1,2,3,4 (Future Region Scheme rezonings)
	Land Use in the Catchment of Lake Clifton.	Ensure protection of stromatolites in Lake Clifton by implementing planning mechanisms so developments meet the criteria outlined in EPA Bulletin 864.	None. However, Rural zone activities (special rural, horticulture) could affect water quality of the Lake.	Implement <i>Coastal and Lakelands Planning Strategy</i> , which reflects criteria for lot sizes, land uses, drainage etc. set out in EPA Bulletin 864.	EPA Bulletin 864. <i>Coastal and Lakelands Planning Strategy (1999).</i>	1,2