

**Metropolitan Region Scheme Amendment 991/33 -
South West Districts Omnibus (No. 3b)**

Western Australian Planning Commission

**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia
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1. Introduction

Section 48D of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposed amendment and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment on the environmental factors, conditions and procedures relevant to the proposed scheme amendment.

2. The Proposed Scheme Amendment

The Western Australian Planning Commission, the Responsible Authority, proposes *Metropolitan Region Scheme (MRS) Amendment 991/33 - South West Districts Omnibus (No.3B)* which comprises 23 proposed modifications to the MRS. The EPA determined that of these 23 proposals, four required Environmental Review, namely:

- **Proposal 10 - Marine Industry Technology Park, Munster (Figures 1a,1b,1c):**
It is proposed to rezone a parcel of land adjacent to Lake Coogee, Munster, from the Rural zone to the Urban zone to accommodate the development of a Technology Park to service and support marine industry located at Jervoise Bay. The site is currently used primarily for horticultural activities (market gardens). The proposal includes an Urban zone within the *Environmental Protection (Kwinana - Atmospheric Waste) Policy* (EPA, 1992b) and within a 500m odour buffer for the existing Woodman Point Waste Water Treatment Plant. The land is also adjacent to the south eastern boundary of Lake Coogee, which is protected by the *Environmental Protection (Swan Coastal Lakes) Policy* (EPA, 1992a) and there is a Conservation Category wetland present on-site as classified by the Water and Rivers Commission in the *Wetland Mapping, Classification and Evaluation Wetland Atlas* (Hill et al, 1996). The proposal does not include any part of *Perth's Bushplan - Site No 261, Lake Coogee* (Government of WA, 1998 a&b).
- **Proposal 19 - Realignment of Controlled Access Highway reservation, Baldivis (Figures 2a, 2b, 2c):**
The proposal realigns an existing Controlled Access Highway (CAH) reservation between Lightbody Road and the future Kwinana Freeway interchange at Baldivis to generally follow the existing alignment of Mundijong Road. The proposal will allow for a second carriageway on the northern side and upgrading of the existing Mundijong Road. Part of the alignment intersects and abuts an area identified in *Perth's Bushplan - Site No 360* (Government of WA, 1998 a&b) as supporting threatened or poorly reserved plant communities requiring interim protection. A Conservation Category wetland also exists adjacent to the eastern end of the proposed reserve.
- **Proposal 8 - Reservation of the existing Wastewater Pump Station, Munster from Urban to Public Purposes (Figure 3):**
- **Proposal 13 - Reservation of the existing Wastewater Treatment Plant, Postans from Rural to Public Purposes (WSD) reservations (Figure 4):**

Proposals 8 and 13 aim to rationalise the current MRS zoning to reflect the existing land use and aim to accommodate future expansion of existing facilities. Environmental Review of the relevant factors for Proposals 8 and 13 has been deferred to the development stage of any future expansion plans.

The main characteristics of the proposals 10 and 19 of the scheme amendment, as evaluated in this report are summarised in Table 1 below. A detailed description of proposals 10 and 19 are provided in the respective Environmental Reviews for each proposal (Halpern Glick Maunsell, 1998 a &b).

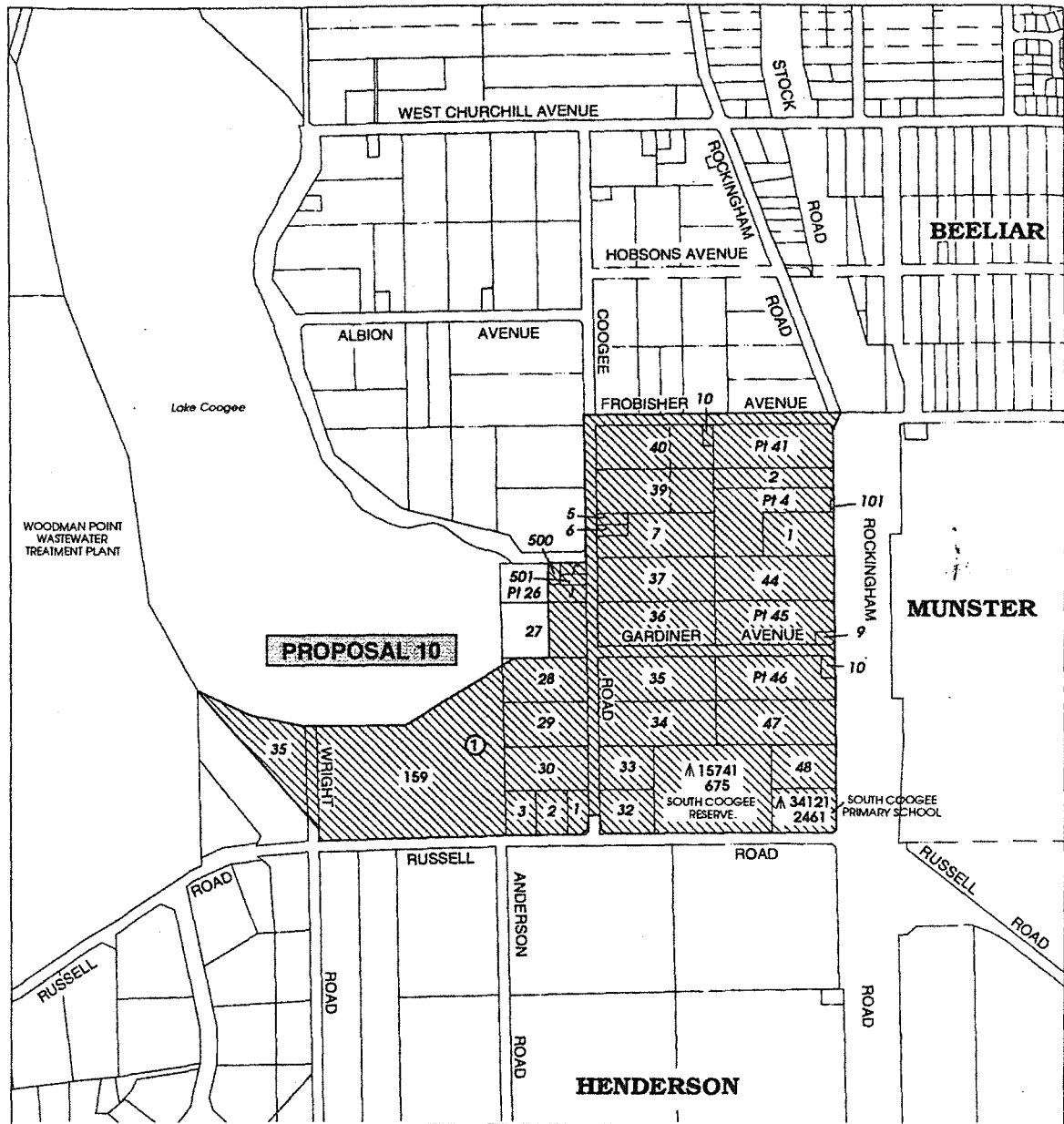
Table 1. Summary of key scheme amendment characteristics

Proposal 10

Element	Description
Location of land	approximately 10 km south of Fremantle in the air quality buffer for Kwinana heavy industry and Woodman Pt WWTP
Main existing land uses	Horticulture (market gardening)
Wetlands	a Conservation Category wetland located in the southwest of the site to be incorporated in POS. Buffer to be included into adjacent Lake Coogee (EPP wetland)
Existing zoning in the Metropolitan Region Scheme	Rural
Proposed Scheme modifications	to rezone the area to "Urban"
Proposed environmental management measures	<ul style="list-style-type: none"> • Buffers to wetlands and adjacent residential areas; • Landscaping and revegetation; • Drainage management; • Restrictions on land uses (no residential, no prescribed premises); and • Contamination assessment and remediation.

Proposal 19

Element	Description
Location	Mundijong Rd, Baldiyis to Peel Estate
Main existing land uses	Road reserve, agriculture
Vegetation	The proposed reserve intersects and abuts regionally significant vegetation identified in <i>Bushplan</i>
Existing zoning/reservation in the Metropolitan Region Scheme	Rural; CAH reserve
Proposed Scheme modifications	rezone the existing CAH reservation to "Rural" reserve of rural land for CAH
Proposed environmental management measures	<ul style="list-style-type: none"> • construction management; and • rehabilitation and revegetation following construction.



SOUTH WEST DISTRICTS - PROPOSED OMNIBUS AMENDMENT (No.3B)

14th JULY 1998

AS ADVERTISED

FIGURE 10

<p>WESTERN AUSTRALIAN PLANNING COMMISSION</p> <p>DEPARTMENT OF PLANNING</p> <p>N SCALE 1:10000</p>	<p>LEGEND</p> <p>PROPOSED:</p> <p> URBAN ZONE</p> <p>Produced by Statutory Mapping Section, Land Information Branch, Ministry for Planning</p>
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Figure 1a. MRS Amendment 991/33 - Proposal 10 (Source: Western Australian Planning Commission, 1998).

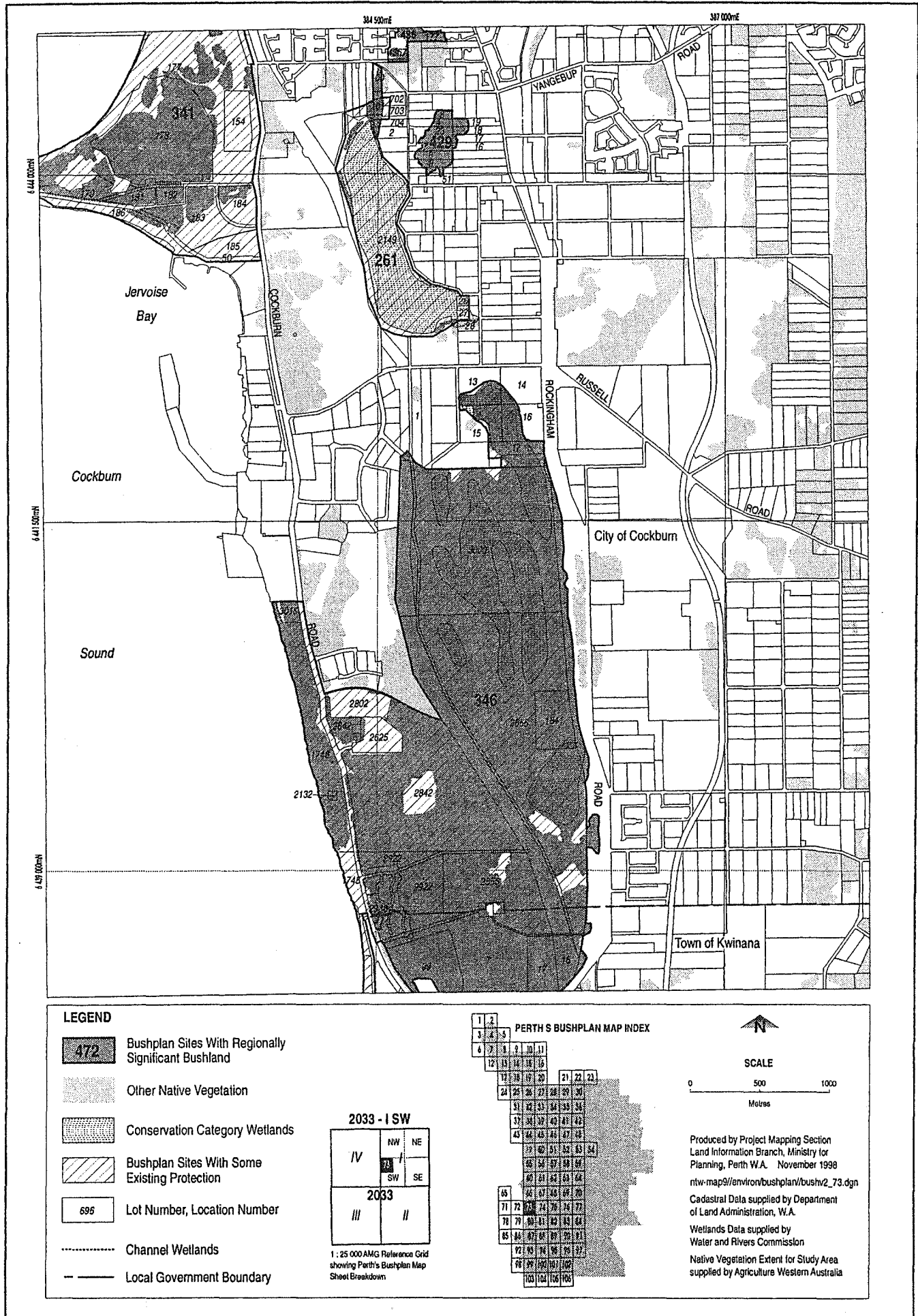


Figure 1b. Perth's Bushplan (extract) - Site 261: Lake Coogee (Source: Gov.WA 1998 a&b).

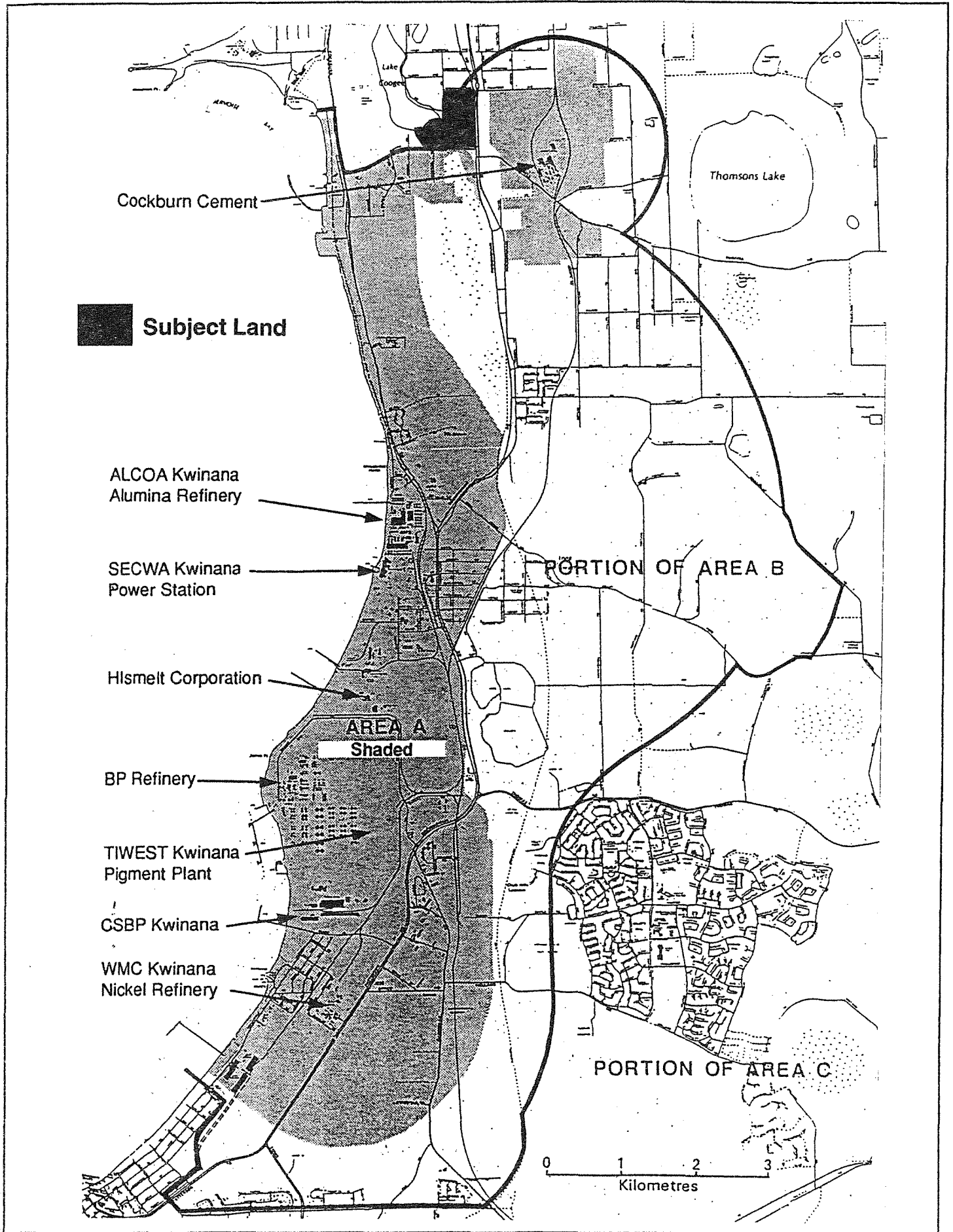
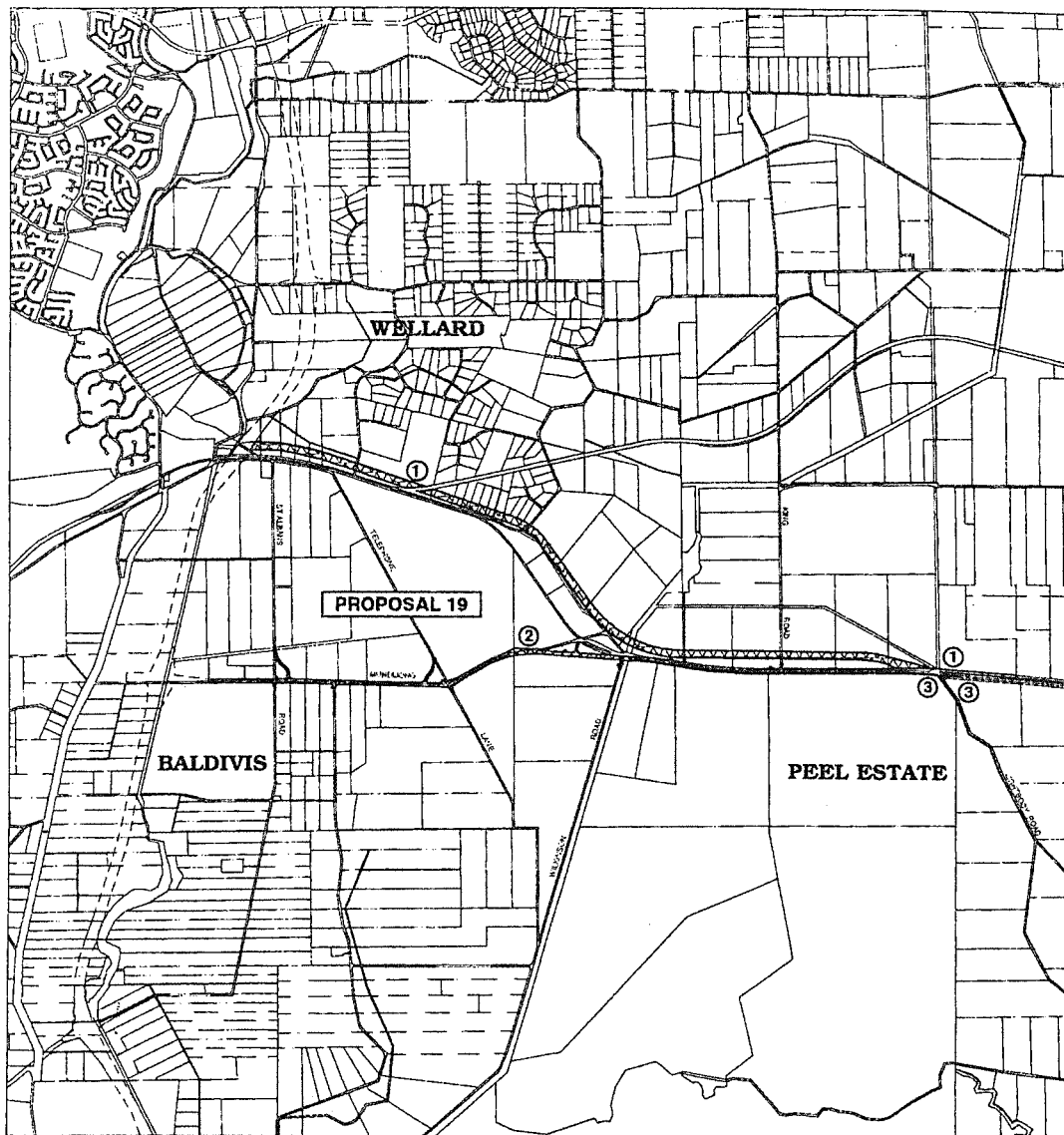


Figure 1c. Kwinana EPP Air Quality Buffer Area (Source EPA, 1992).



SOUTH WEST DISTRICTS - PROPOSED OMNIBUS AMENDMENT (No.3B)

14th JULY 1998

AS ADVERTISED

FIGURE 19

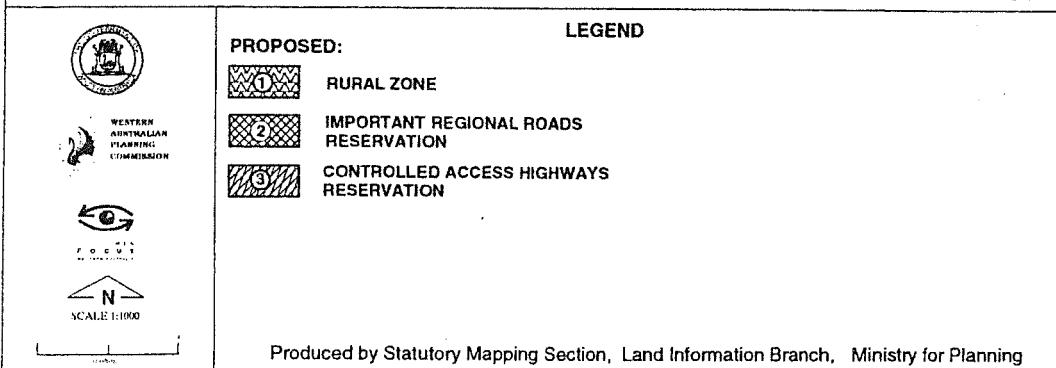


Figure 2a. MRS Amendment 991/33 - Proposal 19 (Source: Western Australian Planning Commission, 1998).

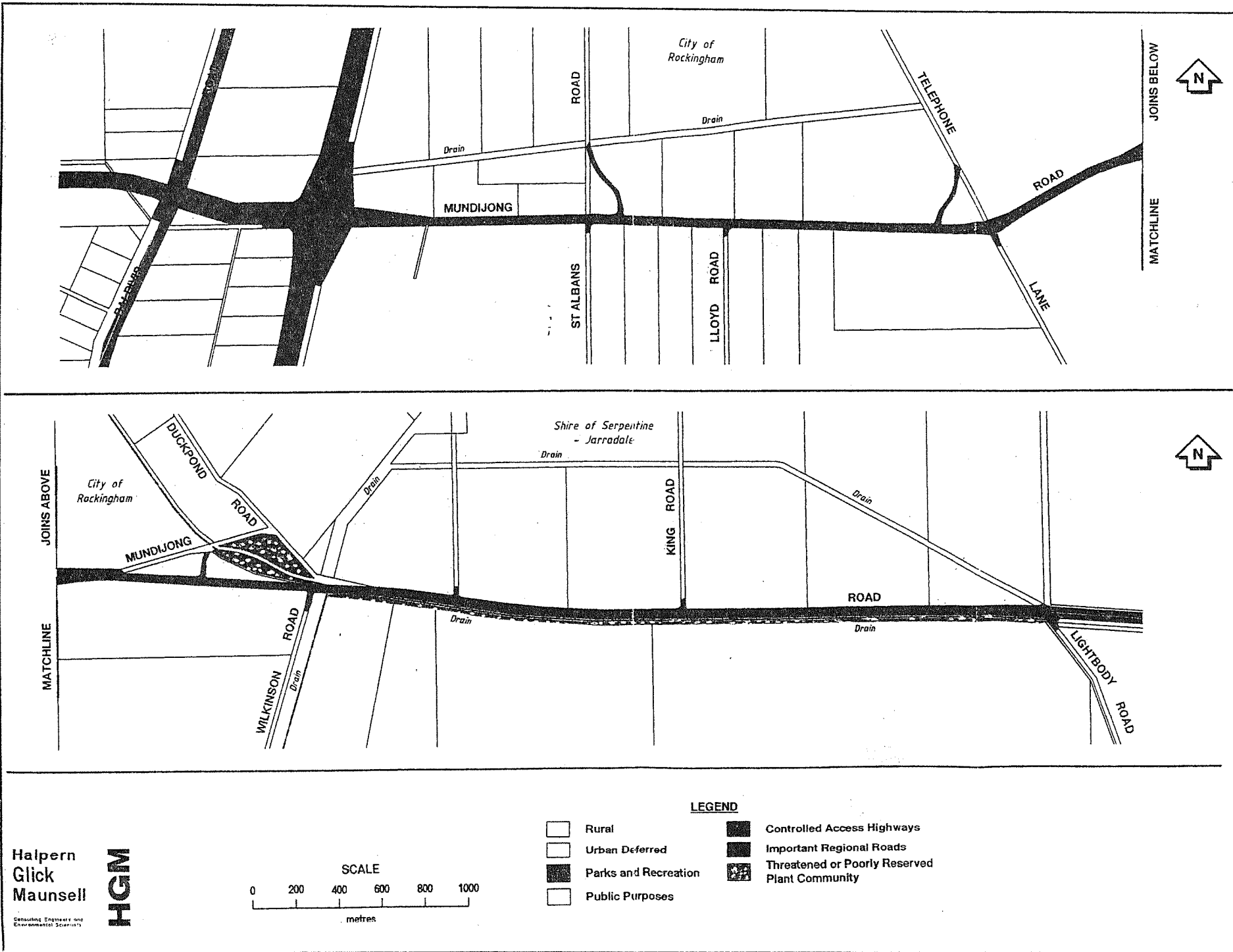
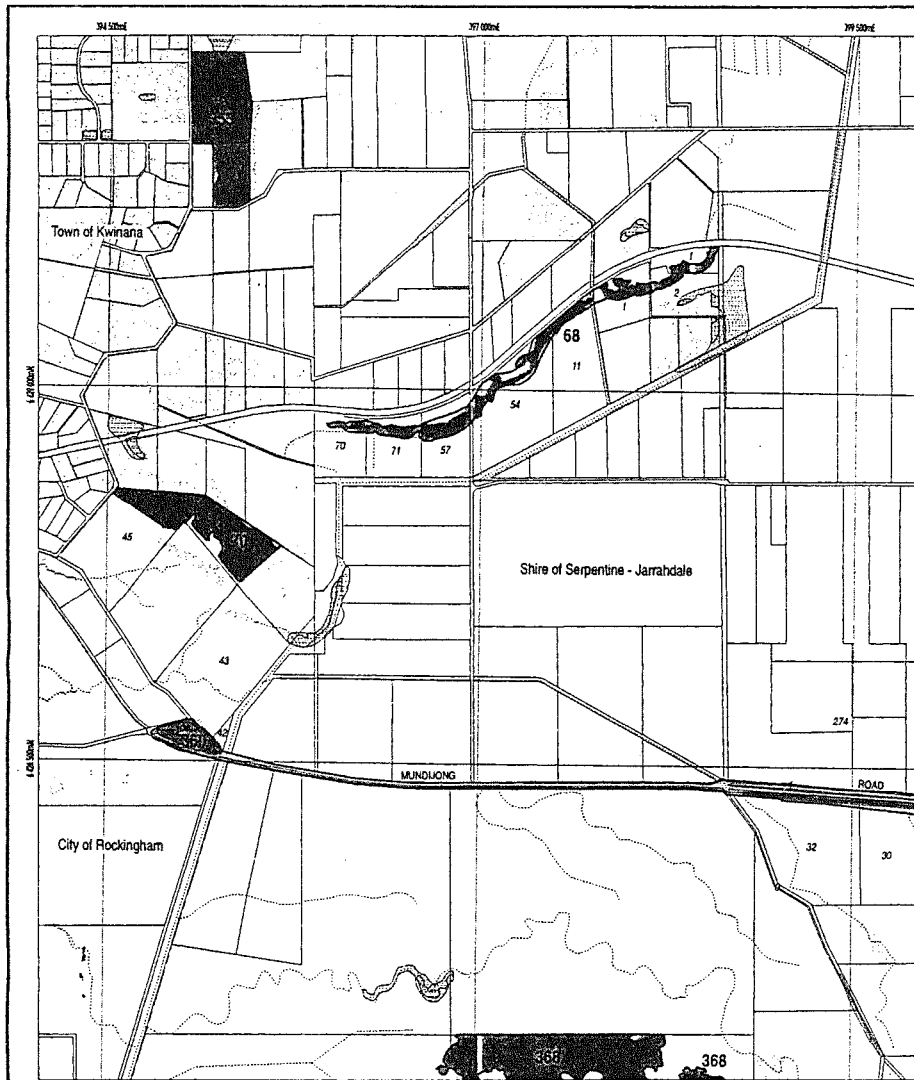


Figure 2b. Mundijong Road - Proposed MRS Land Use Plan (Source HGM, 1998b).

Figure 2c. Perth's Bushplan (extract) - Site 360 Mundijong Road (Source: Gov. WA 1998 a&b).



LEGEND

- Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

PERTH'S BUSHPLAN MAP INDEX

SCALE: 0 500 1000 Meters

Produced by Project Mapping Section
Land Information Branch, Ministry for
Planning, Perth W.A. November 1998
rhw-maps/enviro/bushplan/bush2_89.dgn

Cadastral Data supplied by Department
of Land Administration, W.A.

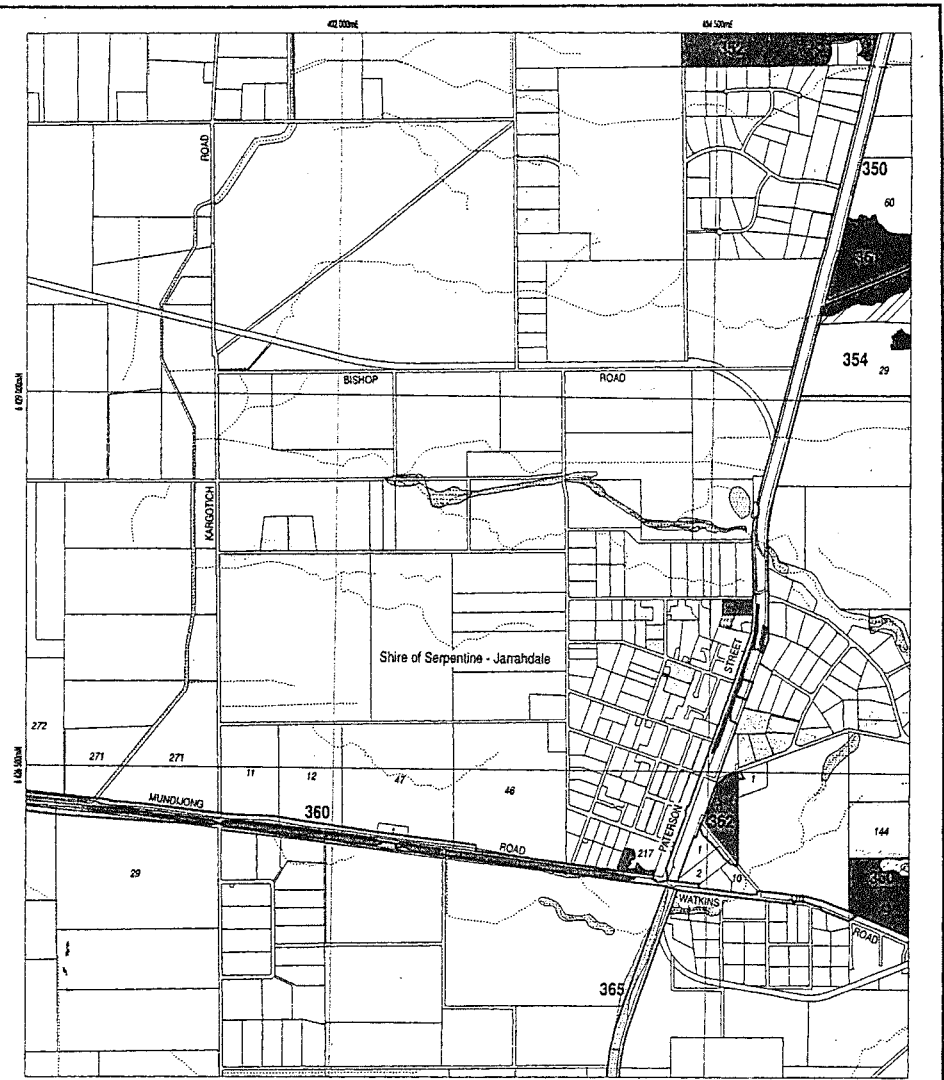
Wetlands Data supplied by
Water and Rivers Commission

Native Vegetation Extent for Study Area
supplied by Agriculture Western Australia

2033 - II NE

IV	I
2033	
III	NW NE
SW SE	

1: 25 000 AMG Reference Grid
showing Perth's Bushplan Map
Sheet Breakdown



LEGEND

- Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

PERTH'S BUSHPLAN MAP INDEX

SCALE: 0 500 1000 Meters

Produced by Project Mapping Section
Land Information Branch, Ministry for
Planning, Perth W.A. November 1998
rhw-maps/enviro/bushplan/bush2_90.dgn

Cadastral Data supplied by Department
of Land Administration, W.A.

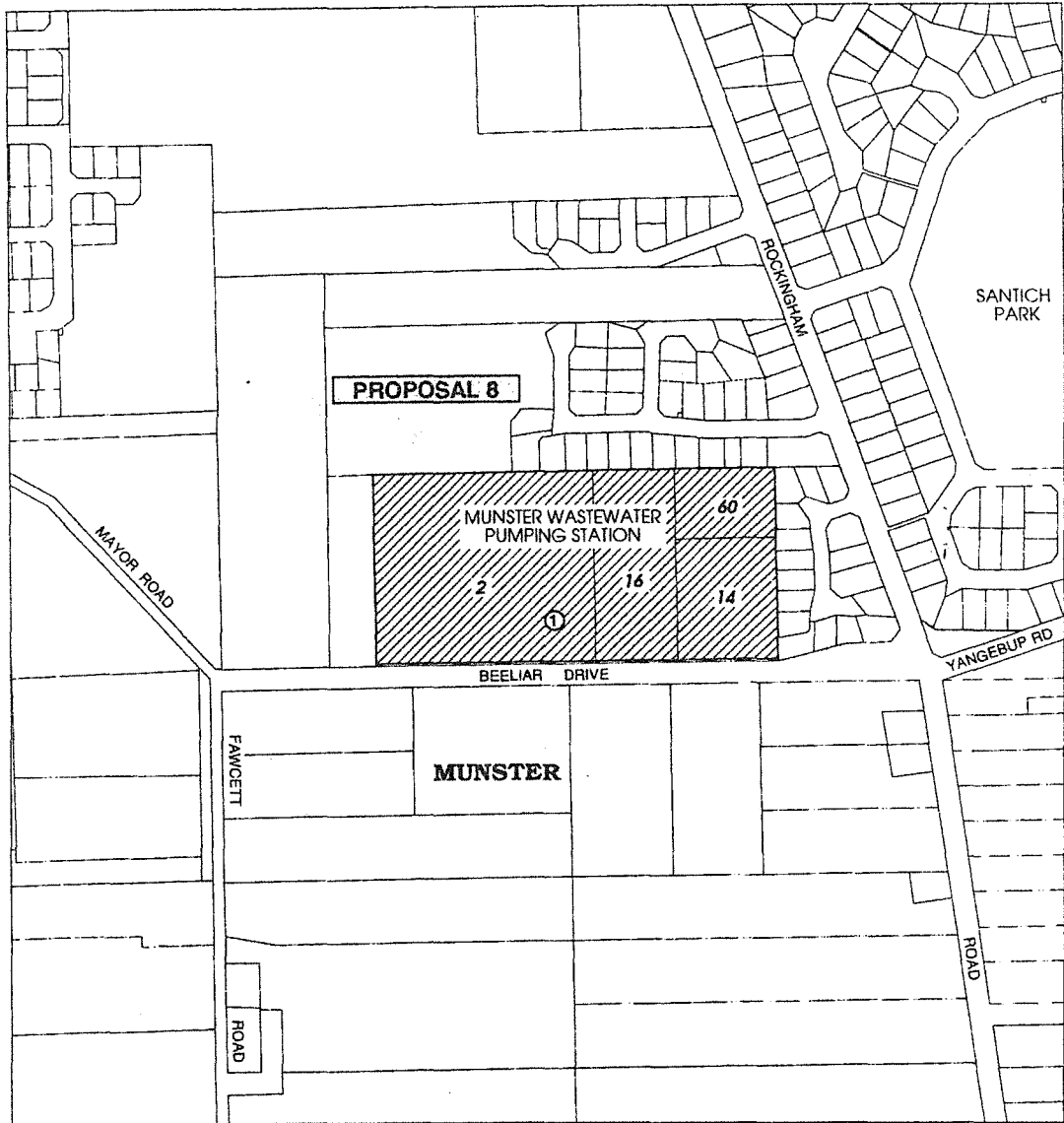
Wetlands Data supplied by
Water and Rivers Commission

Native Vegetation Extent for Study Area
supplied by Agriculture Western Australia

2033 - II NE

IV	I
2033	
III	NW NE
SW SE	

1: 25 000 AMG Reference Grid
showing Perth's Bushplan Map
Sheet Breakdown



SOUTH WEST DISTRICTS - PROPOSED OMNIBUS AMENDMENT (No.3B)
AS ADVERTISED

14th JULY 1998

FIGURE 8

LEGEND

PROPOSED:

 **PUBLIC PURPOSES (WSD) RESERVATION**



WESTERN AUSTRALIAN PLANNING COMMISSION



STATE OF WESTERN AUSTRALIA

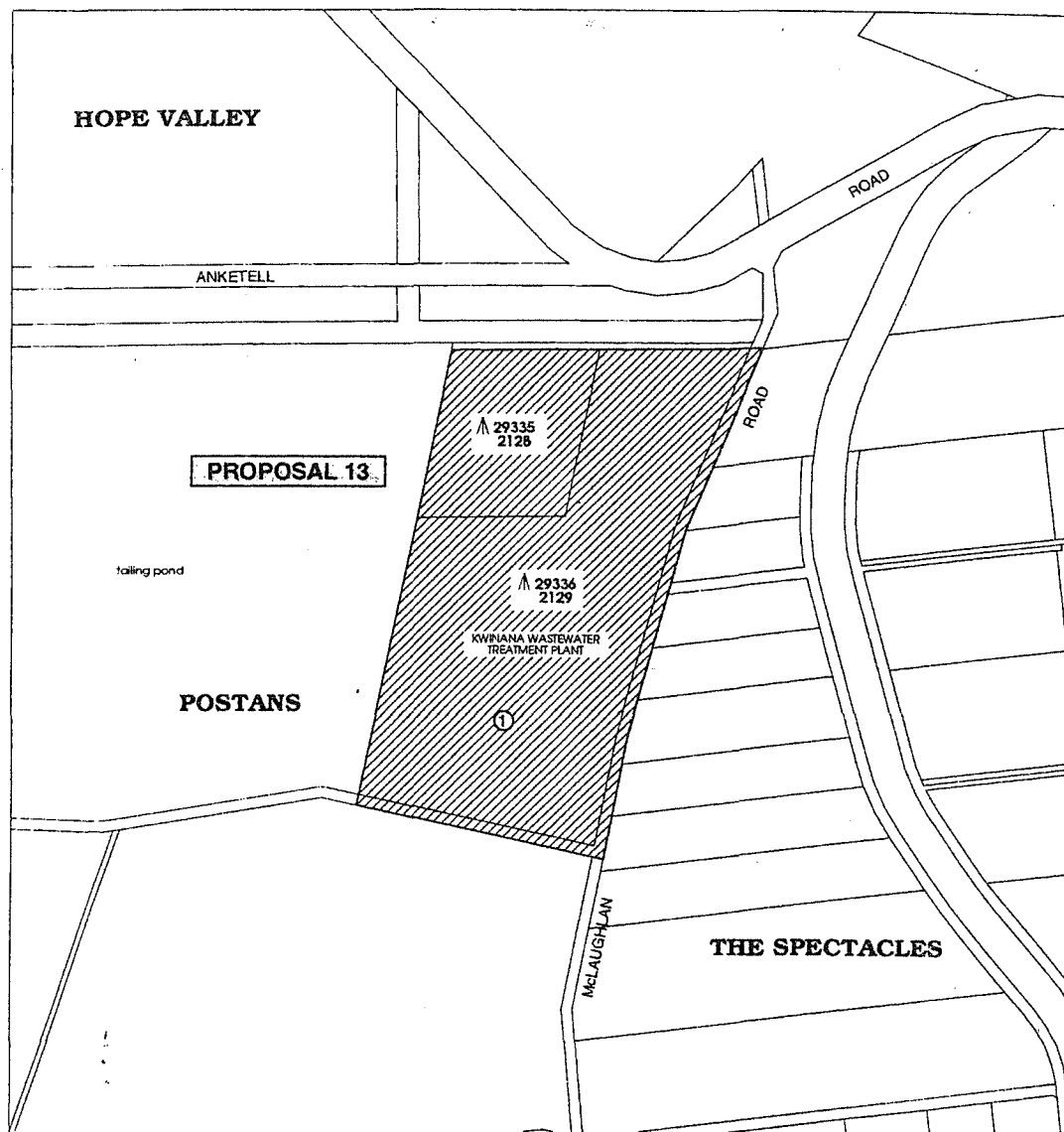


SCALE 1:5000



Produced by Statutory Mapping Section, Land Information Branch, Ministry for Planning

Figure 3. MRS Amendment 991/33 - Proposal 8 (Source: Western Australian Planning Commission, 1998).



SOUTH WEST DISTRICTS - PROPOSED OMNIBUS AMENDMENT (No.3B)

14th JULY 1998

AS ADVERTISED

FIGURE 13

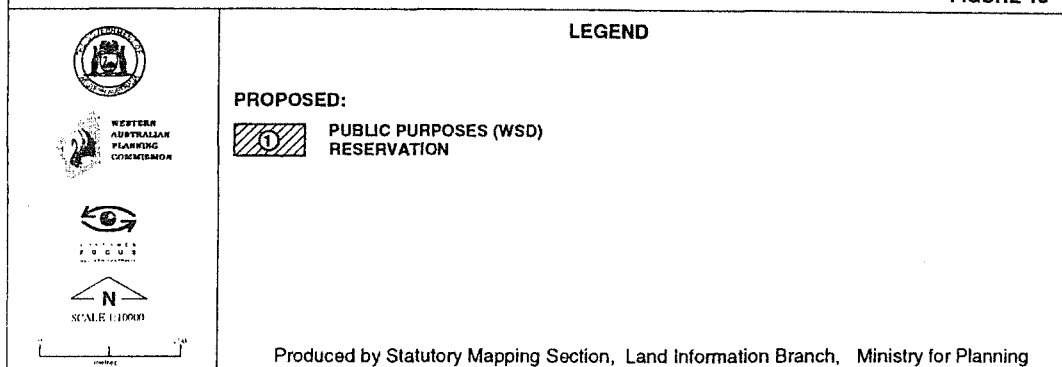


Figure 4. MRS Amendment 991/33 - Proposal 13 (Source: Western Australian Planning Commission, 1998).

3. Relevant environmental factors

It is the EPA's opinion, in accordance with Section 48D of the *Environmental Protection Act 1986*, that the following are the environmental factors relevant to the proposed amendment, which require evaluation:

Proposal 10

- (a) **wetlands** - protection of Conservation Category wetlands, adverse impacts on potential Quenda (Southern Brown Bandicoot) habitat ;
- (b) **soil contamination** - adverse impacts on surface and groundwater quality, Conservation Category wetlands, and future land uses;
- (c) **surface water quality** - adverse impacts on Conservation Category wetlands and potential Quenda habitat;
- (d) **groundwater quality** - adverse impacts on Conservation Category wetlands, potential Quenda habitat and future irrigation and other uses; and
- (e) **gases** - within *Environmental Protection (Kwinana - Atmospheric Waste) Policy* buffer and Woodman Point odour buffer.

Proposal 19

- (a) **vegetation communities** - threatened or poorly reserved communities requiring immediate protection on the Swan Coastal Plain, *Bushplan Site 360*;
- (b) **declared rare and priority fauna** - 2 DRF, 8 priority species;
- (c) **specially protected (threatened) fauna** – direct adverse impacts on potential habitat for a Scheduled fauna species (Quenda); and
- (d) **wetlands** - protection of Conservation Category wetlands.

The above relevant factors were identified from the EPA's consideration and review of all environmental factors (preliminary factors) generated from the Environmental Review document and the submissions received, in conjunction with the characteristics of proposals 10 and 19 (as identified in Table 1) and alternative approval processes which ensure that the factors will be appropriately managed.

On this basis, the EPA considers that some preliminary factors and other issues raised in the submissions do not require further evaluation by the EPA. The identification of relevant factors and the summary of assessment of Relevant Environmental Factors is summarised in Tables 2a and 3a (Proposal 10) and 2b and 3b (Proposal 19) respectively.

Proposals 8 and 13 have no environmental factors relevant at this stage. The key environmental factors for these proposals are identified in the EPA's instructions for this amendment (23/1/98) as outlined in appendix 2 and are:

Proposal 8: odour, surface water quality, noise, vibration, public health and safety risk and hazard; and

Proposal 13: odour, groundwater quality, surface water quality, soil contamination, public health and safety risk and hazard.

These key environmental factors will be further assessed at the development stage in the planning process when expansion of these facilities is proposed.

Table 2a: Proposal 10 - Identification of Relevant Environmental Factors

FACTOR	AMENDMENT COMPONENT WITH POSSIBLE IMPACT	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
BIOPHYSICAL			
Vegetation communities	Potential clearing of remnant vegetation within the Amendment area.	<p>Clearing of tuarts for drainage will decrease numbers thereby threatening the resistance of the remaining tuart stand to robelina grub infestation.</p> <p>Replacement is unlikely to succeed without vigilant tree husbandry.</p> <p>Values of the cleared native vegetation should be replaced with locally native species within the development site and the Lake Coogee Reserve (SDRA, C/C, WCS).</p>	<p>Limited remnant vegetation exists within the Amendment area. The only regionally significant remnant vegetation is addressed under the Wetlands factor. Potential off-site impacts are addressed through other factors.</p> <p>Factor does not require further EPA evaluation.</p>
Declared Rare and Priority Flora	Potential clearing of Declared Rare and Priority Flora within the Amendment area.	CALM database search and site survey revealed no Declared Rare and Priority Flora within the Amendment area. The majority of the vegetation understorey has been cleared or subject to exotic species invasion (DEP)	Factor does not require further EPA evaluation.
Terrestrial Fauna	Potential clearing of remnant vegetation for development or changes to the drainage network following development in the Amendment area may adversely impact on fauna habitat onsite and in adjacent wetland areas	The onsite and adjacent wetlands and associated vegetation provide terrestrial fauna habitat (DEP)	Considered to be a relevant factor but addressed under the Wetlands factor.
Specially Protected (Threatened) Fauna	Potential clearing of remnant vegetation for development or changes to the drainage network following development in the Amendment area may adversely impact on fauna habitat onsite and in adjacent wetland areas	Proposed development at the SE corner of Lake Coogee will destroy the wetland vegetation habitat of a population of Quenda, a Scheduled fauna species under threat because of habitat reduction. (WS).	Considered to be a relevant factor but addressed under the Wetlands factor.

<p>Wetlands</p>	<p>Potential clearing or filling associated with development in the Amendment area may adversely impact on the on-site Conservation Category wetland.</p> <p>Changes to the existing drainage network may result from industrial or infrastructure development in the Amendment area and adversely impact the on-site Conservation Category wetland or adjacent Lake Coogee (EPP wetland).</p>	<p>Development is proposed within the Conservation Category wetland boundary and its designated 50m wetland buffer and should be prohibited. This land should be included in the abutting Bushplan Site /reserved for Parks and Recreation and vested in the City of Cockburn in order to protect the dependant fringing vegetation of Lake Coogee. (SDRA, WS, C/C, WCS,).</p> <p>The proponent should contribute to the implementation of the Lake Coogee Management Plan in order to offset impacts associated with development (C/C)</p> <p>A Wetland Management Plan should be prepared prior to site works (WRC)</p>	<p>Considered to be a relevant factor.</p>
<p>POLLUTION</p>			
<p>Gases</p>	<p>Potential for future industrial activity in the Amendment area to release gases that have an adverse impact to onsite or adjacent areas, including the South Coogee Primary School.</p> <p>Potential for adjacent industry emissions to adversely impact sensitive land uses permitted by the rezoning of the Amendment area.</p>	<p>Urban zoning will allow for sensitive land use within designated industry buffers(DEP)</p>	<p>Considered to be a relevant factor .</p>
<p>Odour</p>	<p>Potential for future industrial activity in the Amendment area to release odours that have an adverse impact to onsite or adjacent areas, including the South Coogee Primary School.</p> <p>Potential for adjacent industry emissions to adversely impact sensitive land uses permitted by the rezoning of the Amendment area.</p>	<p>Urban zoning will allow for sensitive land use within designated industry buffers (Kwinana EPP and Woodman's Point WWTP)((DEP)</p>	<p>Buffer issues require further evaluation but are addressed under the Gases factor.</p> <p>Factor does not require further EPA evaluation.</p>

Dust and Particulates	Potential for dust and particulate emissions from the Amendment area that have an adverse impact to onsite or adjacent areas, including the South Coogee Primary School, during construction of the Technology Park.	Construction activities will be subject to EPA regulations on dust and particulate emissions (DEP)	Factor does not require further EPA evaluation.
Noise	<p>Potential for noise emissions from the Amendment area during construction that has an adverse impact to onsite or adjacent areas, including the South Coogee Primary School..</p> <p>Potential for future industrial activity in the Amendment area to generate noise that has an adverse impact to onsite or adjacent areas, including the South Coogee Primary School..</p> <p>Potential for noise emissions from the adjacent major road to have adverse impacts to sensitive land uses in the Amendment area</p>	<p>Construction and industrial activities will be subject to EPA regulations on noise emissions Urban zoning will allow for sensitive land uses adjacent to existing noise source(DEP)</p> <p>Development to be restricted to technology manufacturing and research and development with low noise emissions. Primary school to be relocated in near future (Landcorp)</p>	<p>Buffer issues require further evaluation but are addressed under the Gases factor.</p> <p>Factor does not require further EPA evaluation.</p>
Surface water quality	Industrial or infrastructure development in the Amendment area may increase the potential for contaminants to enter the surface drainage network and this may impact onsite or adjacent (Lake Coogee) wetlands and wetland dependent vegetation.	Drainage from the proposed treatment basin should not be ultimately discharged into Lake Coogee or other wetlands as this will result in increased nutrients and other pollutants and upset the balance of the lake. Stormwater should be discharged into infiltration ponds or artificial wetlands. The development should incorporate water sensitive design (SDRA, C/C, WCS, WRC)	Considered to be a relevant factor.
Groundwater quality	Industrial or infrastructure development in the Amendment area may increase the potential for contaminants to enter the subsurface drainage network and this may impact onsite or adjacent (Lake Coogee) wetlands or other users of the groundwater resource.	Operational waste from within the park should be treated and not discharged into Lake Coogee/controlled to prevent groundwater pollution which flows towards Lake Coogee. The proposal is within the Cockburn Groundwater Area where there is a requirement for a groundwater well licence for irrigation.(WCS, WRC)	Considered to be a relevant factor.

Soil contamination	<p>Potential for soil contamination as a result of historical horticultural use of the site to have adverse on-site and off-site impacts during and after development of the site.</p> <p>Potential for future contamination from industries located in the Amendment area to have adverse on-site and off-site impacts after development of the site.</p>	<p>Existing contamination may require remediation to ensure adverse impacts onsite and to adjacent areas are avoided(DEP)</p> <p>Extensive soil sampling and possibly removal and/or consolidation may be required for building stability (Landcorp)</p>	Considered to be a relevant factor.
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SOCIAL SURROUNDINGS

Public health and safety	<p>Potential for future health or safety risks to adjacent residential areas associated with industrial development in the Amendment area.</p> <p>Potential for sensitive land uses in the Amendment area being exposed to health or safety risks as a result of being located within existing industry buffers.</p>	<p>Urban zoning will permit potentially polluting or hazardous industries and/or residential development within the designated buffer areas for the Woodman Point Wastewater Treatment Plant and Kwinana Heavy Industry.(DEP)</p>	<p>Buffer issues require further evaluation but are addressed under the Gases factor.</p> <p>Factor does not require further EPA evaluation.</p>
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Table 2b: Proposal 19 -Identification of Relevant Environmental Factors

FACTOR	AMENDMENT COMPONENT WITH POSSIBLE IMPACT	GOVERNMENT AGENCY AND PUBLIC COMMENTS	IDENTIFICATION OF RELEVANT ENVIRONMENTAL FACTORS
BIOPHYSICAL			
Vegetation communities	<p>Potential clearing of remnant vegetation within the Amendment area.</p> <p>Potential degradation of remnant vegetation as a result of increased weed invasion following road construction.</p>	<p>Part of the alignment is within Bushplan. Development will significantly impact on 2 critically endangered plant communities and 2 vulnerable shrubland vegetation communities. West of Webb Rd this site supports "threatened or poorly reserved plant communities" requiring immediate protection on the Swan Coastal Plain. Is the longest of only 2 east-west continuous transects of vegetation representative of the Pinjarra Plain in the Perth Metropolitan Area. (CC, WS)</p> <p>Congratulates the WAPC on proposing to deviate the realignment south around the regionally significant remnant vegetation at the intersection of Duckpond Rd and Mundijong Rd. (WS)</p>	Considered to be a relevant factor.
Declared Rare and Priority Flora	<p>Potential clearing of Declared Rare and Priority Flora within the Amendment area.</p> <p>Potential loss of Declared Rare and Priority Flora as a result of increased weed invasion following road construction.</p>	<p>Development will significantly impact on 2 Declared Rare Flora species, 8 priority species and a number of species of unusual occurrence or endemic to the eastern side of the Swan Coastal Plain.</p>	Considered to be a relevant factor.
Terrestrial Fauna	<p>Potential clearing of remnant vegetation within the Amendment area may reduce fauna habitat.</p> <p>Potential degradation of fauna habitat as a result of increased weed invasion following road construction.</p> <p>Potential increase in fauna deaths as a result of increased road traffic adjacent to fauna habitat.</p>	<p>The majority of the proposed reserve is cleared and the understory of remaining areas is degraded (DEP)</p>	Factor does not require further EPA evaluation..

Specially Protected (Threatened) Fauna	<p>Potential clearing of remnant vegetation within the Amendment area may reduce fauna habitat.</p> <p>Potential degradation of habitat as a result of increased weed invasion following road construction.</p> <p>Potential increase in fauna deaths as a result of increased road traffic adjacent to fauna habitat.</p>	<p>The proposal will have significant impact on the vegetation habitat of a population of Quenda, a Scheduled fauna species under threat because of habitat reduction. (WS)</p> <p>CALM records indicate four protected species may inhabit the area(DEP)</p>	Considered to be a relevant factor.
Wetlands	<p>Potential increase in the volume of contaminated drainage discharging from the Amendment area into the Conservation Category wetland.</p> <p>Potential degradation of wetland vegetation as a result of increased weed invasion following road construction.</p>	<p>Conservation Category wetland occurs within the Amendment area. Wetland within proposed reserve is substantially degraded(DEP)</p>	Considered to be a relevant factor.
SOCIAL SURROUNDINGS			
Aboriginal culture and heritage	Potential for road construction to affect cultural or heritage sites	No significant sites in the Amendment area(DEP)	Factor does not require further EPA evaluation
Non-aboriginal heritage	Potential for road construction to affect cultural or heritage sites	No significant sites in the Amendment area(DEP)	Factor does not require further EPA evaluation

DEFERRED FACTORS			
Vegetation communities	<p>Potential clearing of remnant vegetation within the Amendment area or inadvertent impacts during road construction.</p> <p>Potential degradation of remnant vegetation as a result of increased weed invasion following road construction or other indirect impacts.</p>		<p>Considered to be a relevant factor, but EPA assessment deferred to the detailed planning stage.</p> <p>Factor does not require further EPA evaluation at this stage.</p>
Surface water quality	Potential for road runoff to introduce contaminants into the drainage network		<p>Considered to be a relevant factor, but EPA assessment deferred to the detailed planning stage.</p> <p>Factor does not require further EPA evaluation at this stage.</p>
Groundwater quality	Potential for contaminated road runoff to impact on groundwater quality		<p>Considered to be a relevant factor, but EPA assessment deferred to the detailed planning stage.</p> <p>Factor does not require further EPA evaluation at this stage.</p>
Particulates / dust	Potential particulate/dust emissions during road construction.		<p>Considered to be a relevant factor, but EPA assessment deferred to the detailed planning stage.</p> <p>Factor does not require further EPA evaluation at this stage.</p>
Noise	Potential noise emissions during road construction.		<p>Considered to be a relevant factor, but EPA assessment deferred to the detailed planning stage.</p> <p>Factor does not require further EPA evaluation at this stage.</p>

Table 3a: Proposal 10 - Summary of Assessment of Relevant Environmental Factors

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
Wetlands	Swan Coastal Plain	Maintain the integrity, functions and environmental values of wetlands.	<p>The EPA considers that the Responsible Authority has provided sufficient information to confirm that impacts upon wetlands can be managed, under the Responsible Authority's management measures which will be applied as conditions, to meet the EPA's objective.</p> <p>The EPA notes that:</p> <ul style="list-style-type: none"> an EPP wetland abuts the Amendment area, but that the entire EPP wetland area will be protected ; the Conservation Category wetland which extends into parts of the Amendment area is highly degraded in parts; no development is proposed for that area containing remnant wetland vegetation identified in Bushplan; reservation of the wetland area and buffer areas as public open space can be ensured via conditions enforced at subsequent stages of the planning process; rehabilitation and replanting will be undertaken to augment and enhance the condition of the existing vegetation in wetland buffers; stormwater run-off and drainage controls will be put in place to ensure the existing hydrology is retained and that potential nutrient and contaminant inputs to the wetland are minimised; <p>The EPA recommends that the proposed management measures be applied as conditions such that:</p> <ul style="list-style-type: none"> prior to submission of an application for TPS amendment, an Environmental Management Plan is prepared to identify the wetland areas and buffers required to be conserved and describe the landscaping and regeneration strategy for buffer areas; and prior to submission of an application for subdivision or development approval, whichever occurs first, a Drainage Management Plan is prepared to ensure that the rate and quality of stormwater leaving the Amendment area is maintained; <p>to ensure that the values of wetlands are maintained or even improved.</p>	<p>Having particular regard to:</p> <ul style="list-style-type: none"> the intention to retain and protect all significant wetland areas and vegetation; the commitment to require the preparation of Environmental Management Plans, prior to subsequent planning applications, which address all aspects of development with the potential to adversely impact the wetlands; the commitment to require detailed planning for the development to reflect the outcomes of the EMPs; <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for wetlands.</p>

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
Soil contamination	Amendment area	Ensure the rehabilitation of the site to an acceptable standard that is compatible with the intended land use, consistent with appropriate criteria	<p>The EPA considers that the proponent has provided sufficient information to confirm that soil contamination can be remediated and managed, under the Responsible Authority's management measures (to be applied as conditions) to meet the EPA's objective.</p> <p>The EPA notes that:</p> <ul style="list-style-type: none"> historical horticultural activities within the amendment area are likely to have caused onsite contamination; the Responsible Authority has proposed as a management measure the requirement for thorough investigation of onsite contamination and remediation works, where necessary, to ANZECC standards, prior to subsequent planning approvals; potential contamination from future industrial and other land uses will be controlled through the planning approvals process, with the exclusion of any development that would involve prescribed activities; and no residential land use will be permitted within the Amendment area. <p>The EPA recommends that the proposed management measures be applied as conditions so that;</p> <ul style="list-style-type: none"> a Site Contamination Management Plan is required to be prepared prior to submission of an application for subdivision or development approval, whichever occurs first, to ensure that the site is remediated according to guidelines recognised by the EPA; and the scheme text excludes residential landuse and industrial activities which may result in further contamination (prescribed premises) from the Amendment area; 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> the management measure that will be applied to ensure that the site is remediated prior to development, according to guidelines recognised by the EPA ; and planning controls that will ensure sensitive land uses and potentially polluting industries are not permitted in the Amendment area; <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for soil contamination.</p>

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
Surface water quality	Amendment area and adjacent wetlands.	Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance, are protected, consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993)	<p>The EPA considers that the proponent has provided sufficient information to confirm that surface water quality can be managed, under the Responsible Authority's management measures (to be applied as conditions), to meet the EPA's objective.</p> <p>The EPA notes that:</p> <ul style="list-style-type: none"> remediation of any existing onsite soil contamination will reduce the potential for contaminated run off; the potential for contamination of surface water from future industrial land uses will be controlled through the planning approvals process, with the exclusion of any development that would involve prescribed premises; potentially contaminated runoff from infrastructure such as roads and car parks will be managed to ensure surface water discharging from the Amendment area meets relevant water quality criteria; and the proposed change in landuse is likely to reduce existing nutrient and contaminant inputs to surface water from horticultural activities. <p>The EPA recommends that the management measures be applied as conditions so that prior to submission of an application for subdivision or development approval, whichever occurs first, the following Management Plans be prepared:</p> <ul style="list-style-type: none"> Drainage Management Plan. Site Contamination Management Plan. 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> the proposed change in landuse being likely to reduce nutrient and contaminant inputs to surface water from existing levels; the drainage management measures, which will be applied as a condition, to ensure that the quality of the stormwater leaving the development meets relevant criteria before discharging from the Amendment area; and planning controls that will limit the potential for future industrial activity to adversely impact surface water quality; <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for surface water quality.</p>

<p>Groundwater quality</p>	<p>Amendment area and those areas immediately adjacent.</p>	<p>Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance, are protected, consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993) and the NHMRC / ARMCANZ Australian Drinking Water Guidelines - National Water Quality Management Strategy.</p>	<p>The EPA considers that the proponent has provided sufficient information to confirm that groundwater quality can be managed, under the Responsible Authority's management measures (to be applied as conditions), to meet the EPA's objective.</p> <p>The EPA notes that:</p> <ul style="list-style-type: none"> historical use of the site may have resulted in reduced groundwater quality; the change from horticultural land use is likely to reduce the potential for further degradation of the groundwater; remediation of any contaminated soil within the Amendment area is likely to result in an improvement in groundwater quality due to the removal of a potential source of groundwater contamination; potential contamination from future industrial and infrastructure development will be limited by excluding prescribed premises from the Amendment area and the requirement for a drainage management strategy; and the Responsible Authority will require future development of the Amendment area to be fully sewered. <p>The EPA recommends that the management measures be applied as conditions so that prior to submission of an application for subdivision or development approval, whichever occurs first, the following Management Plans be prepared:</p> <ul style="list-style-type: none"> Drainage Management Plan. Site Contamination Management Plan. 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> the remediation of contamination prior to subdivision or development; the drainage management measures, which will be applied as a condition, to ensure that the quality of the stormwater leaving the development meets relevant criteria before discharging from the Amendment area.; and planning controls that will limit the potential for future industrial activity to adversely impact groundwater; <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for groundwater quality.</p>
<p>Gases</p>	<p>Amendment area and those areas immediately adjacent.</p>	<p>Ensure that gaseous emissions do not adversely affect the environment or health, welfare and amenity of nearby land users by meeting the statutory requirements (including Section 51 of the Environmental Protection Act 1986) and acceptable standards.</p>	<p>The EPA considers that the proponent has provided sufficient information to confirm that gaseous emissions can be managed, under the Responsible Authority's management measures (to be applied as conditions), to meet the EPA's objective.</p> <p>The EPA notes that:</p> <ul style="list-style-type: none"> the Amendment area is within designated industry buffers and adjacent to sensitive land uses; residential land uses will not be permitted within the Amendment area; prescribed premises will not be permitted within the Amendment area <p>The EPA recommends that the management measures be applied as conditions so that a provision is include in the scheme text to require these land use controls</p>	<p>Having particular regard to:</p> <ul style="list-style-type: none"> planning controls that will preclude the potential for future industrial development or sensitive land uses in the Amendment area to conflict with existing and proposed land use of adjacent areas; <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for gases</p>

Table 3b: Proposal 19 - Summary of Assessment of Relevant Environmental Factors

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
<p>Vegetation communities</p>	<p>Amendment area and immediately adjacent areas of regionally significant vegetation</p>	<p>Maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.</p>	<p>The EPA considers that the Responsible Authority has provided sufficient information to confirm that potential adverse impacts upon the remnant vegetation can be managed, under the management measures to be applied as conditions, to meet the EPA's objective.</p> <p>The EPA notes that:</p> <p>The proposed road alignment will avoid and potentially reduce disturbance to the area of high quality remnant vegetation at the intersection of Duckpond and Mundijong roads</p> <p>The significant vegetation in the vicinity of the Amendment area east of Duckpond road is located south of the existing road.</p> <p>The proposed road reserve will not extend further south than the existing reserve.</p> <p>The vegetation in the Amendment area which is north of the existing road is highly degraded</p> <p>The Responsible Authority has indicated that the road widening will occur to the north of the existing road and that no significant remnant vegetation will be impacted by the proposed road construction</p> <p>The EPA recommends that, as conditions of approval, any future extension to the existing road that occurs east of Lot is required not to extend further south than the limit of the current paved surface and the following Management Plans are required to be prepared prior to the commencement of road construction, to ensure that the important vegetation communities in or adjacent to the Amendment area are protected:</p> <p>an Environmental Management Plan including but not limited to: stormwater management; rehabilitation and revegetation; construction management</p>	<p>Having particular regard to:</p> <ul style="list-style-type: none"> • the intent to minimise any disturbance to remnant vegetation; • the potential to reduce disturbance to an area of high quality regionally significant remnant vegetation; • the commitment to rehabilitate and revegetate the road reserve following construction, which will be made a condition; • the management measure to require, as a condition of approval, the preparation and implementation of an Environmental Management Plan to ensure the impacts of road construction are minimised <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for vegetation communities.</p>

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
<p>Declared Rare and Priority Flora</p>	<p>Swan Coastal Plain</p>	<p>Protect Declared Rare and Priority Flora, consistent with the provisions of the Wildlife Conservation Act 1950.</p>	<p>The EPA considers that the Responsible Authority has provided sufficient information to confirm that potential adverse impacts to Declared Rare and Priority Flora can be managed, under the management measures to be applied as conditions, to meet the EPA's objective.</p> <p>The EPA notes that:</p> <p>The proposed road alignment will avoid and potentially reduce disturbance to an area at the intersection with Duckpond road which is known to contain DRF</p> <p>The vegetation which is north of the existing road in the remainder of the Amendment area is highly degraded and unlikely to contain Declared Rare and Priority Flora</p> <p>The Responsible Authority has indicated that the road widening will occur to the north of the existing road and that no significant vegetation in the Bushplan site will be impacted by the proposed road construction</p> <p>A site search found no DRF in the Amendment area</p> <p>the commitment to rehabilitate and revegetate the road reserve following construction, which will be made a condition, will reduce the potential for weed invasion of adjacent areas</p> <p>The EPA recommends that, as conditions of approval, any future extension to the existing road that occurs east of Lot is required not to extend further south than the limit of the current paved surface and the following Management Plans are required to be prepared prior to the commencement of road construction, to ensure that the Declared Rare and Priority Flora in or adjacent to the Amendment area is protected:</p> <p>an Environmental Management Plan including but not limited to:</p> <ul style="list-style-type: none"> stormwater management; rehabilitation and revegetation; construction management 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> • the potential to reduce disturbance to an area known to contain DRF; • the commitment to rehabilitate and revegetate the road reserve following construction, which will be made a condition; • the management measure to require, as a condition of approval, the preparation and implementation of an Environmental Management Plan to ensure the impacts of road construction are minimised <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for Declared Rare and Priority Flora.</p>

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
<p>Specially Protected (Threatened) Fauna</p>	<p>Swan Coastal Plain</p>	<p>Protect Specially Protected (Threatened) Fauna and Priority Fauna species and their habitats, consistent with the provisions of the <i>Wildlife Conservation Act 1950</i>.</p>	<p>The EPA considers that the Responsible Authority has provided sufficient information to confirm that potential adverse impacts upon Specially Protected (Threatened) Fauna and Priority Fauna species can be managed, under the Responsible Authority's management measures to be applied as conditions, to meet the EPA's objective.</p> <p>The EPA notes that:</p> <p>The proposed road alignment will avoid and potentially reduce disturbance to the area in the vicinity of the Amendment area most likely to support Specially Protected (Threatened) Fauna and Priority Fauna species</p> <p>A site survey found no Specially Protected (Threatened) Fauna and Priority Fauna species in the Amendment area that are likely to be significantly affected by the Amendment</p> <p>the commitment to rehabilitate and revegetate the road reserve following construction, which will be made a condition, will reduce the potential for weed invasion of adjacent areas of potential habitat for Specially Protected (Threatened) Fauna and Priority Fauna species</p> <p>The EPA recommends that, as conditions of approval, any future extension to the existing road that occurs east of Lot is required not to extend further south than the limit of the current paved surface and the following Management Plans are required to be prepared prior to the commencement of road construction, to ensure that the important Specially Protected (Threatened) Fauna and Priority Fauna species in or adjacent to the Amendment area are protected:</p> <p>an Environmental Management Plan including but not limited to:</p> <ul style="list-style-type: none"> stormwater management; rehabilitation and revegetation; construction management 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> • the limited potential for the amendment to significantly impact Specially Protected (Threatened) Fauna and Priority Fauna species; • the potential to reduce current disturbance to an area of potential Specially Protected (Threatened) Fauna and Priority Fauna species habitat; • the commitment to rehabilitate and revegetate the road reserve following construction, which will be made a condition; • the management measure to require, as a condition of approval, the preparation and implementation of an Environmental Management Plan to ensure the impacts of road construction are minimised <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for Specially Protected (Threatened) Fauna and Priority Fauna species.</p>

RELEVANT FACTOR	RELEVANT AREA	EPA OBJECTIVES	EPA ASSESSMENT	EPA ADVICE
Wetlands	Swan Coastal Plain	Maintain the integrity, functions and environmental values of wetlands.	<p>The EPA considers that the Responsible Authority has provided sufficient information to confirm that impacts upon wetlands can be managed, under the Responsible Authority's management measures which will be applied as conditions, to meet the EPA's objective.</p> <p>The EPA notes that:</p> <p>The WRC advises that the Conservation Category wetland is located south of the Amendment area y;</p> <p>The Responsible Authority has indicated that the road widening will occur to the north of the existing road and that no significant wetland areas will be impacted by the proposed road construction</p> <p>The EPA recommends that, as conditions of approval, any future extension to the existing road that occurs east of Lot is required not to extend further south than the limit of the current paved surface and the following Management Plans are required to be prepared prior to the commencement of road construction, to ensure that impacts to wetlands in or adjacent to the Amendment area are minimised:</p> <p>an Environmental Management Plan including but not limited to:</p> <ul style="list-style-type: none"> stormwater management; rehabilitation and revegetation; construction management 	<p>Having particular regard to:</p> <ul style="list-style-type: none"> • the degraded condition of the wetland and WRC's advice; • the management measure to require, as a condition of approval, the preparation and implementation of an Environmental Management Plan to ensure the impacts of road construction are minimised, <p>it is the EPA's opinion that the proposed amendment can be managed to meet the EPA's objective for wetlands.</p>

4. Conditions

In developing recommended conditions in accordance with Section 48D of the *Environmental Protection Act 1986*, the EPA's preferred course of action is to have the Responsible Authority provide an array of management measures and/or scheme provisions to ameliorate the impacts of the amendment on the environment. The management measures are considered by the EPA as part of its assessment of the amendment, and following discussion with the Responsible Authority the EPA may seek additional management measures or scheme provisions.

The EPA may, of course, also recommend conditions additional to that relating to the Responsible Authority's management measures.

Having considered the Responsible Authority's environmental management measures and the information provided in this report, the EPA has developed a set of conditions which are consistent with but replace those environmental management measures in the Amendment documentation, if the proposed amendment is approved for implementation. These conditions are in accordance with Section 48D of the *Environmental Protection Act 1986* and are presented in Appendix 1. Matters addressed in the conditions include:

Proposal 10

- (a) preparation and implementation of an Environmental Management Plan;
- (c) preparation and implementation of a Drainage Management Plan;
- (d) preparation and implementation of a Site Contamination Management Plan; and
- (e) environmental buffer controls on subsequent development in the Amendment area.

Proposal 19

- (a) preparation and implementation of an Environmental Management Plan; and
- (b) restrictions on the location of subsequent road building in the Amendment area.

5. Conclusions

The EPA has concluded that *Metropolitan Region Scheme (MRS) Amendment 991/33 - South West Districts Omnibus (No.3B)* can be implemented to meet the EPA's objectives provided the conditions recommended in Section 4 and set out in Appendix 1 are imposed and enforced.

6. Recommendations

In accordance with Section 48D of the *Environmental Protection Act 1986* the EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposed scheme amendment being assessed contains four proposals that required further environmental Review by the EPA, namely the rezoning to accommodate a marine technology park in Munster (proposal 10), the realignment of a Controlled Access Highway Reservation in Baldivis (proposal 19), the rezoning of an existing Wastewater Pump Station at Munster (Proposal 8) and the rezoning the existing Wastewater Treatment Plant at Postans (proposal 13). The detailed environmental review for proposals 8 and 13 has been deferred to the development
2. That the Minister considers the report on the relevant environmental factors for the proposals 10 and 19 as set out in Section 3.
3. That the Minister notes the EPA has concluded that the EPA's objectives can be met for the proposals provided there is satisfactory implementation by the Responsible Authority of the recommended conditions set out in Section 4.
4. That the Minister imposes the conditions and procedures recommended in Appendix 1 of this report.

7. References

- DEP (1997). *Contaminated Sites: Assessment and Management of Contaminated Land and Groundwater in Western Australia - A public position paper*. Government of WA, Perth.
- Department of Planning and urban Development (1991). *Road Reserve Review Final Report*. Department of Planning and Urban Development, department of Transport, Main Roads Western Australia and Transport.
- EPA (1992a). *Environmental Protection Act (1986). Environmental Protection (Swan Coastal Plain Lakes) Policy*. Environmental Protection Authority, Perth.
- EPA (1992b). *Development of an environmental protection policy for air quality at Kwinana*. Bulletin 644, Environmental Protection Authority, Perth.
- EPA (1993). *Western Australian Water Quality Guidelines for Fresh and Marine Waters* Bulletin 711, Environmental Protection Authority, Perth.
- Gibson, N., Keighery, B.J., Keighery, G. J., Burbidge, A.H. and Lyons, M.N. (1994). *A Floristic Survey of the Southern Swan Coastal Plain*. Unpublished Report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management and the Conservation Council of WA.
- Government of Western Australia, 1998a & b. *Perth's Bushplan, Volume 1 and Volume 2*. Volume 1 (1998a) published by the Western Australian Planning Commission and Volume 2 (1998b) published by the Department of Environmental Protection, Perth, WA.
- Halpern Glick Maunsell (1998a). *Marine Industry Technology Park South West Districts Omnibus Amendment No.3 - Section 48(a) Environmental Review - T4076E(e) - March 1998*.
- Halpern Glick Maunsell (1998b). *Mundijong Road (Kwinana Freeway to Lightbody Road, Baldvis) South West Districts Omnibus MRS Amendment No.3 - Section 48(A) Environmental Review (April 1998)*.
- Hill, A.L., Semeniuk, V. and A. Del Marco (1996). *Wetlands of the Swan Coastal Plain 2B: Wetland Mapping, Classification and Evaluation Wetland Atlas* Water and Rivers Commission and Department of Environmental Protection.
- Keighery, B.J. (1996). *Flora Information for Roadside Bushland Protection Plans in the Shire of Serpentine-Jarrahdale*. Wildflower Society of Western Australia.
- Keighery, B.J. and Trudgen, M.E. (1992). *Remnant Vegetation on the Alluvial Soils of the Eastern side of the Swan Coastal Plain*. Unpublished Report for the Australian Heritage Commission prepared by the Department of Conservation and Land Management.
- Western Australian Planning Commission (1998) Metropolitan Region Scheme Amendment No 991/33 - South West Districts Omnibus (No 3b), Amendment Report. Government of Western Australia, Perth, WA.

Appendix 1

Recommended Environmental Conditions

Recommended Environmental Conditions

METROPOLITAN REGION SCHEME AMENDMENT NO 991/33
(SOUTHWEST DISTRICTS OMNIBUS No. 3B)

Scheme Purpose:

The Western Australian Planning Commission, the Responsible Authority, proposes *Metropolitan Region Scheme (MRS) Amendment 991/33 - South West Districts Omnibus (No.3B)* which comprises 23 proposed modifications to the MRS. This condition statement applies to two of these proposals, namely:

- **Proposal 10 - Marine Industry Technology Park, Munster:**

It is proposed to rezone a parcel of land adjacent to Lake Coogee, Munster, from the Rural zone to the Urban zone to accommodate the development of a Technology Park to service and support marine industry located at Jervoise Bay. The site is currently used primarily for horticultural activities (market gardens). The proposal includes an Urban zone within the *Environmental Protection (Kwinana - atmospheric waste) Policy* (EPA,1992) and within a 500m odour buffer for the existing Woodman Point Waste Water Treatment Plant. The land is also adjacent to the south eastern boundary of Lake Coogee, which is protected by the *Environmental Protection (Swan Coastal Lakes) Policy* (EPA, 1992) and there is a Conservation Category wetland on-site.

- **Proposal 19 - Realignment of Controlled Access Highway reservation, Baldivis:**

The proposal realigns an existing Controlled Access Highway (CAH) reservation between Lightbody Road and the future Kwinana Freeway interchange at Baldivis to generally follow the existing alignment of Mundijong Road. The proposal will allow for a second carriageway on the northern side and upgrading of the existing Mundijong Road. Part of the alignment intersects and abuts an area identified in *Perth's Bushplan -Site No 360* (WA Gov, 1998) as supporting threatened or poorly reserved plant communities requiring interim protection. A Conservation Category wetland also exists adjacent to the eastern end of the proposed reserve.

Responsible Authority: Western Australian Planning Commission

Responsible Authority Address: 469 Wellington Street
PERTH WA 6009

Assessment Number: 1129

Report of the Environmental Protection Authority: Bulletin 92X

Subject to the following conditions, there is no known environmental reason why the planning scheme Amendment to which the above report of the Environmental Protection Authority relates should not be implemented:

Proposal 10 - Marine Industry Technology Park, Munster:

1 Environmental Management

- 1-1 Prior to finalisation of amendment of the Town Planning Scheme, the Responsible Authority will require the preparation of an Environmental Management Plan for the Marine Technology Park, to ensure the protection of the onsite Conservation Category wetland and Lake Coogee.
- 1-2 The EMP shall be prepared in consultation with the City of Cockburn and Water and Rivers Commission, to the requirements of the Responsible Authority with the concurrence of Department of Environmental Protection. This Plan shall include but not necessarily be limited to:
 - a) the protection of the conservation values of wetlands and vegetation, including the location and dimensions of appropriate wetland buffers;
 - b) impacts and management of construction activities;
 - c) landscaping and revegetation of buffer areas;
 - d) maintenance and responsibilities for maintenance; and
 - e) implementation timing.
- 1-3 The Environmental Management Plan required by condition 1-1 will be implemented.

2 Drainage and Nutrient Management Plan

- 2-1 A Drainage Management Plan shall be prepared and implemented for the Marine Technology Park to ensure that the rate, quantity and quality of water leaving the proposal will not adversely impact on the onsite Conservation category wetland or Lake Coogee.
- 2-2 Prior to submission of an application for subdivision approval (other than an application for consolidation or minor modification to existing boundaries) or development, whichever occurs first, the Responsible Authority shall require preparation of a Drainage Management Plan for the drainage catchment that contains the proposal within the Amendment area, in consultation with the City of Cockburn, to the requirements of the Responsible Authority with the concurrence of the Department of Environmental Protection and the Water and Rivers Commission.
- 2-3 The proponent shall implement the Drainage and Nutrient Management Plan required by condition 2-1 to the requirements of the Responsible Authority with the concurrence of the Water and Rivers Commission.

3 Contamination

3-1 Prior to submission of an application for subdivision approval or development, whichever occurs first, the Responsible Authority shall require preparation, in consultation with the City of Cockburn, of a Site Contamination Management Plan for the subject land to the requirements of the Responsible Authority with the concurrence of the Department of Environmental Protection, to meet the following objective:

- to ensure the rehabilitation of the site to an acceptable standard that is compatible with the intended land use, consistent with appropriate criteria.

The Plan shall include:

- 1 identification of areas of contamination resulting from previous activities in the portion of the Amendment area which is the subject of the subdivision or development application;
- 2 establishment of criteria to be achieved following remediation of contaminated areas, based on the intended land uses;
- 3 development of a remediation plan for contaminated areas where the quality criteria are not met; and
- 4 identification of responsibilities for implementation of the Plan.

Note: Criteria for assessment and remediation recognised by the EPA include those in the ANZECC and NHMRC "Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites" (1992), "Dutch B and C" (1986), or the most current soil remediation criteria, the ANZECC "Australian Water Quality Guidelines for Fresh and Marine Waters" (1992), NHMRS and ARMCANZ "Australian Drinking Water Guidelines - National Water Quality Management Strategy (1996) - refer to *Contaminated Sites: Assessment and Management of Contaminated Land and groundwater in Western Australia - A public position paper* (DEP, 1997)

3-2 The above mentioned Site Contamination Management Plan shall be implemented.

4 Environmental buffer and pollution controls

4-1 The Responsible Authority shall ensure provisions are included in the scheme Amendment text to:

- preclude residential land use from within the Technology Park development area
- preclude prescribed premises from the Technology Park development area

Proposal 19 - Realignment of Controlled Access Highway reservation, Baldivis:

5 Environmental Management

5-1 Prior to the commencement of construction for the Mundijong Road, the Responsible Authority shall require the preparation of an Environmental Management Plan (EMP) to ensure construction impacts are minimised and to address any indirect impacts of the upgraded road.

5-2 The EMP shall be prepared in consultation with the Department of Conservation and Land Management, the Water and Rivers Commission and the Local Authority, to the requirements of the Responsible Authority with the concurrence of the Department of Environmental Protection. This Plan shall include but not necessarily be limited to:

- a) impacts and management of construction activities;
- b) stormwater drainage management;
- c) rehabilitation and revegetation strategies ;
- d) maintenance and responsibilities for maintenance; and
- e) implementation timing

5-3 The Environmental Management Plan required by condition 5-1 shall be implemented.

6 Limit of Works

6-1 The Responsible Authority shall place provisions in the scheme Amendment text for the Controlled Access Highway reservation to ensure that future upgrading of Mundijong road will be required not to extend further south than the existing limit of the sealed road surface

Appendix 2

Proposals 8 and 13 - Key Environmental Factors

(as previously identified in the EPA's instructions for this amendment - 23/1/98)

Proposals 8 and 13 - Key Environmental Factors

(as previously identified in the EPA's instructions for this amendment - 23/1/98)

PROPOSAL : To transfer Lots 2,14 & 16 Beeliar Drive and Lot 60 Rockingham Road, Munster from Urban zone to Public Purpose (WSD) reservation within Market Garden Swamp (System 6 M92).

CONTENT		EPA Objective	SCOPE OF WORK
Prelim Env Factors	Site Specific Factor		
Pollution Management			
Air			
	Odour	Odours emanating from the proposed development should not adversely affect the welfare and amenity of other land users.	Assess and document the odour impacts and management provisions.
Water			
	Surface Water Quality	Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance are protected, consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993).	Assess and document impacts and management provisions, with particular reference to emergency overflow into Market Garden Swamp (System 6 M92).
Non-chemical Emissions			
	Noise	Protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring that noise levels meet statutory requirements and acceptable standards.	Assess and document the noise impacts and management provisions.
	Vibration	Protect the amenity of nearby residents from vibration impacts resulting from activities associated with the proposal by ensuring that vibration levels meet statutory requirements and acceptable standards.	Assess and document the vibration impacts and management provisions.

PROPOSAL : To transfer Reserves 29335 and 29336 McLaughlan Road, Postans from Rural zone to Public Purposes (WSD) reservation.

CONTENT		EPA Objective	SCOPE OF WORK
Prelim Env Factors	Site Specific Factor		
Pollution Management			
Air			
	Odour	Odours emanating from the proposed development should not adversely affect the welfare and amenity of other land users.	Assess and document the odour impacts and management provisions.
Water			
	Groundwater quality	Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance are protected, consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993).	Assess and document the current level of groundwater quality and the impact and management provisions, with particular reference to the Spectacles.
	Surface water quality	Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance are protected, consistent with the draft WA Guidelines for Fresh and Marine Waters (EPA, 1993).	Assess and document changes in surface water quality, impacts and management provisions, with particular reference to the Spectacles (emergency overflow).
Land			
	Soil contamination	Ensure the rehabilitation of the site to an acceptable standard that is compatible with the intended land use, consistent with appropriate criteria. Contaminated material should be treated on-site or disposed of off-site at an appropriate land fill facility. Where this is not feasible, contaminated material should be managed on-site to prevent groundwater contamination or risk to public health.	Assess and document the type, extent and current level of contamination, including management provisions and cleanup, with particular reference to the storage/disposal of sludge. Document how the site will be managed to ensure any contamination is minimised.
Social Surroundings			
Social			
	Public health and safety risk and hazard	Ensure that risk is managed to meet the EPA's criteria for individual fatality risk off-site and the DME's requirements in respect of public safety.	Assess and document the risks and hazards, the impacts and management provisions (eg. storage of chlorine).