

**Proposal to change land use affecting System Six areas
and lakes protected under the Environmental Protection
Policy to Urban, Industrial, Special Uses and
transportation purposes, to be reflected in the major
Metropolitan Region Scheme Amendments for the South
West Corridor.**

Department of Planning and Urban Development

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

**Environmental Protection Authority
Perth, Western Australia
Bulletin 746
July 1994**

THE PURPOSE OF THIS REPORT

This report contains the Environmental Protection Authority's environmental assessment and recommendations to the Minister for the Environment on the environmental acceptability of the proposal.

Immediately following the release of the report there is a 14-day period when anyone may appeal to the Minister against the Environmental Protection Authority's report.

After the appeal period, and determination of any appeals, the Minister consults with the other relevant ministers and agencies and then issues his decision about whether the proposal may or may not proceed. The Minister also announces the legally binding environmental conditions which might apply to any approval.

APPEALS

If you disagree with any of the contents of the assessment report or recommendations you may appeal in writing to the Minister for the Environment outlining the environmental reasons for your concern and enclosing the appeal fee of \$10.

It is important that you clearly indicate the part of the report you disagree with and the reasons for your concern so that the grounds of your appeal can be properly considered by the Minister for the Environment.

ADDRESS

Hon Minister for the Environment
12th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

CLOSING DATE

Your appeal (with the \$10 fee) must reach the Minister's office no later than 5.00 pm on 29 July 1994.

Environmental Impact Assessment (EIA) Process Timelines in weeks

Date	Timeline commences from receipt of full details of proposal by proponent	Time (weeks)
9/3/94	Proponent Document Released for Public Comment	8
4/5/94	Public Comment Period Closed	
11/5/94	Issues Raised During Public Comment Period Summarised by EPA and Forwarded to the Proponent	1
20/5/94	Proponent response to the issues raised received	2.5
15/7/94	EPA reported to the Minister for the Environment	8

ISBN. 0 7309 5685 7
ISSN. 1030 - 0120
Assessment No. 838

Contents

	Page
Summary and recommendations	i
1. Introduction and background	1
2. Summary description of proposal	1
3. Environmental impact assessment method	3
4. Public submissions	3
5. Key environmental issues and objectives of evaluation	4
5.1 Existing policy framework	4
5.1.1 Urban conservation	4
5.1.2 Wetland protection	7
5.2 Technical information	7
5.2.1 Vegetation and flora	7
5.2.2 Fauna	10
6. Discussion and evaluation of proposals	10
6.1 Rapid Transport Reserve between Jandakot and Mandurah	11
6.1.1 Evaluation	12
6.2 Deletion of north west portion of System Six Area M103 for Special Uses	29
6.2.1 Evaluation	29
6.3 Deletion of south-west area of System Six Area M103 west of Ennis Avenue for Urban and Industrial purposes	30
6.3.1 Evaluation	30
6.4 Widening of Safety Bay Road between Ennis Avenue and Mandurah Road	32
6.4.1 Evaluation	34
7. Additional issue — System Six Recommendations	35
7.1 Department of Planning and Urban Development proposals	35
7.2 Environmental Protection Authority advice	36
8. Conclusions and recommendations	36
9. Recommended environmental conditions	37
10. References	40

Table

1. Potential significant environmental impacts of proposals	11
---	----

Appendices

1. Environmental Impact Assessment flow chart
2. Summary of submissions and proponent's response
3. List of submitters
4. Proponent's commitments
5. Environmental Protection Authority advice provided on the remainder of the proposals contained within South West Corridor major Metropolitan Region Scheme Amendments A and B (938/33 and 937/33).

Summary

The Department of Planning and Urban Development, on behalf of the State Planning Commission has prepared two Major Metropolitan Region Scheme Amendments (937/33 and 938/33) for the South West Corridor. These amendments foreshadow future land use changes.

Some elements of the rezonings proposed in the major amendments have the potential for significant impact on System Six Areas M103 and M104, The Spectacles, Leda Wetlands, Stakehill Swamp, Anstey Swamp and the Paganoni area. As such, the Environmental Protection Authority required that a Public Environmental Review be prepared for those proposals contained within the rezonings which have the potential for adverse impacts on these identified areas.

The specific proposals assessed in this Public Environmental Review are the:

- Rapid Transport Reserve;
- deletion of the north west corner of System Six Area M103 for Special Uses;
- deletion of the south west portion of System Six Area M103 west of Ennis Avenue for industrial and urban purposes; and
- widening of Safety Bay Road between Ennis Avenue and Mandurah Road within System Six Area M103 (refer Figure A).

The remainder of the land use changes proposed by both Metropolitan Region Scheme Amendments were assessed at the level of "informal review with public advice" and the advice provided by the Environmental Protection Authority is included in Appendix 5 of this report. (As this advice has already been provided, it is not subject to appeal.)

The Public Environmental Review was released for an eight week submission period, and attracted 35 public submissions. Almost all of the submissions received were concerned with the potential impacts on System Six areas, wetlands, and flora and fauna.

The Environmental Protection Authority evaluated each of these proposals in terms of their potential impact on wetlands and lakes protected by the Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 that is, The Spectacles, Leda, Lake Cooloongup, Lake Walyungup, Stakehill Swamp, Anstey Swamp, and the Paganoni wetlands. The Environmental Protection Authority also examined each of these proposals in terms of their potential impact on System Six Area M103, M104 and on the region's conservation values in general.

It was concluded that in order to protect the identified environmental values of the area as far as possible, the proposed Rapid Transport Reserve alignment required modifications, the north west area of M103 could not be removed from System Six and should not be rezoned from Parks and Recreation, that the area west of Ennis Avenue in System Six could be developed but only if integrated management of the Port Kennedy, Lark Hill, and Lakes Cooloongup and Walyungup area could be secured (refer Figures 1 to 13 in the main report). The widening of Safety Bay Road was also found to be acceptable subject to the preparation of an Environmental Management Programme.

The Environmental Protection Authority's recommendations with regard to the above proposals are as summarised in the following table.

	Summary of Recommendations
1	<p>The Rapid Transport Reserve as proposed in Metropolitan Region Scheme Amendments 937/33 and 938/33 be amended in accordance with Figures 1 to 12 in order to ameliorate potential environmental impacts on:</p> <ul style="list-style-type: none"> • The Spectacles; • The Leda wetlands; • The conservation values contained within System Six Area M103; • Stakehill Swamp; • Anstey Swamp; and • The Paganoni area.
2	<p>An Environmental Management Programme be prepared to ameliorate and mitigate environmental impacts associated with the construction of a Rapid Transport system.</p>
3	<p>The north western area of System Six Area M103 in Hillman which was previously proposed for Special Uses should be retained in Parks and Recreation in the Metropolitan Region Scheme as committed to by the Department of Planning and Urban Development in the Public Environmental Review. Deletion of this area from Parks and Recreation would be environmentally unacceptable.</p>
4	<p>The removal of area west of Ennis Avenue which is currently zoned for Parks and Recreation and partly for Industrial in the Metropolitan Region Scheme is environmentally acceptable subject to:</p> <ul style="list-style-type: none"> • the land owned by the State Planning Commission generally known as Lark Hill as shown in Figure 13 being secured and managed primarily for conservation purposes; • a linkage being provided between the greater part of System Six Area M103 east of Ennis Avenue through to the coast at Port Kennedy, consistent with recommendations made for System Six Area M106; and • integration of management of the area identified with the management of the Port Kennedy conservation area and the greater area of System Six M103.
5	<p>Preparation of a single integrated management plan prior to the finalisation of the Metropolitan Region Scheme for the entire area identified, that is, System Six M103, Lark Hill and Port Kennedy. This plan is to identify:</p> <ul style="list-style-type: none"> • the management purpose of specific areas; • linkages provided between the greater part of System Six M103 east of Ennis Avenue and the coast at Port Kennedy (M106); • agencies responsible for the implementation of the plan; and • a timetable for implementation.
6	<p>The widening of Safety Bay Road between Ennis Avenue and Mandurah Road is environmentally acceptable, subject to the preparation of an Environmental Management Programme addressing environmental issues to the requirements of the Environmental Protection Authority prior to construction commencing.</p>
7	<p>Proposals for additions to the conservation estate put forward by the Department of Planning and Urban Development are supported, and will be considered during a formal update of the System Six proposals. However, the proposals to delete parts of area M93, M103, M107, and M108 are not environmentally acceptable.</p>

1. Introduction and background

Over recent years, the Department of Planning and Urban Development (DPUD) has prepared a number of studies and structure plans for the South West Corridor of the metropolitan area: which is, the coastal areas between Fremantle and Mandurah. These studies at their broadest level include Metroplan and the Urban Expansion Policy, and at a more local level include the Jandakot Land Use and Water Management Strategy and the South Jandakot/Mandogalup District Planning Study for the Jandakot and Kwinana localities. Further south, the Department of Planning and Urban Development has prepared a South-West Corridor Structure Plan for the area from Rockingham to north of Mandurah (DPUD, 1994).

The Environmental Protection Authority and the Department of Environmental Protection have provided submissions on almost all of these planning studies in a series of letters and meetings, and also in two published reports, Bulletin 680 and Bulletin 683 (EPA, 1993b & c).

The Department of Planning and Urban Development prepared major amendments to the Metropolitan Region Scheme to give statutory effect to many of the planning proposals contained in the preceding studies. These amendments were advertised for public comment under the planning approvals process in November 1993 (State Planning Commission, 1993 a & b).

Elements of the rezonings proposed in the major amendments have the potential for significant impact on System Six Areas M103 and M104, and on several lakes and wetlands such as The Spectacles, Leda wetlands, Stakehill Swamp, Anstey Swamp and the Paganoni wetlands and vegetation. As such, the Environmental Protection Authority decided that a Public Environmental Review was required. The key objectives for undertaking the environmental assessment are to minimise, mitigate, or avoid impacts on the areas identified as environmentally significant.

2. Summary description of proposal

In September 1993, the Department of Planning and Urban Development, on behalf of the State Planning Commission referred the two major Amendments to the Metropolitan Region Scheme (MRS) effecting the South West Corridor to the Environmental Protection Authority for assessment. These Amendments were identified as Amendment No. 938/33 (Stage A), and Amendment No. 937/33 (Stage B).

The Environmental Protection Authority set two different levels of assessment on the proposals contained within the amendments in recognition of the differing potential environmental impacts associated with the proposed re-zonings and eventual land use changes.

A Public Environmental Review was sought for the:

- Rapid Transport Reserve (in MRS Amendment A & B);
- deletion of the north west corner of System Six Area M103 for Special Uses (in MRS Amendment B);
- deletion of the south west portion of System Six Area M103 west of Ennis Avenue for industrial and urban purposes (in MRS Amendment B); and
- widening of Safety Bay Road between Ennis Avenue and Mandurah Road (in MRS Amendment B) (refer Figure A).

The other rezonings and eventual land use changes proposed by both of the Metropolitan Region Scheme Amendments (A & B) were assessed at the level of "informal review with public advice". The advice provided by the Environmental Protection Authority on these proposals is included in Appendix 5 of this report. The advice contained in this appendix is not subject to appeal.

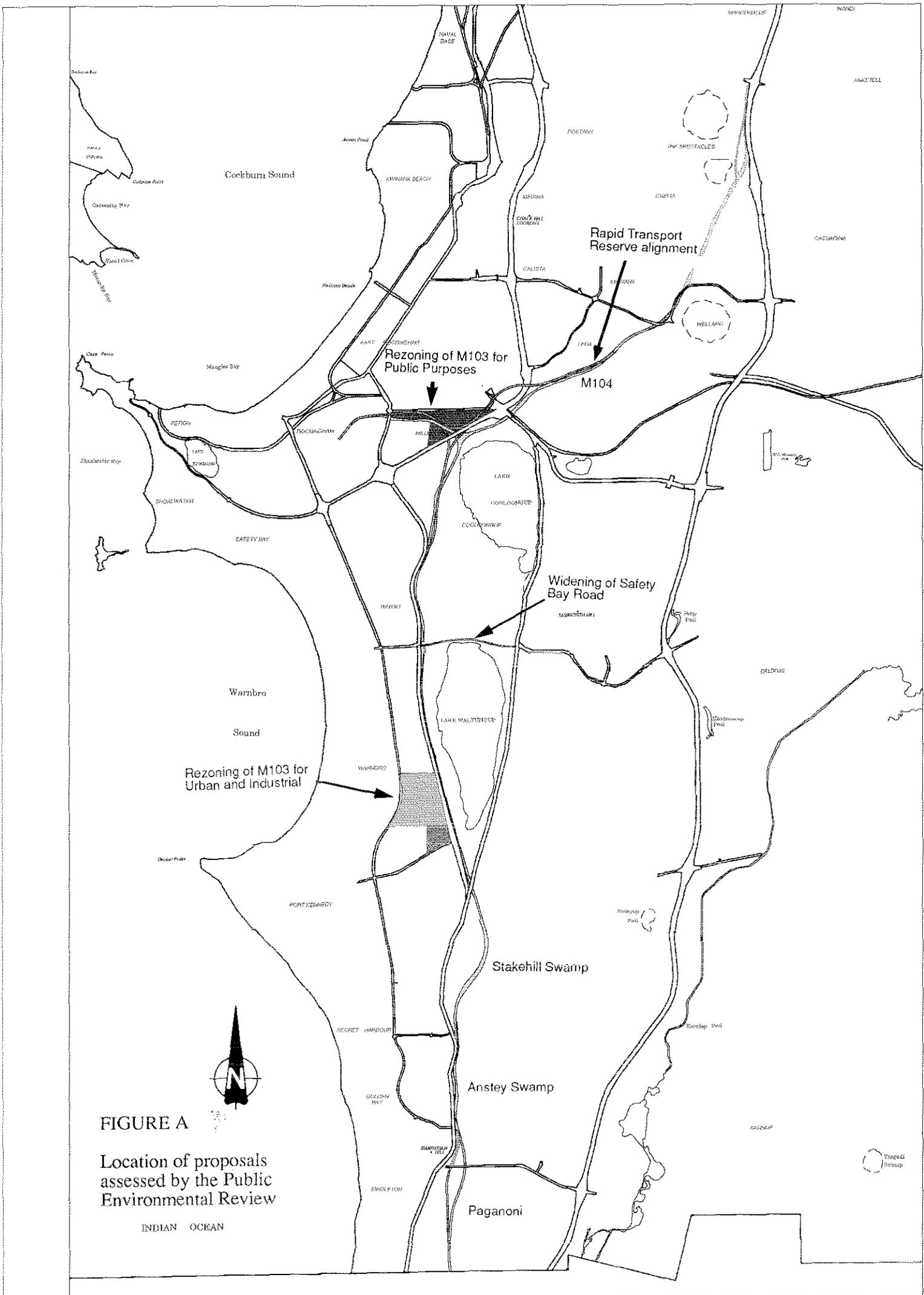


FIGURE A

Location of proposals assessed by the Public Environmental Review

INDIAN OCEAN



Subsequent changes to proposals

The Department of Planning and Urban Development is no longer proposing to delete the area in the north west of System Six Area M103 because of its high conservation value, and has given a commitment in the PER to this effect.

The Department of Planning and Urban Development has also changed the alignment of the Rapid Transport Reserve in response to concerns raised by the Environmental Protection Authority and the community.

3. Environmental impact assessment method

The environmental impact assessment for this proposal followed the *Environmental impact assessment administrative procedures 1993*, as shown in the flow chart in Appendix 1. The summary of submissions and the proponents response to those submissions appears in Appendix 2, and a list of submitters appears as Appendix 3. The proponent's commitments appear in Appendix 4.

In addition to following the administrative procedures, Department of Environmental Protection officers undertook a number of activities including meetings with officers of the Department of Planning and Urban Development, and the Department of Conservation and Land Management, site visits, literature reviews, and meetings and telephone conversations with Environmental Consultants Bowman Bishaw and Gorham and Malcolm Trudgen.

Limitation

This evaluation has been undertaken using information currently available. The information has been provided by the proponent through preparation of the Public Environmental Review document (in response to guidelines issued by the Department of Environmental Protection), by Department of Environmental Protection officers utilising their own expertise and reference material, by utilising expertise and information from other State government agencies, and by contributions from Environmental Protection Authority members.

The Environmental Protection Authority recognises that further studies and research may affect the conclusions. Accordingly, the Environmental Protection Authority considers that if the proposals have not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Environmental Protection Authority

4. Public submissions

The Public Environmental Review document prepared for this assessment was available for an eight week public submission period which closed on 4 May 1994. Comments were sought on the proposals from the public, community groups and State Government agencies. Thirty five individual submissions were received which raised a number of issues mainly relating, though not limited to:

- impact of the proposals on System Six Areas M103 and M104;
- impact of the proposals on The Spectacles;
- impact on flora and fauna;
- impact on wetlands such as Stakehill and Anstey Swamps;
- the Rapid Transport Reserve;
- proposals for changes to the System Six areas in general; and
- the Public Environmental Review process.

A detailed list of the issues raised in submissions and the proponent's response to these issues is incorporated in Appendix 2 of this report. Many of the issues raised are also specifically discussed in the following sections of this report.

There were a number of issues raised which are not directly relevant to this assessment such as the development of Secret Harbour and Port Kennedy, and the proposed Jandakot Botanic Park. Issues such as these have been responded to by the proponent, though are not discussed further in this assessment report.

The Department of Planning and Urban Development also has undertaken public consultation on the proposals being assessed through the structure planning process and through submissions on the Metropolitan Region Scheme amendments which were advertised for public comment in November 1993.

5. Key environmental issues and objectives of evaluation

5.1. Existing policy framework

5.1.1 Urban conservation

The Environmental Protection Authority has a strategy for urban conservation. This strategy has been established through the Conservation Through Reserves Study undertaken by the Conservation Through Reserves Committee which is endorsed by Government (refer section 5.1.1.1), and three environmental impact assessments of proposed developments over land with high conservation value which had not previously been recommended for conservation by the System Six Study (Ellenbrook, EPA, 1992c and Brixton Street, EPA, 1991 and 1992b)(refer Section 5.1.1.2).

The Environmental Protection Authority believes an adequate and representative system of reserves for the conservation of flora, fauna and landscape should be set aside, and that the integrity and conservation values of these reserves should be maintained and protected through proper management, and the attaining of security of tenure for the reserves.

The System Six Report has formed a principle focus for the Environmental Protection Authority's conservation efforts on the Swan Coastal Plain. The Environmental Protection Authority does also consider protection of areas outside of the Systems' recommendations if they have high conservation value or are regionally significant.

5.1.1.1 System Six Study

In 1972, the Environmental Protection Authority established the Conservation Through Reserves Committee to make recommendations with respect to National Parks and Nature Reserves of the State. Western Australia was divided into 12 different systems each representing a natural and demographic entity. The Perth metropolitan area was included within the Darling System, that is, System Six.

System Six covers the most intensively used part of the State where land values are high and where competition for differing land uses is often intense. The System Six Study attempted to define those parts of the region which should be kept mainly natural so as to preserve certain conservation, recreation and landscape values.

In 1983, the Environmental Protection Authority published and forwarded the System Six report to State Government after extensive public consultation (EPA, 1983 a & b). On 19 March 1984, State Cabinet accepted in principle the general recommendations contained in Part I of the System Six Report and approved of the progressive implementation of the detailed area recommendations contained in Part II.

Part II of the System Six Report made recommendations for the conservation of the area known as the Rockingham Lakes, that is Lake Cooloongup and Lake Walyungup (Recommendation M103). This is the System 6 Area which has the greatest potential to be significantly impacted on by the proposals contained in this Public Environmental Review assessment (refer Figure B). System Six Area M103 is recognised for its lakes, variety of different vegetation species and formations, and its abundance of bird life. This area has been included within the System Six recommendations because it constitutes open space of regional significance. This is due to the fact that it has conservation value and because it is a large attractive area within the South West Corridor, and as such its recreational importance is likely to grow in the future. It is recommended that the area become a Regional Park in recognition of its many values. The Environmental Protection Authority stated that the important management considerations for M103 include ensuring that the Lake Cooloongup area is managed primarily for the conservation of flora and fauna, and that Lake Walyungup area is managed to permit recreational use.

5.1.1.2 Conservation outside of System Six Areas

The scrutiny of areas outside the Systems' areas by the Environmental Protection Authority is the exception but any proposal which may impact on areas of high conservation value outside the Systems' areas is looked at carefully by the Environmental Protection Authority. Areas with regionally significant vegetative systems which are endangered may be recommended for protection. Examples of areas which have been assessed by the Environmental Protection Authority and have been found to have regionally significant conservation value which should be protected include Ellenbrook (EPA 1992c) and Brixton Street (EPA 1991 and 1992b). General criteria for determining regionally significant conservation value include:

- the regional vegetation complex is endangered (in general less than 10 per cent of the vegetation complex remains and less than 10 per cent is secured for conservation);
- the area should have a unique attribute or special feature such as diversity of plant and animal communities, habitat for species that are scarce or otherwise threatened and in need of protection, contain elements that have scientific and educational value and have a high degree of naturalness;
- the area should have a high degree of representativeness; and
- the area should be managed to ensure viability.

Decisions on managing impacts on individual species which are endangered have generally been the responsibility of the Department of Conservation and Land Management under the *Wildlife Protection Act* and the advice of that Department should be sought if species gazetted under the *Wildlife Protection Act* may be present. The Department of Conservation and Land Management may refer proposals to the Environmental Protection Authority for assessment.

The Environmental Protection Authority believes that decisions on protecting areas of remnant vegetation outside the above framework or outside of System Six for local conservation, linkages, buffers or local community use should be the responsibility of the planning agencies which have the framework to accommodate community interests in protecting the land for local conservation and recreation and to take into account the costs associated with this such as acquisition and loss of land for housing and other development.

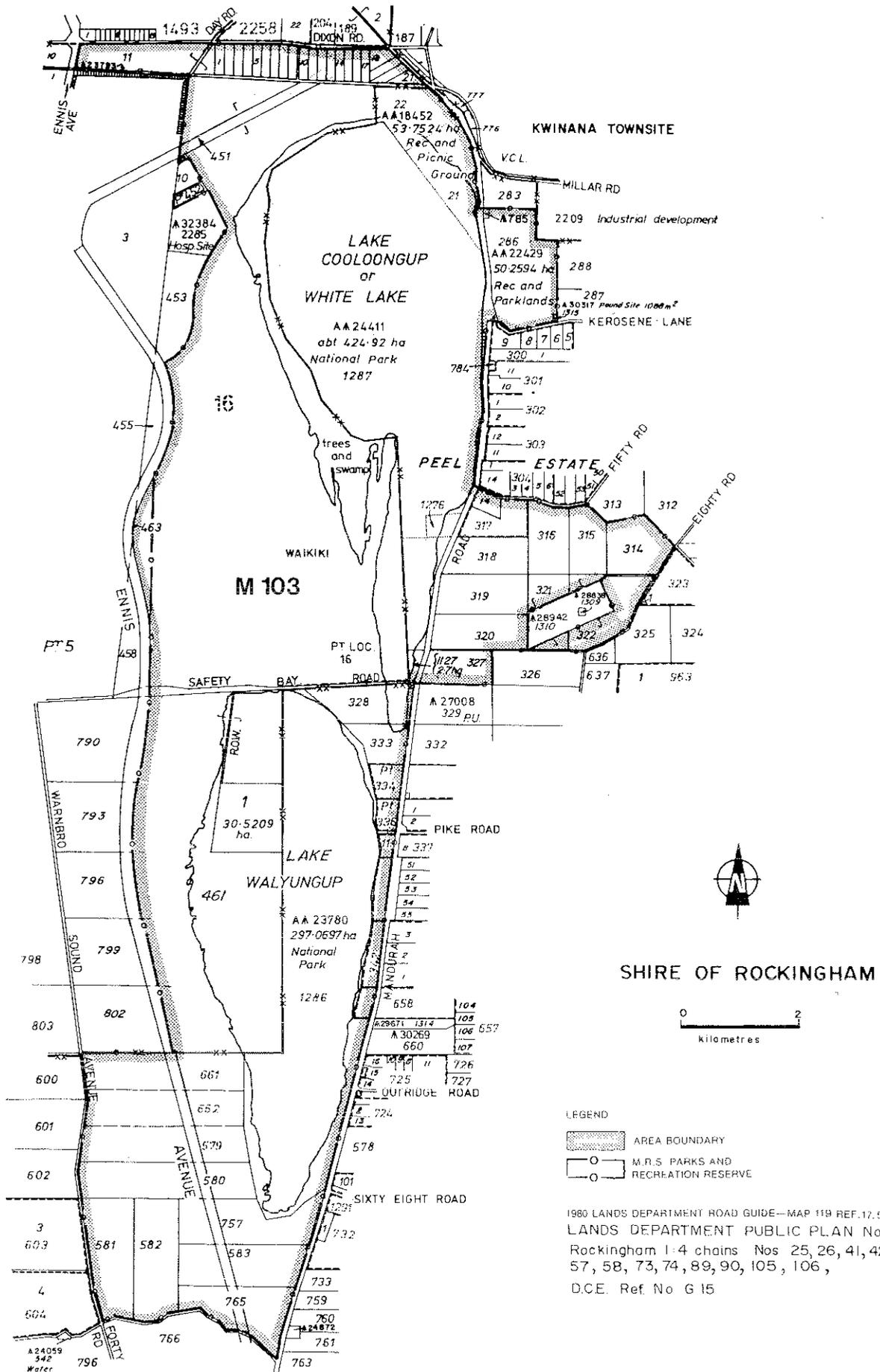


FIGURE B

By taking this approach, the Environmental Protection Authority does not wish to diminish the importance of the issues associated with local areas which do not have high conservation value or to discourage community concerns, but rather to indicate the role of the planning process in making decisions regarding the use of the land.

5.1.2 Wetland protection

Since 1971, the Environmental Protection Authority has consistently recognised the need to conserve lakes and wetlands, and has developed a strategy for wetland protection on the Swan Coastal Plain (EPA, 1993d). The Environmental Protection Authority discourages proposals which would affect significantly functional lakes and wetlands, that is:

- lakes nominated for protection in the Environmental Protection (Swan Coastal Plain Lakes) Policy (EPA, 1992a);
- representative wetlands recommended for protection in the Environmental Protection Authority's System Six report;
- wetlands with rare vegetation communities not adequately represented in reserves, or rare flora and fauna (and their habitats); and
- wetlands recognised by international agreement because of their importance primarily for waterbirds and their habitats.

There are a number of lakes and wetlands which have the potential to be affected by the proposals contained within this Public Environmental Review, particularly the proposed Rapid Transport Reserve and the widening of Safety Bay Road. These include:

- The Spectacles (Environmental Protection Policy Lakes & Beeliar Regional Park);
- Leda wetlands (Environmental Protection Policy Lakes & System Six M104);
- Lakes Cooloongup and Walyungup (Environmental Protection Policy Lakes & System Six M103);
- Stakehill Swamp (Environmental Protection Policy Lake);
- Anstey Swamp (Environmental Protection Policy Lake); and
- Paganoni (recognised high conservation area).

5.2 Technical information

5.2.1 Vegetation and flora

The vegetation and flora of the Swan Coastal Plain has been mapped by Heddle, Loneragan and Havel (1980) into a series of vegetation complexes that correspond in distribution to the major landform and soil units defined by Churchward and McArthur (1980). There are four main complexes affected by the proposals contained within this assessment, Quindalup, Cottesloe - Central and South, Herdsman, and Karrakatta - Central and South.

5.2.1.1 Quindalup complex

The Quindalup complex is restricted to the coastal dunes and has two major divisions. These are the areas of beach ridges, that is small dunes formed in parallel sequences at the back of the prograding beaches and stabilised where first formed, and the areas of larger dune that have been mobile and subsequently been stabilised by vegetation (Trudgen, 1994). The first division contains a number of species including *Agianthus cunninghamii*, *Anthericium divaricatum*, *Arctotheca nivea*, *Atriplex istaidea*, *Cakile maritima*, *Calocephalus brownii*, *Carpobrotus virescens*, *Pelargonium capitatum*, *Senecio lautus*, *Sonchus megalocarpus*, *Spinifex longifolius*, *Tetragonia implexicoma*, and *T. Zeyheri*. The mobile and stable dune division contains species such as *Acacia cyclopis*, *Anthrocercis littorea*, *Lepidosperma gladiatum*, *Myoporum insulare*, *Nitraria schoberi*, *Olearia axillaris*, *Scaevola crassifolia*, *S. nitida*, *Spyridium globulosum*, *Westringia rigida* and *Wilsonia backhousei* (Hedde et al., 1980).

The vegetation of the Quindalup complex differs in the way it looks and species composition from one place to another because of the variation in the dune environment caused by differences in soil and topography, availability of water particularly in the swales, and the degree of shelter from salt-laden winds (Hedde et al., 1980). The differences in the vegetation are apparent in a north south direction largely because of climatic variation, and in an east west direction because of the variability in landforms and habitats (Semeniuk et al., 1989). For example, in studies of areas of Quindalup sands, 81 species were recorded in the Mandurah region which were not recorded at Alkimos, Ningana, Wilbinga, or Breton Bay which are all in the northern Perth Metropolitan area or north of it. Conversely, 52 species which were recorded at Wilbinga or Breton Bay were not recorded at Mandurah and Alkimos and/or Ningana (Trudgen, 1994).

Specific vegetation surveys undertaken for this Public Environmental Review have found a number of areas with Tuart (*Eucalyptus gomphocephala*) as the main overstorey species on Quindalup soils. This is highly unusual as the structural formation of tall woodland of tuart is generally absent from the Quindalup complex (Hedde et al., 1980). In some areas of System Six Area M103, wetlands have been observed with a Tuart dominated overstorey and sedge (*Ghania trifida*) understorey (Trudgen, 1994 and Gibson, N., [Department of Conservation and Land Management], pers. comm., 1994). Once again this is a highly unusual, if not rare occurrence (Gibson, N., and Keighery, G., [Department of Conservation and Land Management], pers. comm., 1994 and Trudgen, 1994).

5.2.1.1.1 Conservation status of Quindalup complex

Seven per cent of the Quindalup vegetation complex is in the conservation estate managed by the Department of Conservation and Land Management (Portlock, et al., 1993).

As stated in Section 5.2.1.1, the vegetation of the Quindalup complex varies because of the climatic gradient in a north south direction, and because of the influence of factors such as soils and landforms in an east west direction. As a result of this variation, there is inadequate conservation of the variety of the geomorphic, habitat, and vegetation systems in the Quindalup dunes. Where reserves are present in the Quindalup dunes in the Perth Metropolitan area, there has been a tendency to preserve the more seaward assemblages at the expense of the more landward assemblages (Semeniuk et al., 1989). For example, 64 per cent of the remaining seven per cent of the Quindalup Complex in the conservation estate is in the Yalgorup National Park (Portlock et al., 1993). This is about 1600 hectares of an original extent of the Quindalup complex of about 45 350 hectares, or approximately 3.5 per cent of the original area of the complex. However, there are no areas of beach ridges in the Yalgorup National Park as they are not developed between Mandurah and Bunbury (Trudgen, 1994).

The major areas of Quindalup complex which are currently protected are in the southern part of its distribution (Yalgorup National Park), and in the northern part of its distribution, north of the metropolitan area. The beach ridges of the complex, which occur south of Perth on the Rockingham Beach Plain are poorly represented in reserves (Trudgen, 1994).

5.2.1.1.2 Conservation status of Tuart tall woodland

The natural range of Tuart is restricted to coastal and near coastal areas between Ludlow and Moore River, with Ludlow Forest being the most extensive area of Tuart in a conservation area (Trudgen, 1991). Studies undertaken some time ago found that 94 per cent of Tuart tall woodland had been cleared, and that woodlands of Tuart and mixed Tuart on coastal limestone made up 7.1 per cent of the remaining vegetation on the Swan Coastal Plain (Beard and Sprenger, 1984).

It is believed that the long term conservation status of the Tuart is not secure given the small percentage which remains and its inadequate representation in conservation reserves. Many areas of remaining Tuart stands on the coastal plain have had their understoreys cleared and/or are being used for grazing and consequently the stands are not regenerating. In the absence of changes in their management to permit the establishment of young trees, these stands will gradually disappear as the existing trees decline (Trudgen, 1984).

5.2.1.2 Cottesloe Complex — Central and South

The Cottesloe Complex - Central and South occurs on the Cottesloe unit of the Spearwood Dunes and varies from a heath on limestone outcrops to a mosaic of woodland of Tuart (*Eucalyptus gomphocephala*) and an open forest of tuart-jarrah-marri and *Banksia* on deeper sands.

This complex occupies a narrow belt on the eastern edge of the Quindalup complex within the study area.

5.2.1.2.1 Conservation Status of the Cottesloe Complex - Central and South

The Cottesloe Complex - Central and South had an original extent of about 44,893 hectares of which about 3678 hectares or 8.2 per cent is in conservation areas. The largest area of this vegetation complex in conservation reserves south of the Swan River would be in Yalgorup National Park, which has about 1140 hectares or 2.5 per cent of the original extent. Other than this, most of the reserve part of this vegetation complex would be in northern Metropolitan reserves such as Neerabup National Park. Therefore, it is considered that this vegetation complex is only moderately well conserved, and is best reserved at its extremities and is poorly reserved between Mandurah and Perth (Trudgen, 1994).

5.2.1.3 Herdsman complex

The Herdsman complex is restricted in the study area to major freshwater wetlands such as the Anstey Swamp, Stakehill Swamp and the floodplain of the Serpentine River. It is dominated by sedgeland and a woodland of the Flooded Gum (*Eucalyptus rudis*) and Paperbark (*Melaleuca*) species, with the species of paperbark depending on the local drainage and adjacent soils. Other species of plants on this complex include *Typha*, *Baumea*, *Juncus*, *Leptocarpus* and *Scirpus*.

5.2.1.4 Karrakatta Complex - Central and South

The Karrakatta Complex - Central and South occurs on the deep yellow-brown sands of the Karrakatta unit of the Spearwood Dune system. The vegetation consists mainly of an open forest of tuart-jarrah-marri with an understorey of *Banksia* species, *Allocasuarina fraseriana* (Sheoak) and *Agonis flexuosa* (Peppermint).

5.2.2 Fauna

There is little information available regarding the fauna of the south west corridor and much of the information that is available is of a regional nature. The study area contains a number of fauna habitat types. These include:

- the coastal dunes, dominated by low scrub;
- inland areas dominated by Tuart tall open woodland with an understorey of *Banksia* species, *Acacia* (*Acacia rostellifera*) or Blackboy (*Xanthorrhoea preissii*);
- major wetlands with large expanses of open water surrounded by sedges; and
- medium to small wetlands dominated by Tuart and Flooded Gum with a substorey of Paperbark species, and a dense understorey of shrubs and sedges.

A specific fauna study was undertaken for a number of areas which would be directly affected by the proposals subject to this assessment (Bamford, 1993). This study detected the presence of the gazetted rare species the Southern Brown Bandicoot (*Isoodon obesulus*) in The Spectacles, the proposed Hillman Public Purposes Reserve and around the wetlands north east of Lake Coolongup.

Several species of birds that are rarely seen near Perth are known or believed to occur in the area also. These include the Splendid Fairy-wren (*Malurus splendens*), the Common Bronzewing (*Phaps chalcoptera*), Scarlet Robin (*Petroica multicolor*) and Weebil (*Smicrornis brevirostris*) (Bowman Bishaw Gorham, 1994).

6. Discussion and evaluation of proposals

The different proposals being assessed have been evaluated for their potential environmental impacts on the issues identified in Section 5 of this report. The proposals and their potential impacts are summarised in Table 1.

The evaluation of the potential environmental impacts of these proposals is discussed more fully in the following sections.

Evaluation objectives

The Environmental Protection Authority's main objectives in this assessment are:

- to evaluate the extent of potential impacts in the context of whether they would jeopardise or preclude the implementation of System Six recommendations;
- to evaluate whether the proposals would adversely affect the regional conservation values represented within the System Six Areas;
- to ensure that there is good representation and management of the different vegetation types in conservation reserves;
- to prevent unnecessary clearing and development of unusual or rare vegetation complexes or flora;
- to ensure that the habitats of fauna, particularly rare or unusual fauna, are protected wherever possible;
- to evaluate the potential impact of the proposals on wetlands and lakes;

- to reach conclusions as to whether the potential impacts contravene established wetland protection policy, and whether they are environmentally acceptable; and
- to make recommendations regarding the level of environmental management required to mitigate and manage potential impacts.

Table 1. Potential significant environmental impacts of proposals

PROPOSAL	POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACT			
	Loss of regionally significant vegetation	Fauna (direct impact and loss of habitat)	Wetlands	System 6 - fragmentation of and loss from
Rapid Transport Route	Tuart, Blackboys, Tuart over <i>Ghania trifida</i> , <i>Banksia littoralis</i> on Quindalup. Declared rare flora.	Southern Brown Bandicoot, Avifauna	The Spectacles, Leda, Stakehill, and Anstey Swamp.	M103, M104, Beeliar Regional Park
Deletion of North West section of M103 for Special Uses.	Tuart, Blackboys, Tuart over <i>Ghania Trifida</i> , <i>Banksia littoralis</i> on Quindalup.	Southern Brown Bandicoot, Avifauna	Small wetlands north of Lake Coo롱gup	M103
Deletion of the South West corner of M103 west of Ennis Avenue for Urban and Industrial	Quindalup Complex			M103
Widening of Safety Bay Road between Ennis Avenue and Mandurah Road	Tuart and Paperbark vegetation associations		Lakes Coo롱gup and Walyungup and associated wetlands	M103

6.1 Rapid Transport Reserve between Jandakot and Mandurah

The Department of Planning and Urban Development has identified a Rapid Transport Reserve between Jandakot and Mandurah. This reserve is intended to accommodate the construction of a high speed commuter system between Perth, Rockingham and Mandurah at some later stage.

6.1.1 Evaluation

The Environmental Protection Authority has evaluated this proposal in terms of its potential impacts on System Six Recommendations M103, M104, the Beeliar Regional Park, and on regionally significant vegetation, fauna, and wetlands (Table 1). The objectives of this evaluation are as detailed in Section 6.

The Rapid Transport Reserve was introduced as a proposal through the Metropolitan Region Scheme amendment process and was not part of any previous structure planning for the South West Corridor. As such, the Environmental Protection Authority had little opportunity to have early input to the determination of an environmentally suitable alignment.

The Environmental Protection Authority did not believe that the alignment presented in the advertised amendment to the Metropolitan Region Scheme was environmentally acceptable, and therefore entered into negotiations with the Department of Planning and Urban Development to investigate alternatives. This view regarding environmental acceptability was also supported by the Department of Conservation and Land Management, and all but two of the 35 public submissions received. The public submissions largely argued that little or no consultation had taken place on the selection of a public transport system or route, and that the alignment advertised had unacceptable environmental impacts in a number of areas. Public submissions also argued that the identification of an alignment in the advertised amendment would pre-empt the outcome of the Government funded South West Area Transit Study.

The Department of Planning and Development has stated that it has based its route selection on the alternatives which were investigated by the South West Area Transit Study team, and has argued that there are no feasible alternatives available which have the minimal economic and social costs associated with this alignment.

The Environmental Protection Authority would prefer that a Rapid Transport Reserve alignment be found which does not have the range of environmental impacts associated with this alignment. However, in recognition of the Department of Planning and Urban Development's argument that economically and socially feasible alternatives are not available, and in recognition of the need to service the Rockingham area, the Environmental Protection Authority has negotiated with the Department of Planning and Urban Development to modify the advertised alignment in order to minimise its impacts on the identified conservation values. The outcomes of these negotiations are as shown in Figures 1 - 12.

The evaluation of each section of the advertised and modified alignment is as discussed below.

6.1.1.1 Forrest Road, Jandakot to Wellard Road, Kwinana

Advertised alignment and evaluation of its potential environmental impacts

The Rapid Transport route proceeds southwards from Forrest Road, Jandakot following the alignment of the Kwinana Freeway. The proposed route deviates away from Kwinana Freeway in a westerly direction just north of Thomas Road and proceeds through undeveloped land in Parmelia and Casuarina until it intersects with Wellard Road (State Planning Commission, 1993c).

This section of the route impacts on the Beeliar Regional Park by alienating four hectares from the corner of the The Spectacles wetland area. The proposed route does not impact directly on the wetlands themselves or any regionally significant, or rare and endangered flora or fauna (Figure 1).

An alternative was also discussed in the State Planning Commission's report (1993c). This alternative involved proceeding down the alignment of the Kwinana Freeway until south of Thomas Road and then deviates in a westerly direction through Parmelia/Casuarina until it

intersects with Wellard Road. This route will have no impact on The Spectacles, but could have an impact on an area identified by the Department of Conservation and Land Management as having the Declared Rare Flora *Diuris micrantha*.

The Spectacles area has been recognised for its conservation values and has been included as part of the Beeliar Regional Park. It is a habitat for two gazetted rare species, that is, the Southern Brown Bandicoot and the Freckled Duck and the wetlands have been assessed to be in the High Conservation Category for management and are protected under the Environmental Protection Policy for Lakes (EPA, 1992). The area also has a large, relatively undisturbed Jarrah/*Banksia* woodland, the largest and best-preserved example of a mature, closed *Melaleuca* wetland, a Declared Rare Flora species, *Dodonaea hackettiana*, a rare lizard species *Lerista lineata*, a frog species, *Crinia georgiana*, which is rare on the Swan Coastal Plain, and a nesting colony of the Rufous Night-heron (Bowman, Bishaw, Gorham & DPUD, 1994). A working group has been formed for The Spectacles which has prepared and started implementing a development plan for the area, indicating a high degree of commitment by the community to preservation of the conservation, recreation and education values of this area.

The Environmental Protection Authority considers that any alignment which has an impact on The Spectacles area is not desirable. Unfortunately, alternative alignments investigated, including the advertised easterly alignment, have unacceptable impacts on populations of the declared rare flora species *Caladenia huegelii* and *Diuris micrantha* which occur in the proposed Parks and Recreation and nature reserve to the south of Thomas Road.

The Environmental Protection Authority has carefully evaluated and attempted to balance the impacts of the advertised westerly and easterly alignments in this area and possible alternatives to these. It is concluded that the westerly alignment has relatively lower environmental impacts than the easterly alignment and other alternatives investigated. Careful planning and management at the construction stage will be required to mitigate potential impacts associated with issues such as hydrology, fauna movement and public access. The area of upland vegetation to the east of Johnson Road once reserved for Parks and Recreation should be included in The Spectacles area and managed for conservation purposes.

The Environmental Protection Authority considers that any further intrusion into The Spectacles area is environmentally unacceptable.

6.1.1.2 Wellard Road Kwinana, to Mandurah Road, Kwinana (through Leda) Advertised alignment and evaluation of its potential environmental impacts

The proposed Rapid Transport Reserve alignment proceeds from Wellard Road in a south westerly direction until it reaches and crosses the existing Mundijong/Kwinana railway line and Mandurah Road (State Planning Commission, 1993c).

The original Transport Reserve alignment as advertised passes through the buffer of wetland in Leda, through an Environmental Protection Policy Lake on the western side of the Leda Regional Open Space just to the east of Mandurah Road, and through upland vegetation of the Cottesloe Complex - Central and South within the Regional Open Space.

The great diversity of habitats available through this area means that it had the highest number of fauna species observed during fauna surveys undertaken as part of the Public Environmental Review. Evidence of the Southern Brown Bandicoot was found to be abundant around the Environmental Protection Policy Lake and the smaller wetland to the east of that. Other species observed around these wetlands were the Golden Whistler, which is rarely recorded on the Swan Coastal Plain and several other species such as the Common Bronzewing, Red-capped Parrot and the Splendid Fairy-wren which are uncommon close to Perth (Bamford, 1993). The rail alignment as proposed would result in the destruction of some of these high conservation value habitats.

The vegetation survey found that the wetlands had a significant range of vegetation types in good to very good condition. In addition, there is upland vegetation of the Cottesloe Complex — Central and South which is in good condition (Trudgen, 1994). As discussed in Section 5.2.1.2.1, this vegetation complex is poorly conserved with only 8.2 per cent contained in conservation areas, with the only significant area in conservation reserve south of the Swan River being in Yalgorup National Park near Mandurah. The rail alignment as proposed would result in the further loss of some of this vegetation which is within System Six Area M104, and is now also contained in a Parks and Recreation reserve currently being managed by the Department of Conservation and Land Management.

Negotiated alternative alignment

The Environmental Protection Authority has negotiated with the Department of Planning and Urban Development to shift the alignment of the reserve further north in the Leda area so that it now lies largely within the area which has already been identified for urban use, thereby minimising additional impact on the upland vegetation. The shifting of the reserve further north also removes the alignment from the buffer and fringing vegetation of the central wetland, and avoids traversing through the larger Environmental Protection Policy Lake at the western end of the Leda Regional Open Space by crossing through a cleared area to the north instead. As such, this realigned section of the reserve is environmentally acceptable (Figures 3 and 4). Issues such as fauna movement will need to be addressed at the construction stage.

6.1.1.3 Mandurah Road, Kwinana to Goddard Road, Rockingham

Advertised alignment and evaluation of its potential environmental impacts

The advertised alignment travels from Mandurah Road south of the Garden Island Highway Reserve, swinging north to run just north of the residential area south of Dixon Road (within System Six Area M103), crossing over Ennis Avenue north of the technical college and terminating just on the eastern side of Goddard Street in Rockingham (State Planning Commission, 1993c).

This alignment isolates an area of high quality Tuart woodland and Blackboy scrub from the remainder of System Six Area M103 (Bowman, Bishaw, Gorham & DPUD, 1994). The alignment takes the Transport Reserve through two wetlands to the north-east of Lake Cooloongup which have an overstorey of Tuart. This is quite an unusual vegetation association and reflects the fact that the soil is Quindalup rather than the Cottesloe unit of the Spearwood dunes found further to the east. These are rare vegetation types and their occurrence over wetlands is rare, although the lower tree layers of Paperbark (*Melaleuca*) shrub layers of *Acacia* and sedge layers of *Ghania* and *Baumea* are similar to ones found in wetlands in the Cottesloe Complex - Central and South further to the east (Trudgen, 1994).

Negotiated alternative alignment

An alternative alignment was negotiated between the Environmental Protection Authority and the Department of Planning and Urban Development which would enter M103 from the north of Dixon Road immediately to the east of the caravan park and would parallel the Garden Island Highway Reserve on its northern side curving back north along the southern edge of Dixon Road towards Ennis Avenue. A new interchange which straddles the Garden Island Highway Reserve would move the alignment out of the high quality Tuart vegetation in the Hillman area of M103 as far as possible, and approximately 150 - 200 metres further west from Lake Cooloongup. A deliberate attempt has been made to parallel the Garden Island Highway Reserve so as to minimise any additional alienation and clearing impacts on System Six Area M103 (Figures 4, 5 and 6).

This alternative alignment would avoid impacting altogether on the high conservation area to the north east of Lake Cooloongup, will minimise impact on the Tuart dominated vegetation in the Hillman area of M103, and will no longer impact on the fringing vegetation on the western side of Lake Cooloongup. However, the modified alignment will have increased impact on the stand of Blackboy in the area which has been identified by Trudgen (1994) as being of regional conservation significance. The modified alignment will also still result in the fragmentation and isolation of some areas from the main area of M103. Both of these are undesirable, though unavoidable impacts. Management of issues such as maintenance of fauna movements will need to be addressed at the construction stage.

6.1.1.4 Rockingham to north of Mandurah

Advertised alignment and evaluation of its potential environmental impacts.

The advertised alignment travels south from the interchange area just south of the Garden Island Highway, skirts the Rockingham Kwinana District Hospital, passes between the Rockingham Golf Course and existing residential area and joins into Ennis Avenue just south of the Golf Course. The alignment then generally follows the eastern edge of Ennis Avenue extending between 22 to 60 metres beyond the Ennis Avenue road reserve. At the intersection of Mandurah Road and Ennis Avenue, the Transport Reserve swings in an easterly direction to cross over Mandurah Road skirting the south western tip of Stakehill Swamp. The Transport Reserve then goes back towards Mandurah Road passing through part of Anstey Swamp and travels south through the Paganoni area towards north Mandurah.

This alignment would impact on the fringing vegetation of Lake Cooloongup to the south of the Garden Island Highway reserve, and would result in the loss of Tuart woodland and wetlands with Tuart dominated overstorey. As stated in section 5.2.1.1 and its subsections, the occurrence of wetlands with a Tuart dominated overstorey is rare, and has only been observed in one other area in a recent study undertaken by the Department of Conservation and Land Management covering the whole of the Swan Coastal Plain (Gibson, N and Keighery, G [Department of Conservation and Land Management] *pers. comm.*, 1994). Since 94 per cent of Tuart woodland has already been cleared, and there is very poor representation of Tuart dominated vegetation in reserves, any further loss of Tuart woodland would be environmentally unacceptable.

The vegetation of the Lake Walyungup area south of Safety Bay Road is different to that north of the road in that it contains no Tuart woodland in the vicinity of the proposed Rapid Transport Reserve alignment, however it does contain areas with rare and unusual vegetation which require protection. This flora includes the species *Schoenus asperocarpus*, *Linum marginale* and *Acacia pulchella var goadbeyi* (Keighery, G., [Department of Conservation and Land Management] *pers. comm.*, 1994). These species occur on the western side of Lake Walyungup in the vicinity of Safety Bay Road. The Environmental Protection Authority therefore wants to ensure that the Transport Reserve intrudes as little as possible into this area of System Six Area M103.

The alignment passes close to Stakehill Swamp (approximately 20 metres), though does not intrude upon the wetland itself, or the fringing vegetation. Anstey Swamp is impacted by the Transport Reserve, although the reserve does not enter the area of the wetland defined under the Environmental Protection Policy for Lakes. In addition, a section of the Paganoni Reserve would be alienated from the main core area by the proposal. The Paganoni area was identified as a high conservation value area during the environmental audit of the South West Corridor which took place as part of the structure planning for this corridor (Semeniuk, 1991).

Negotiated alternative alignment

The Environmental Protection Authority has negotiated for the alignment to be shifted further west along its entire route south of the interchange area within M103. This results in the

alignment moving approximately 150 to 200 metres further west of Lake Cooloongup with the alignment being contained entirely within the Ennis Avenue road reserve from just south of the golf course to just north of Safety Bay Road. This will avoid any direct impact on the identified Tuart dominated wetlands within M103, and minimise the need for clearing of any Tuart trees. It also negates the need to alienate any more land from System Six Area M103.

From Safety Bay Road southwards, the alignment has been moved further west so that it only goes 12.5 metres beyond the existing Ennis Avenue road reserve, thereby avoiding impact on the identified areas of rare and unusual flora, and minimising the amount of land alienated from System Six Area M103.

In the Anstey Swamp area, the Transport Reserve alignment has been moved entirely into the road reserve so as to avoid any additional impact on the swamp. In the Paganoni area, the alignment has also been moved further west so that it is now largely outside of the well vegetated areas, and will only alienate a small portion of land from the core area (Figures 6 - 12).

6.1.1.5 Summary

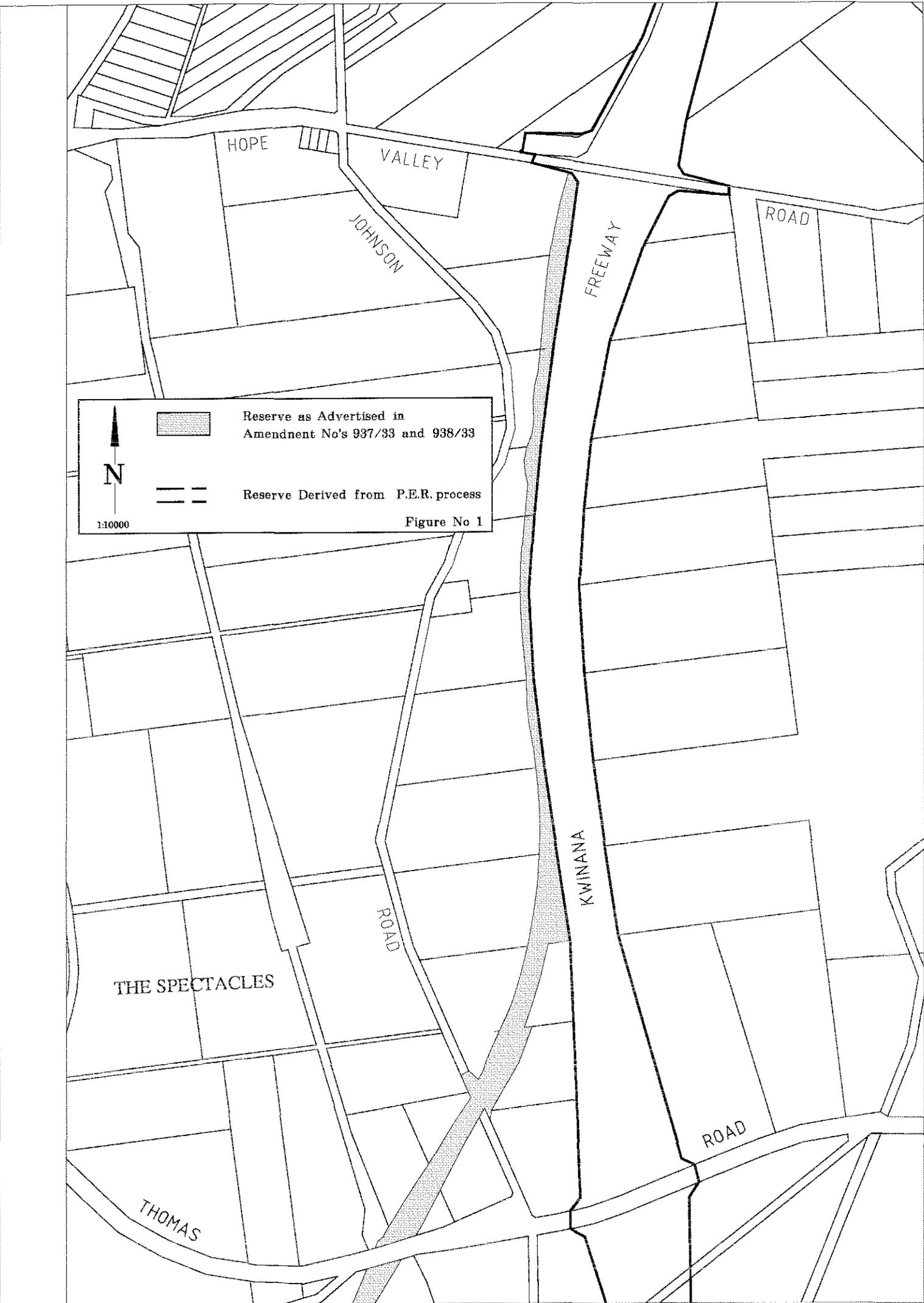
In summary, the Environmental Protection Authority has worked within the constraints imposed by outside factors to secure a modified Rapid Transport Reserve alignment which reduces the environmental impacts associated with the original alignment. This modified alignment is an improvement environmentally on the original alignment because it:

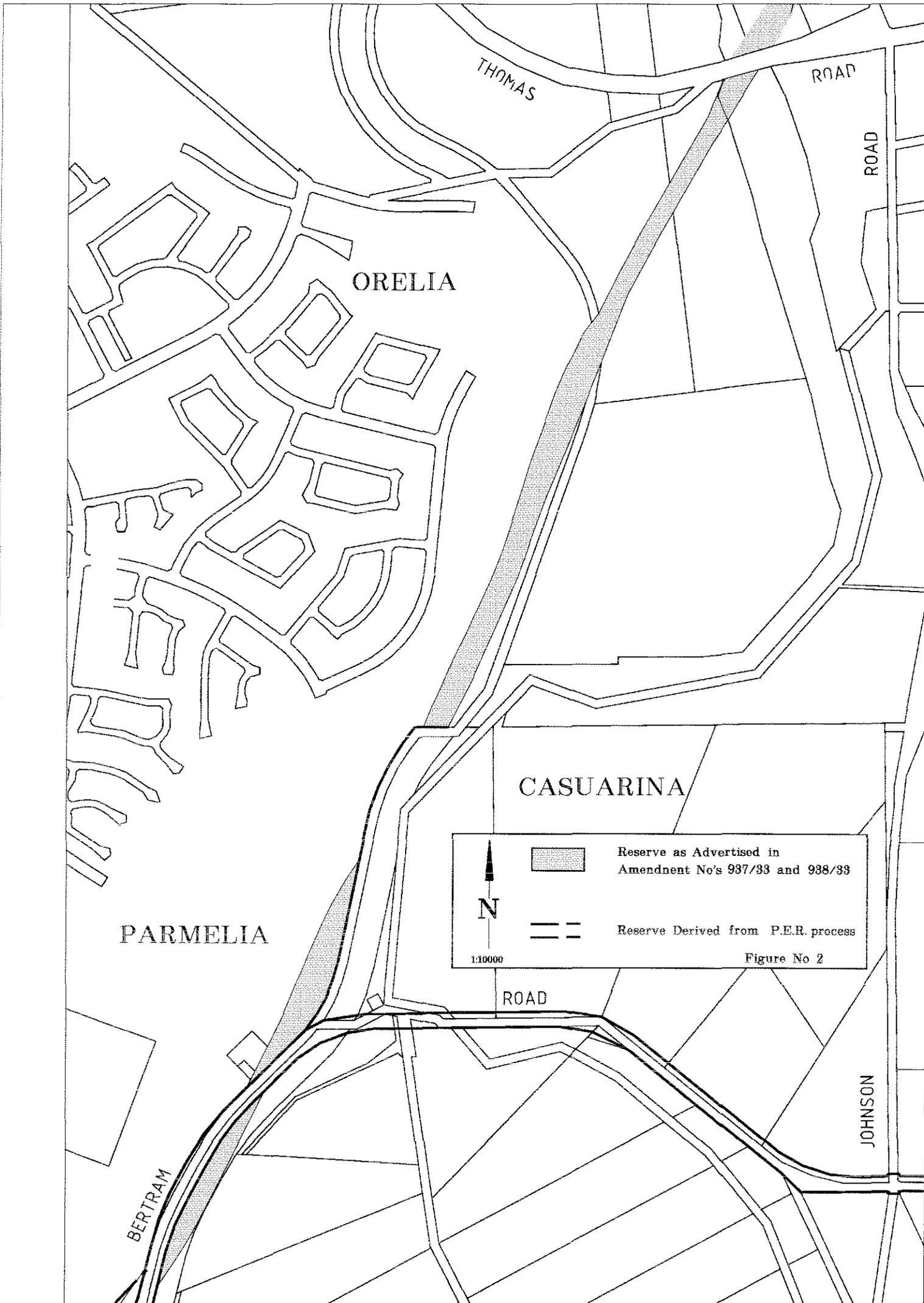
- avoids the area of Declared Rare Flora to the south of Thomas Road;
- avoids directly impacting on any of the wetlands in the Leda area;
- reduces the amount of upland Cottesloe - Central and South vegetation to be cleared;
- avoids the highest conservation value areas in the north and north east of System Six Area M103;
- moves out of the fringing vegetation of Lake Cooloongup;
- largely avoids the Tuart and Tuart over *Ghania trifida* vegetation association in the vicinity of Lake Cooloongup;
- avoids rare and unusual vegetation in the Lake Walyungup area;
- is moved out of Anstey Swamp as far as is practical; and
- is moved to abut the edge of the Paganoni area, thereby minimised fragmentation of land from the core of the conservation area.

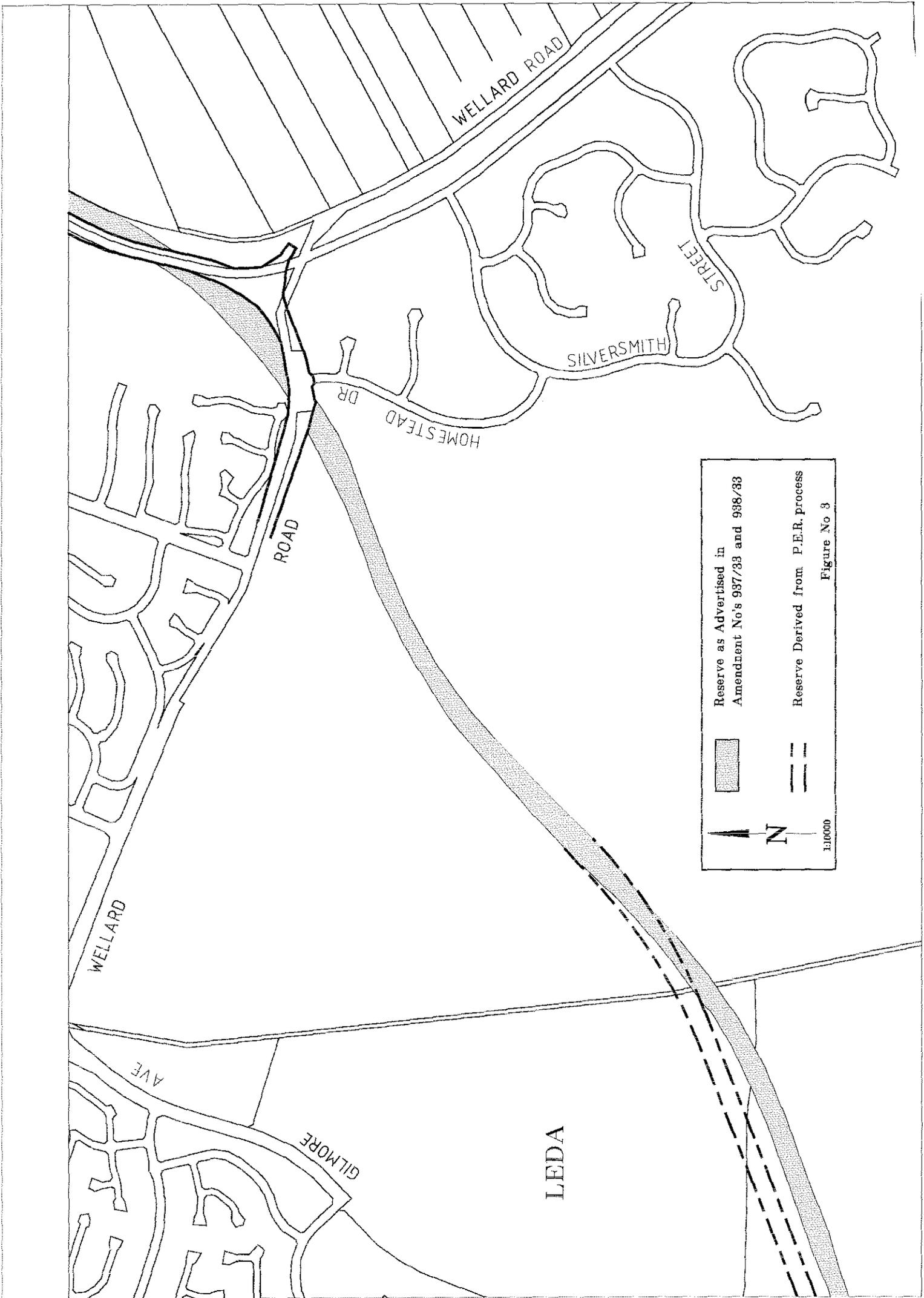
Recommendation 1

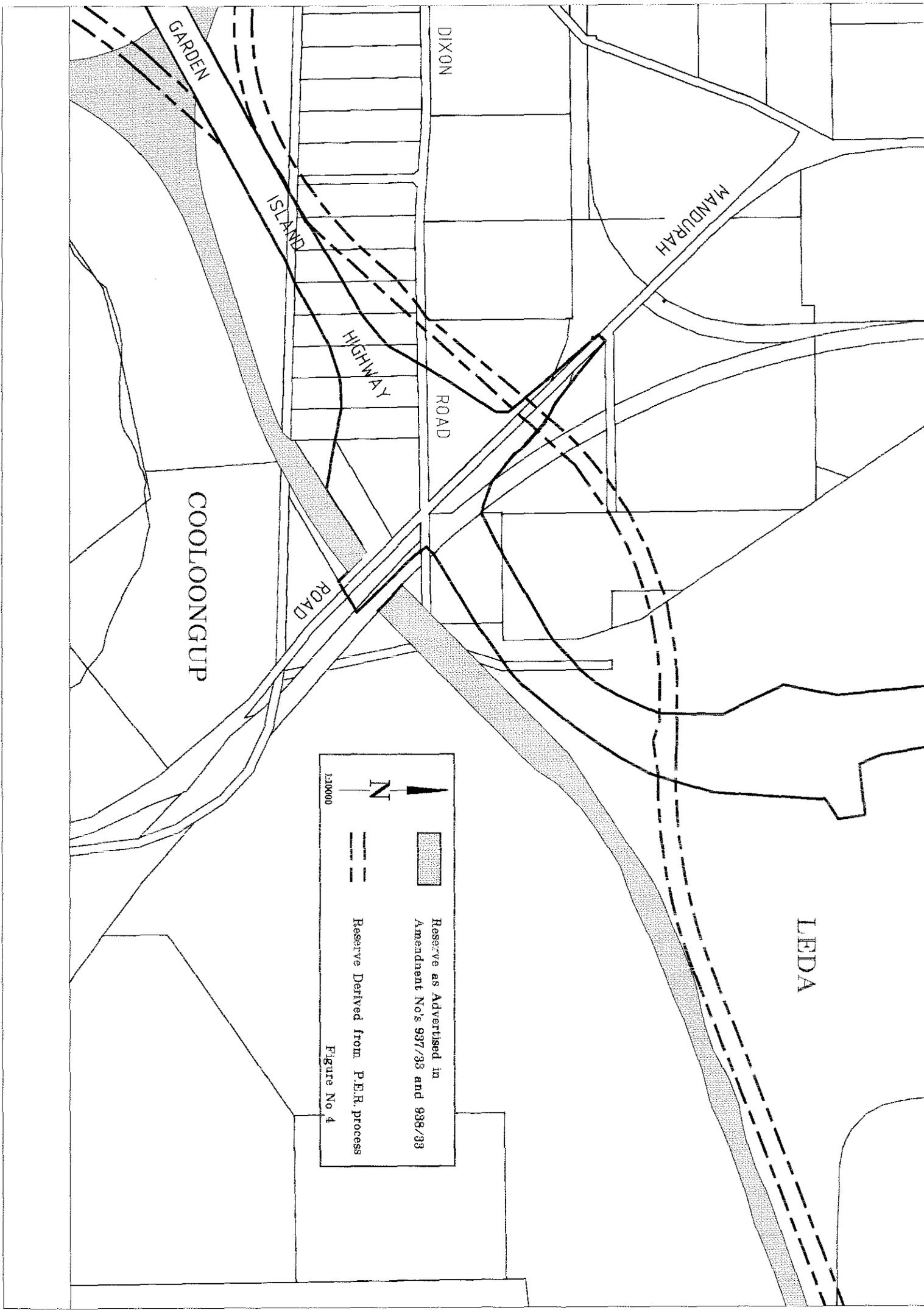
The Environmental Protection Authority recommends that the proposed alignment of the Rapid Transport Reserve as modified during negotiations with the Department of Planning and Urban Development shown in Figures 1 to 12 of this assessment report, is environmentally acceptable. The Environmental Protection Authority recommends that the Metropolitan Region Scheme amendment be modified to reflect this new alignment.

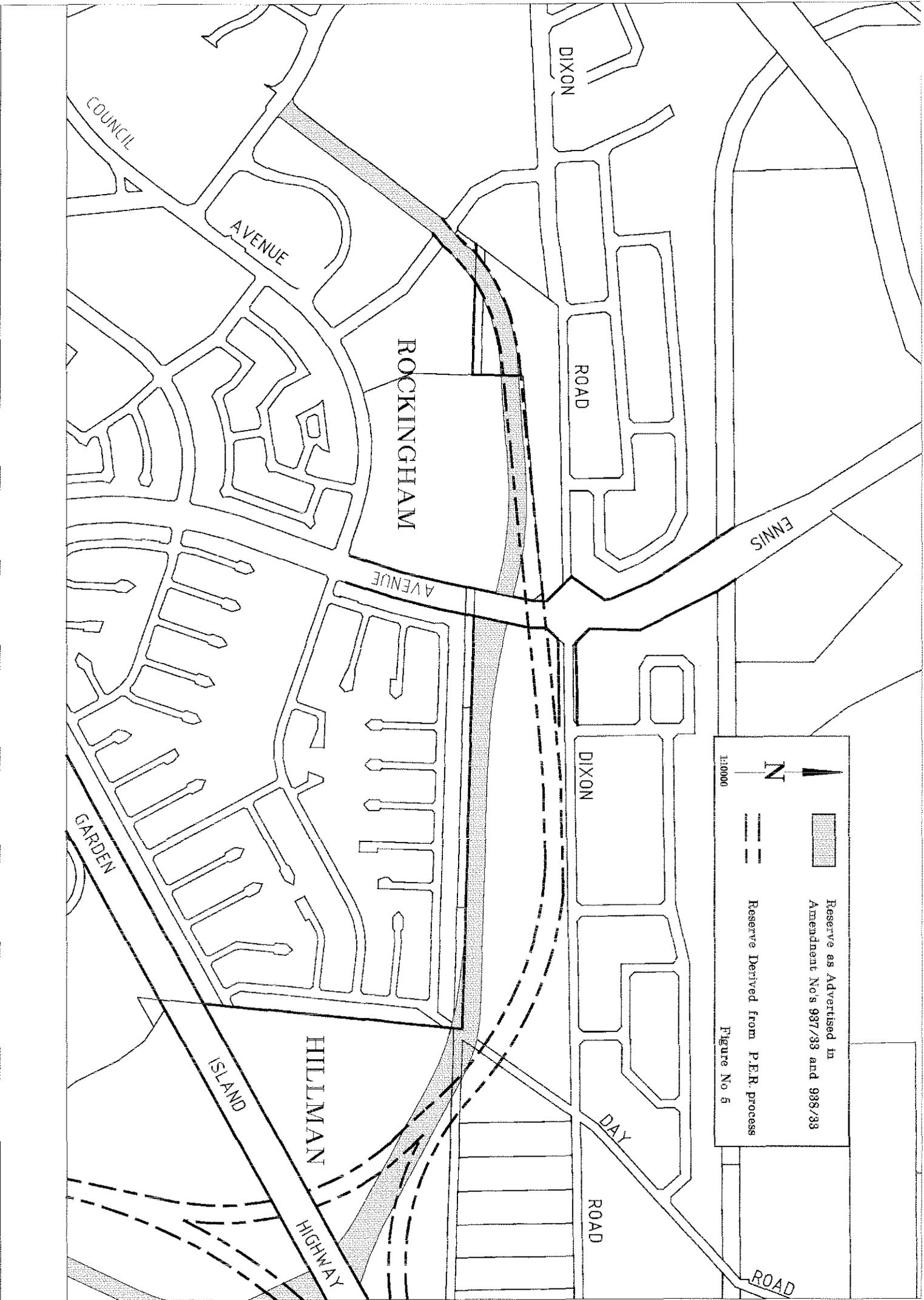
The Environmental Protection Authority considers that the potential environmental impacts associated with the construction and operation of the Rapid Transport system could be further reduced prior and during construction by requiring an Environmental Management Programme to be prepared which takes into account all the identified conservation values in this corridor.













HILLMAN

ISLAND

HIGHWAY

GARDEN

LAKE COOLOONGUP

DRIVE

ELANORA

ENNIS

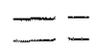
AVENUE



1:10000



Reserve as Advertised in
Amendment No's 937/33 and 938/33

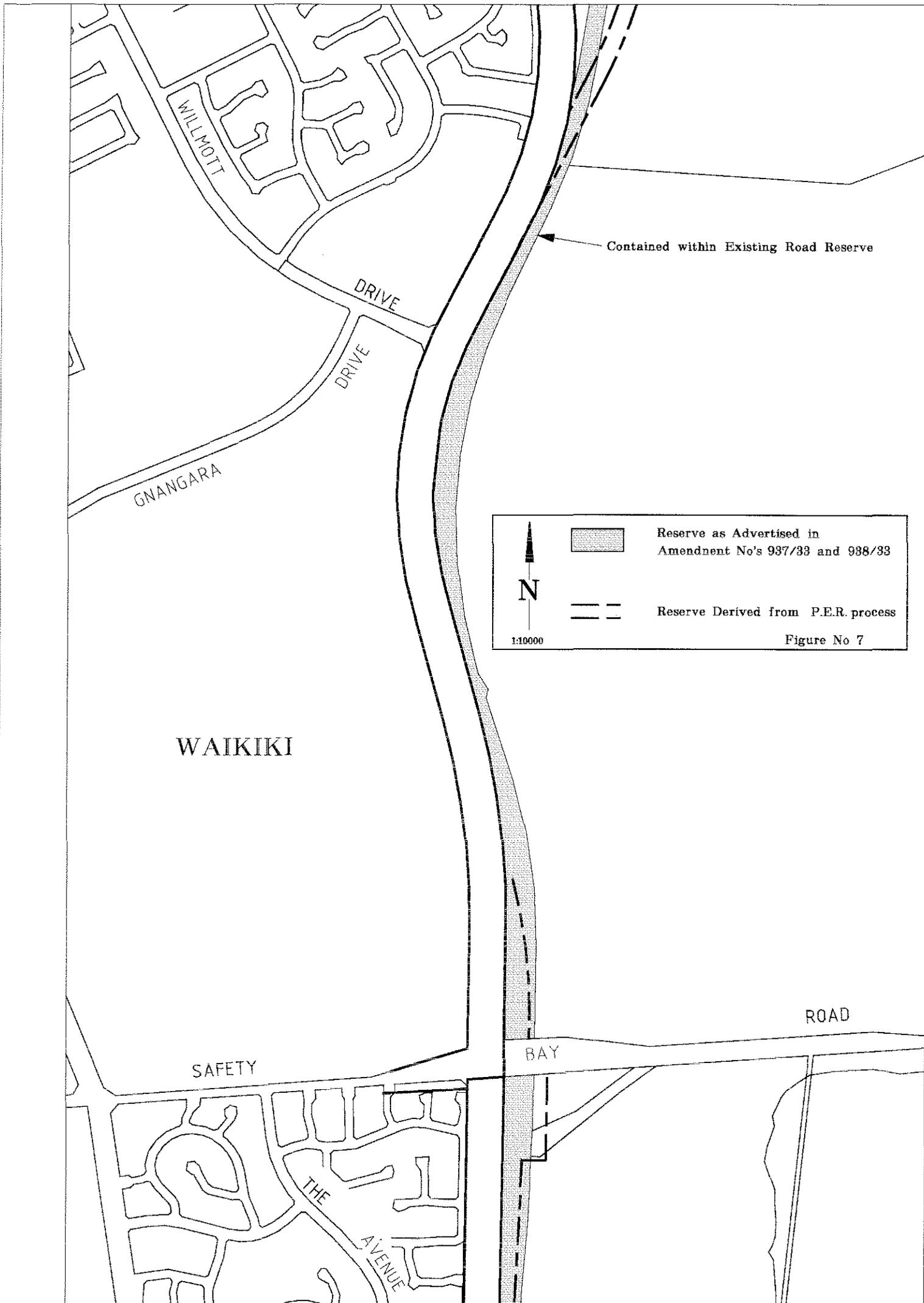


Reserve Derived from P.E.R. process

Figure No 6

ROCKINGHAM

GOLF COURSE



Contained within Existing Road Reserve

		Reserve as Advertised in Amendment No's 937/33 and 938/33
		Reserve Derived from P.E.R. process
1:10000		Figure No 7

WAIKIKI

SAFETY

ROAD

BAY

THE AVENUE



WARNBRO

WARNBRO

ENNIS

LAKE

WALYUNGUP

SOUND

CHELMSFORD AVE

AVENUE

AVENUE

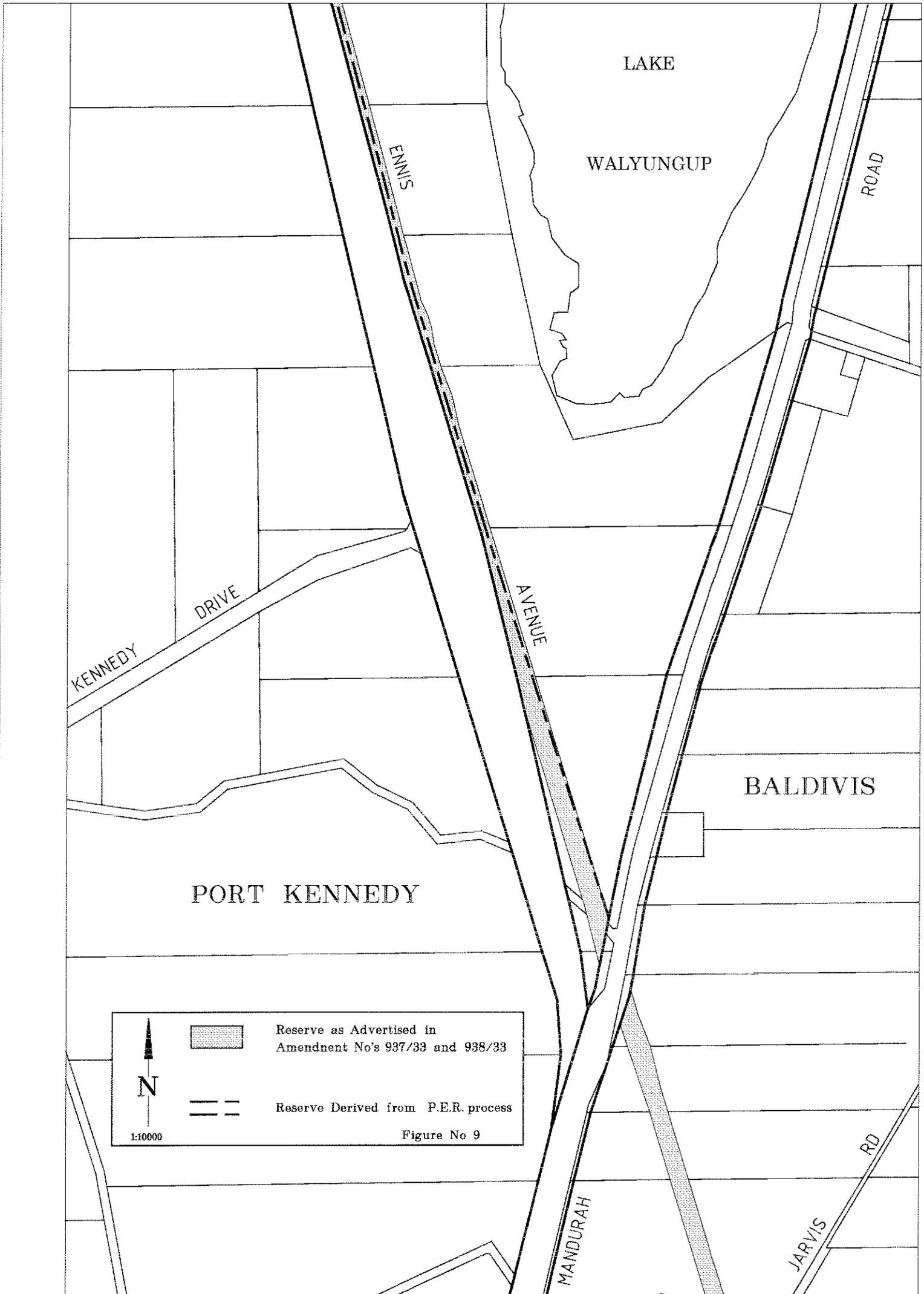
N

1:10000

Reserve as Advertised in
Amendment No's 937/33 and 938/33

Reserve Derived from P.E.R. process

Figure No 8



LAKE

WALYUNGUP

ROAD

FINNIS

AVENUE

DRIVE

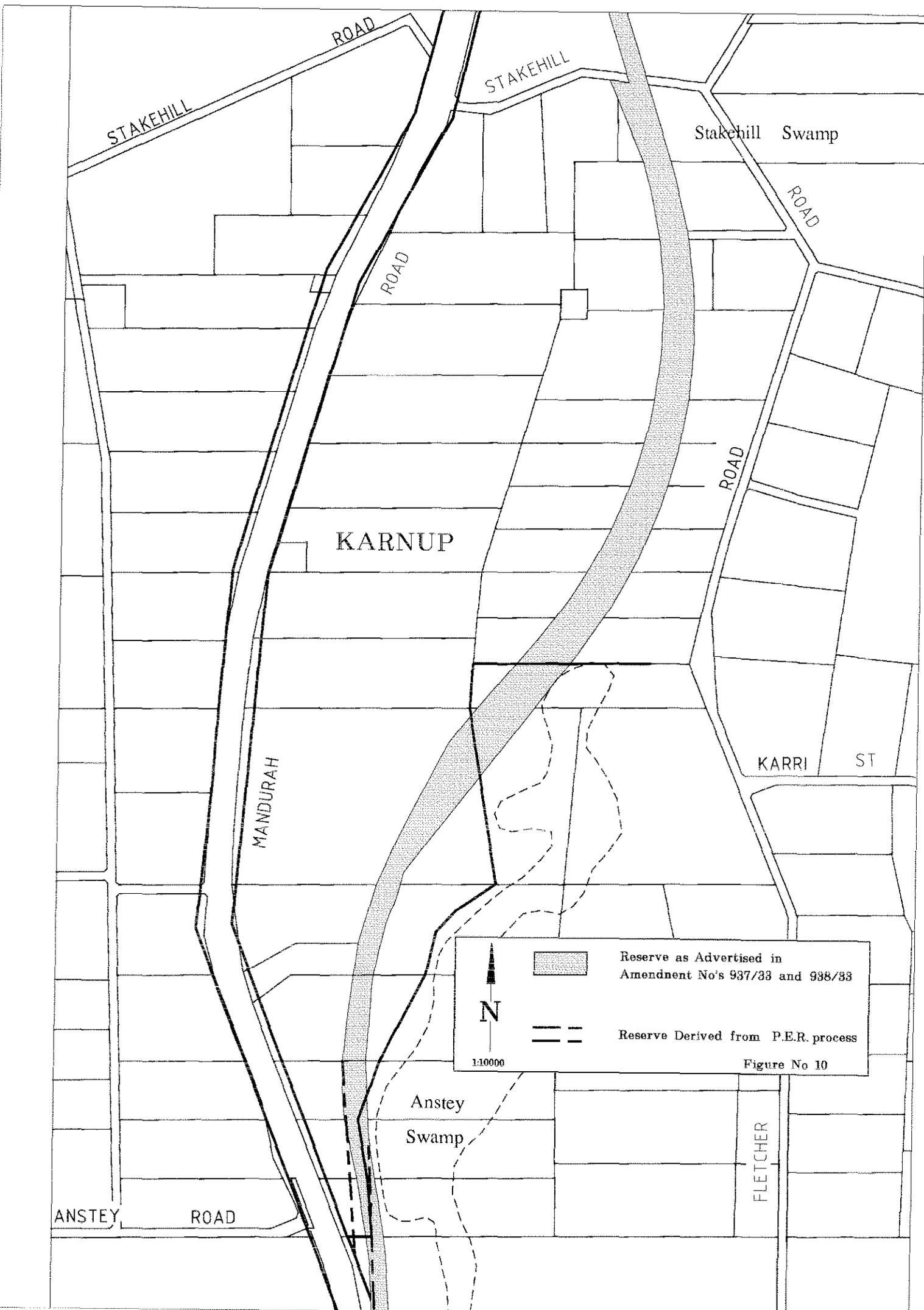
KENNEDY

BALDIVIS

PORT KENNEDY

 1:10000		Reserve as Advertised in Amendment No's 937/33 and 938/33
		Reserve Derived from P.E.R. process

Figure No 9



ANSTEY

ROAD

Contained within existing road reserve

KARNUP

Ansteys
Swamp

ROAD

ROAD

FLETCHER

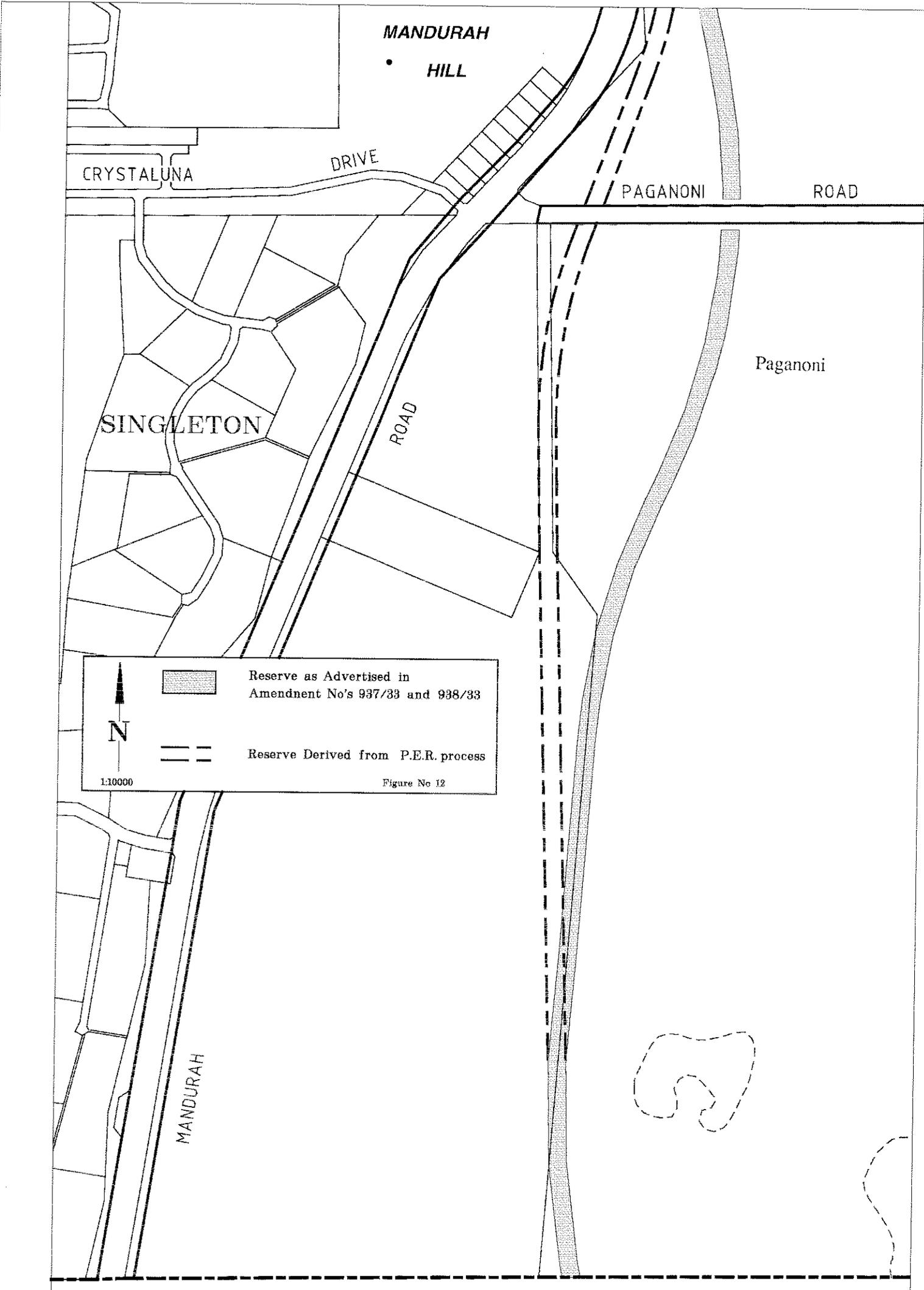
MANDURAH

DAMPIER

DRIVE


 Reserve as Advertised in
Amendment No's 937/33 and 938/33
 Reserve Derived from P.E.R. process
 1:10000
 Figure No 11

MANDURAH
• HILL



MANDURAH

• HILL

CRYSTALUNA

DRIVE

PAGANONI

ROAD

SINGLETON

ROAD

Paganoni

 N		Reserve as Advertised in Amendment No's 937/33 and 938/33
		Reserve Derived from P.E.R. process

1:10000 Figure No 12

MANDURAH

Recommendation 2

The Environmental Protection Authority recommends that prior to construction, an Environmental Management Programme be prepared to the satisfaction of the Environmental Protection Authority on the advice of the Department of Conservation and Land Management. The objective of this Environmental Management Programme is to ameliorate and mitigate the environmental impacts associated with the construction and operation of the Rapid Transport system, particularly in relation to impacts on vegetation, fauna, hydrology, wetlands and access to reserves. The Environmental Management Programme should be released for public review for four weeks at the time of its assessment.

6.2 Deletion of north west portion of System Six Area M103 for Special Uses

One of the proposed amendments to the Metropolitan Region Scheme was to rezone a portion of System Six Area M103 in the Hillman area from the Parks and Recreation Reservation to Special Uses for potential use as a University or sporting facility site (Figure A). The Department of Planning and Urban Development has since given a commitment that they will recommend that this rezoning proposal be removed from the amendment and that this area remain as Parks and Recreation Reserve within System Six Area M103.

6.2.1 Evaluation

As can be seen from the Table 1, if the proposal to remove the north west corner of System Six Area from Parks and Recreation were to proceed, it would have significant environmental impact on regionally significant vegetation types, and rare and endangered fauna, and would fragment System Six Area M103.

The area subject to this particular proposal is within the Quindalup complex of vegetation (refer Section 5.2.1.1). The vegetation and flora of this specific area was further investigated by Trudgen (1994). The major botanical values of the area were found to be:

- the presence of vegetation types on Quindalup soil with Tuart forming an overstorey in good to very good condition;
- the presence of a large stand of blackboys in good condition; and
- the presence of swales with *Banksia littoralis* forming the overstorey.

As stated previously, the presence of Tuart as a dominant overstorey in the Quindalup Vegetation Complex is an unusual and rare vegetation type. Given that there is so little of Tuart dominated woodland left on the Swan Coastal Plain, it would be environmentally unacceptable to allow further loss of this vegetation type.

The stand of blackboys observed in this area has been described as probably the best on the area of Quindalup beach ridges in the Port Kennedy area and of significant value for conservation, and the presence of swales with a *Banksia littoralis* overstorey is very unusual on Quindalup soils and a rare vegetation type, with significant conservation value (Trudgen, 1994).

Fauna studies undertaken have found that the structural complexity of the vegetation types, the presence of old Tuart trees with many hollows potentially used by fauna for shelter and breeding, and the linkage of the site to other vegetation types around Lake Coloongup,

indicates that the site is of high conservation value for fauna. The area is known for its variety of bird species, including uncommon species such as the Splendid Fairy-wren and the rare species Masked Owl (*Tyto novaehollandiae*). Evidence of the Southern Brown Bandicoot was found among the dense sedges in this area. The site is important for the maintenance of faunal diversity in this general regional. If habitat area were to decline, populations of species of fauna will also decline in proportion to the loss of habitat, and even possibly to a greater extent if the remaining habitat is too small to support viable populations (Bamford, 1993).

Comments from and negotiations with key government agencies

The Department of Planning and Urban Development has recognised the conservation values of the area proposed to be rezoned from Parks and Recreation to Special Uses and has given a commitment to leave the area in Parks and Recreation Reservation. The Department of Conservation and Land Management also advised that this area should not be removed from System Six Area M103 because of its high conservation values.

Public Submissions

Most of the public submissions received were totally opposed to the removal of this area from System Six Area M103.

Recommendation 3

The Environmental Protection Authority has concluded that deletion of the north western area of System Six Area M103 in Hillman for Public Purposes would be environmentally unacceptable and recommends that it not proceed. The Environmental Protection Authority recognises that the Department of Planning and Urban Development has already given a commitment to change this aspect of their proposal in recognition of the concerns raised.

6.3 Deletion of south west area of System Six Area M103 west of Ennis Avenue for Urban and Industrial purposes

The Department of Planning and Urban Development has proposed that the area currently reserved for Parks and Recreation and partly for Industry within System Six Area M103 west of Ennis Avenue be rezoned to allow urban and industrial development (Figure 13).

Public Submissions

Most of the public submissions received were opposed to the removal of this area from System Six.

Submitters believed that the proposal to rezone this area had not taken into account the fact that the area is listed on the National Estate, and that the zonings would destroy and or adversely affect the values which were recognised by the National Estate Listing.

The view was also expressed that the proposed trade-off for development of this area was based on trading a high conservation value area on a hectare-for-hectare basis with areas of lower conservation value.

6.3.1 Evaluation

The area subject to this proposal is separated from the main area of M103 by Ennis Avenue, and has vegetation of the Quindalup complex which is currently not developed for any purpose.

The Department of Planning and Urban Development has proposed to include an area immediately to the south of Port Kennedy Drive in System Six M103 in exchange for removing the area to the north of Port Kennedy Drive for urban and industrial development from System Six M103. The area for exchange is described in the Public Environmental Review as being the Water Authority treatment site (zoned for Public Purposes), and extends in a westerly direction from Mandurah Road to the proposed alignment of Warnbro Sound Avenue (Bowman, Bishaw, Gorham & DPUD, 1994).

Much of the area proposed for exchange located between the Warnbro Sound Avenue alignment and Ennis Avenue has been cleared for a racecourse and for grazing, and much of the remaining vegetation in the northern part of the area is in poor condition. The flora of the two areas is very similar, but some species associated with a small wetland on the area proposed to be added to M103 in exchange do not occur on the area proposed for deletion. None of the species associated with this wetland are rare or restricted (Trudgen, 1994).

The fauna survey indicates that the shrubland on the area proposed for addition is of lower quality as a fauna habitat because of its relatively degraded condition. However, there are two sites on this land which provide an additional habitat for fauna, these being the small wetland mentioned previously, and an area of *Acacia* shrubland which occurs to the east of the racecourse complex which was an area identified as being in good to very good condition by Trudgen (1994). It was concluded by Bamford (1993), that the area proposed for exchange has weaknesses as an exchange principally because much of it is degraded.

The Environmental Protection Authority did not consider that the area offered as an exchange in the Public Environmental Review was sufficient compensation of the removal of that land west of Ennis Avenue from System Six M103, as it appeared to be based on a hectare for hectare exchange, and is of lower conservation value. However, it is considered that the M103 area west of Ennis Avenue is vulnerable to increased degradation because of its isolated location and the fact that it will be surrounded by urban and industrial development.

The Environmental Protection Authority's objective in this instance is to ensure that there is good representation of Quindalup complex in reserves, and that areas with identified conservation values are appropriately secured and managed to ensure long term survival.

The Environmental Protection Authority then examined other potential exchanges in an attempt to meet these objectives. In this regard, the land to the west of the proposed Warnbro Sound Avenue alignment was considered to be a more appropriate exchange as it was of greater area and conservation value than the area proposed to be removed. The Environmental Protection Authority also examined options available for securing a transect from the coast to the Lakes Walyungup and Coo loongup area of M103 as discussed in System Six Recommendation M106. The purpose of securing the land would be to cater mainly for conservation, with some provision for recreation on the more degraded areas to the west of the Warnbro Sound Avenue alignment. The Environmental Protection Authority was also concerned that the maximum land area should be secured for conservation, and that single management plan be prepared which would integrate the management of the Port Kennedy conservation area within System Six Area M106, the Lark Hill area (both west and east of the Warnbro Sound Avenue alignment) and the greater area of M103 to the east of Ennis Avenue.

The Environmental Protection Authority concluded that given that the land to the west of the Warnbro Sound Avenue alignment has higher conservation value, it is a more suitable exchange than the area to the east. This land, together with the land east of the proposed Warnbro Sound Avenue alignment and the Port Kennedy Conservation area forms a significant linkage from the coast to Lakes Walyungup and Coo loongup (M103). It is also considered that this area also has better long term management prospects because it is included in a much greater conservation area which would be secured and managed for that specific purpose.

The Environmental Protection Authority believes that this package achieves the identification, securing, and management for conservation of a significant land area of Quindalup complex including part of the beach ridge plain. It is believed that with appropriate management, this area has greater ability to withstand the pressures of encroaching urban development as the population of the south west corridor continues to expand and grow. The Department of Planning and Urban Development has given a commitment to cooperate in this matter.

Recommendation 4

The Environmental Protection Authority recommends that deletion of the area west of Ennis Avenue which is currently zoned Parks and Recreation and Industrial in the Metropolitan Region Scheme from System Six Area M103 is environmentally acceptable subject to:

- **the land being owned by the State Planning Commission generally known as Lark Hill as shown on Figure 13 being lots 581-583, 765-768, 771, 796-802 and 1097 inclusive being secured and managed primarily for conservation purposes;**
- **a linkage being provided between the greater part of System Six Area M103 east of Ennis Avenue through to the coast at Port Kennedy, consistent with recommendations made for System Six Area M106; and**
- **integration of management of the area identified with the management of the Port Kennedy conservation area and the greater area of System Six M103.**

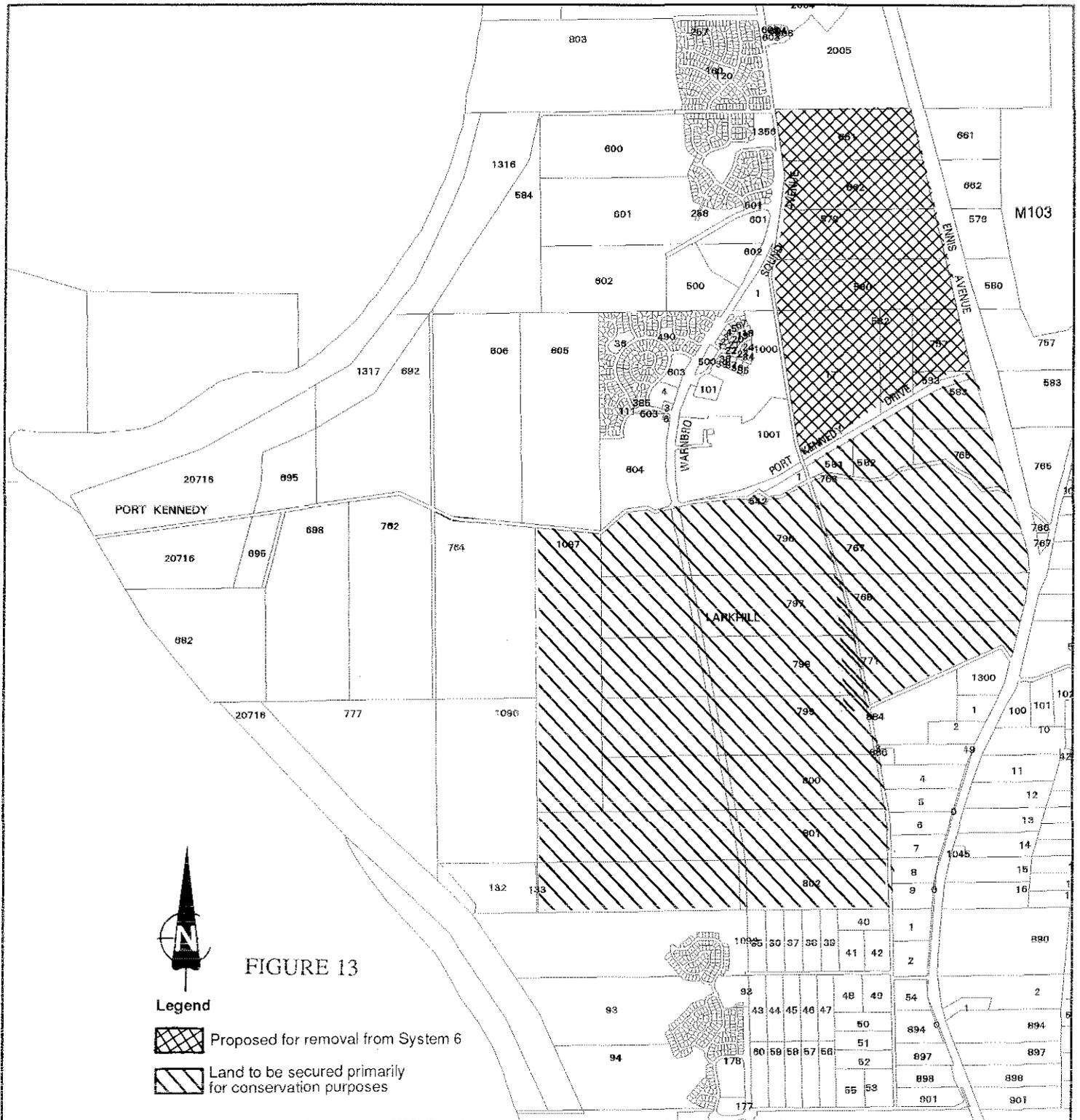
Recommendation 5

The Environmental Protection Authority recommends that before 30 June 1995, the proponent prepare a single integrated management plan for the entire area of the identified conservation estate, that is, System Six M103, Lark Hill and Port Kennedy conservation areas, to the satisfaction of the Environmental Protection Authority on the advice of the Department of Conservation and Land Management and the Commissioner for Soil and Land Conservation. This plan shall identify:

- **the management purpose of specific areas;**
- **linkages provided between the greater part of System Six M103 east of Ennis Avenue and the coast at Port Kennedy (M106);**
- **agencies responsible for the implementation of the plan; and**
- **a timetable for implementation.**

6.4 Widening of Safety Bay Road between Ennis Avenue and Mandurah Road

The Department of Planning and Urban Development proposes to widen the road reserve from 14 metres (current constructed width) to a nominal width of 40 metres to allow for the upgrading of Safety Bay Road to Important Regional Road status. In addition, it is proposed to deviate the existing road reserve to the north at the Ennis Avenue end and to the south at the Mandurah Road end.



Public Submissions

Six of the 35 public submissions received discussed this proposal in terms of its impact on the southern extension of Lake Cooloongup near Mandurah Road. These comments relate to a previous assessment by the Environmental Protection Authority which looked at the connection of an extension of Safety Bay Road between Eighty Road and Mandurah Road (Environmental Protection Authority, 1993a). The submitters argued that the option which allows for a road crossing to the south of the southern end of Lake Cooloongup (known as Option E) be pursued instead of one which crosses Lake Cooloongup. The Environmental Conditions set by the Minister for the Environment in 1993 to allow for this option to be pursued, though the final choice on the alignment rests with the proponent of that proposal in keeping with the Environmental Conditions which were set.

6.4.1 Evaluation

The proposed widening of Safety Bay Road between Ennis Avenue and Mandurah Road has the potential to impact on wetlands, vegetation, and fauna.

The Environmental Protection Authority recognises that this road currently exists, and will in the future be a major east-west connection between Rockingham and the Kwinana Freeway. Much of the proposed widening can be accommodated in the existing road reserve, and therefore, there will be little additional alienation of land from System Six Area M103. The Environmental Protection Authority has therefore concentrated its assessment on the likely environmental impacts associated from the definition of a specific road alignment within the identified reserve, and management requirements at the construction stage.

It is considered that the preparation of an Environmental Management Programme prior to construction would be sufficient to manage the potential environmental impacts associated with the construction of the road. These potential impacts relate to protection of wetlands and their hydrological connections (north and south of the current alignment), minimising the need for clearance of vegetation, particularly that of the closed Paperbark forest along the route, and provision of fauna crossing and fauna protection facilities along the road.

The deviation proposed in the area near Mandurah Road which will impact on the southern extremity of Lake Cooloongup must be in keeping with Environmental Conditions set by the Minister for the Environment in 1993 for the extension of Safety Bay Road between Eighty Road and Mandurah Road, Baldivis (Minister for the Environment, 1993).

Recommendation 6

The Environmental Protection Authority recommends that the widening of Safety Bay Road between Ennis Avenue and Mandurah Road is environmentally acceptable subject to the preparation of an Environmental Management Programme to the requirements of the Environmental Protection Authority, prior to construction commencing. This plan should address, though not necessarily be limited to the following elements;

- **selection of an alignment and construction to minimise the clearing of vegetation;**
- **selection of an alignment and construction to minimise or avoid impacts on wetlands;**
- **management of fauna; and**
- **maintenance or improvement of hydrological connections in the area.**

7. Additional issue — System Six Recommendations

The Department of Planning and Urban Development has requested that the proposals being assessed in this Public Environmental Review be assessed in the context of wider recommendations for changes to the current configuration of existing System Six reserves and reserve proposals. These changes were illustrated in Figure 7 of the Public Environmental Review.

7.1 Department of Planning and Urban Development proposals

It was proposed by the Department of Planning and Urban Development that the System Six Area M93 be expanded to include The Spectacles, and the Baldivis Tramway Park Strip which connects the Beeliar Regional Park through The Spectacles and Leda Regional Open Space to the Serpentine Regional Park, Peel Regional Park and beyond. It is also proposed that the area of M93 which are not included in the Regional Open Space area, that is the Wattleup wetlands, be removed from System Six.

The Department of Planning and Urban Development propose to include major elements of the proposed Jandakot Botanic Park in the area currently known as M97 and M99.

It has been proposed to reconfigure the existing M104 to include all of the regional open space on the southern and eastern side of Leda and the Town of Kwinana.

It has been proposed to reconfigure M103 to include the Tamworth Hill Swamp and part of Lark Hill. As discussed in Section 6.3 of this report, there is also a proposal to remove the area west of Ennis Avenue from System Six Area M103.

The existing M106 (Port Kennedy) is proposed to be expanded eastwards to meet the proposed expanded area of M103 at the future alignment of Warnbro Sound Avenue. It is also proposed to include in M106, all of the coastal foreshore reserve which will extend in a continuous strip from the northern side of Port Kennedy down the coast into the City of Mandurah, as far as the study area boundary at Silver Sands.

M107 is proposed to be substantially removed to allow for future urban development. It is proposed to comprise two east-west strips, retained in accordance with the local structure plan for the Madora area and the foreshore reserve. In return for development of this area, the Department of Planning and Urban Development has proposed including the Paganoni Reserve on the eastern side of Mandurah Road extending north to include Anstey Swamp within System Six, and labelling this area M107 instead.

M108 is proposed to be adjusted to reflect the boundaries of the regional open space in the Structure Plan (Bowman, Bishaw, Gorham and DPUD, 1994).

Public submissions

Almost all of the public submissions received were opposed to the removal of any areas from System Six on the basis that some of the areas proposed for deletion such as the Wattleup wetlands of M93 are of high conservation values, and because if System Six areas continue to be deleted in these and future planning proposals it means that there is no guaranteed security for the conservation estate. Much support was expressed for the proposed additions.

Four submissions received from the landowners effected by System Six Recommendation M107 were in favour of the removal of this area from System Six.

7.2 Environmental Protection Authority advice

As discussed in Section 5.1.1.1, the System Six Study which began in 1976 resulted in a series of location specific recommendations, for example M93, M103, being put forward, as well as a series of general principles and recommendations applying to State Forest, Crown Reserves, land use planning, management of parks, reserves and open space, and preparation of a land resource inventory for planning purposes. These recommendations were published in 1983 (Environmental Protection Authority, 1983 a & b). A public participation programme undertaken as part of the studies resulted in just under 2000 submissions being received. The outcomes of the System Six Study were endorsed by Cabinet in March, 1984.

The System Six areas have community and Government support.

The Minister for the Environment has endorsed the need for an update of the whole of the System Six recommendations to be undertaken by the Department of Environmental Protection with other Government agencies such as the Department of Planning and Urban Development and the Department of Conservation and Land Management. The Parks and Recreation Reserve estate proposed in the Public Environmental Review as an update of System Six Recommendations has formed a good basis for discussion for the future of System Six in this area. The Environmental Protection Authority considers however, that it cannot be considered and interpreted as an update of the System Six recommendations for this corridor because the issues of long-term vesting, purpose and management have not been addressed.

The Environmental Protection Authority considers that the holistic approach taken by the Department of Planning and Urban development in attempting to achieve a balance between conservation and development in the entire South West Corridor is commendable. The proposed additions to the urban conservation estate are welcome, and it is acknowledged that some of the areas proposed for addition through reservation for Parks and Recreation under the Metropolitan Region Scheme will increase the representation of some types of habitats such as wetlands and upland vegetation in the reserve system of the Swan Coastal Plain.

However, the Environmental Protection Authority considers that it is not appropriate that the nominated parts of M93, M103, M107 and M108 as proposed in the Public Environmental Review be removed from System Six. The removal of these areas from System Six would have the effect of eliminating protection of identified conservation values within these areas, and would serve to reduce the area of representative examples of the range of vegetation complexes and communities, native flora, fauna and fauna habitats which are present in this region. As such, they cannot be considered to be environmentally acceptable at this point in time.

Recommendation 7

The Environmental Protection Authority advises that proposals for additions to the conservation estate put forward by the Department of Planning and Urban Development are supported, and will be considered and implemented during a formal update of the System Six proposals put forward in 1983.

However, the proposed deletions from M93, M103, M107, and M108 are not considered to be environmentally acceptable.

8. Conclusions and recommendations

Following consideration of the issues detailed in the Public Environmental Review, additional information presented in the public submissions and the proponent's response to public submissions and other information available to the Environmental Protection Authority, the Environmental Protection Authority has concluded that:

- the proposed Rapid Transport Reserve is environmentally acceptable subject to modifications being made to the amendment in line with the negotiated alignment as shown in Figures 1 to 12 (Recommendation 1)

- an Environmental Management Programme be prepared prior to construction of the Rapid Transport system to ameliorate and mitigate potential environmental impacts associated with the construction and ongoing operation of this system (Recommendation 2)
- the removal of the north eastern area of System Six Area M103 in Hillman is environmentally unacceptable (Recommendation 3);
- the removal of the south west corner of System Six Area M103 west of Ennis Avenue currently zoned for industrial and urban purposes from System Six is environmentally acceptable subject to the securing and management for conservation purposes of the land generally known as Lark Hill, and this management being integrated with the management of the Port Kennedy conservation area and the M103 east of Ennis Avenue (Recommendations 4 and 5).
- the widening of Safety Bay Road between Ennis Avenue and Mandurah Road is environmentally acceptable subject to the preparation of an Environmental Management Plan prior to the construction of the road to ameliorate and mitigate potential environmental impacts (Recommendation 6).

With regard to the discussion included in the the Public Environmental Review regarding the future of System Six proposals in the South West corridor of the Metropolitan Region, the Environmental Protection Authority advises that the proposals put forward by the Department of Planning and Urban Development are to be commended and are a welcome addition to the urban conservation estate. The proposals will be considered during a formal update of the System Six proposals put forward in 1983.

The Authority has established an implementation and auditing system which requires the proponent to advise the Authority on how it would meet the requirements of the environmental conditions and commitments of the project. The proponent would be required to develop a Progress and Compliance Report for this project as a section of the recommended audit programmes.

The Authority's experience is that it is common for details of the proposal to alter through the detailed design and construction phase. In many cases alterations are not environmentally significant or have positive effects on the environmental performance of the project. The Authority believes that such non-substantial changes, and especially those which improve the environmental performance and protection, should be provided for.

The Authority believes that any approval for the proposal based on this assessment should be limited to five years. Accordingly, if the proposal has not been substantially commenced within five years of the date of this report, then such approval should lapse. After that time, further consideration of the proposal should occur only following a new referral to the Authority.

9. Recommended environmental conditions

Based on its assessment of this proposal and recommendations in this report, the Environmental Protection Authority considers that the following Recommended Environmental Conditions are appropriate:

CHANGES OF LAND USE AFFECTING SYSTEM SIX AREAS AND LAKES
PROTECTED UNDER THE ENVIRONMENTAL PROTECTION POLICY
TO URBAN, INDUSTRIAL, SPECIAL USES AND TRANSPORTATION PURPOSES,
TO BE REFLECTED IN THE MAJOR METROPOLITAN REGION SCHEME
AMENDMENTS FOR THE SOUTH WEST CORRIDOR (838)

1 Proponent Commitments

The proponent has made a number of environmental management commitments in order to protect the environment.

- 1-1 In implementing the proposal, the proponent shall fulfil the commitments made in the Public Environmental Review and in response to issues raised following public submissions; provided that the commitments are not inconsistent with the conditions or procedures contained in this statement. These commitments are consolidated in Environmental Protection Authority Bulletin 746 as Appendix 1. (A copy of the commitments is attached.)

2 Implementation

Changes to the proposal which are not substantial may be carried out with the approval of the Minister for the Environment.

- 2-1 Subject to these conditions, the manner of detailed implementation of the proposal shall conform in substance with that set out in any designs, specifications, plans or other technical material submitted by the proponent to the Environmental Protection Authority with the proposal. Where, in the course of that detailed implementation, the proponent seeks to change those designs, specifications, plans or other technical material in any way that the Minister for the Environment determines on the advice of the Environmental Protection Authority, is not substantial, those changes may be effected.

3 Proposed Rapid Transport Reserve Alignment

- 3-1 The proponent shall modify the Metropolitan Region Scheme amendment 937/33 938/33 to be consistent with the alignment of the Rapid Transport Reserve as shown in Figures 1 to 12.

- 3-2 Prior to construction commencing, to ameliorate and minimise the environmental impacts associated with the construction and operation of the Rapid Transport System, the proponent shall prepare an Environmental Management Programme to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority and the Department of Conservation and Land Management.

This Plan, which shall be released for public review for four weeks, shall address, but not be limited to:

- impacts on vegetation, fauna, hydrology and wetlands; and
- access to reserves.

4 Proposed Deletions from System Six Area M103.

- 4-1 The proponent shall not take any action which will remove the north west part of System Six Area M103 in Hillman (refer Figure 14) from Parks and Recreation reserve for Public Purposes or any other purpose which will jeopardise its tenure and management for conservation.

- 4-2 The proponent may allow the development of the area west of Ennis Avenue which is currently within System Six Area M103 subject to the following requirements:

- 1 Land owned by the State Planning Commission generally known as Lark Hill as shown on Figure 13 being lots 581 - 583, 765 - 768, 771, 796 - 802 and 1097 to be secured and managed for conservation purposes;
- 2 A linkage to be provided between the greater part of System Six Area M103 east of Ennis Avenue through to the coast at Port Kennedy, consistent with recommendations made for System Six Area M106; and
- 3 Integration of the management of the area identified with the management of the Port Kennedy conservation area and the greater area of System Six Area M103.

- 4-3 Prior to June 30 1995, the proponent shall ensure that a single integrated Management Plan is prepared for the entire area of the conservation estate (ie System Six Area M103, Lark Hill and Port Kennedy conservation areas), to the requirements of the Environmental Protection Authority on advice of the Department of Conservation and Land Management and the Commissioner for Soil and Land Conservation.

This Plan shall identify:

- 1 the management purpose of specific areas;
- 2 linkages provided between the greater part of System 6 Area M103 east of Ennis Avenue and the coast at Port Kennedy; and
- 3 agencies responsible for its implementation; and
- 4 provide a timetable for implementation.

5 Widening of Safety Bay Road

- 5-1 Prior to construction of Safety Bay Road between Ennis Avenue and Mandurah Road, Rockingham, the proponent shall prepare an Environmental Management Plan to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority. (See Procedure 3).

This Plan shall address, but not necessarily be limited to the following elements:

- 1 selection of an alignment and construction to minimise the clearing of vegetation;
- 2 selection of an alignment and construction to minimise or avoid impacts on wetlands;
- 3 management of fauna; and
- 4 maintenance and improvement of hydrological connections in the area.

6 Proponent

These conditions legally apply to the nominated proponent.

- 6-1 No transfer of ownership, control or management of the project which would give rise to a need for the replacement of the proponent shall take place until the Minister for the Environment has advised the proponent that approval has been given for the nomination of a replacement proponent. Any request for the exercise of that power of the Minister shall be accompanied by a copy of this statement endorsed with an undertaking by the proposed replacement proponent to carry out the project in accordance with the conditions and procedures set out in the statement.

7 Time Limit on Approval

The environmental approval for the proposal is limited.

- 7-1 If the proponent has not substantially commenced the project within five years of the date of this statement, then the approval to implement the proposal as granted in this statement shall lapse and be void. The Minister for the Environment shall determine any question as to whether the project has been substantially commenced. Any application to extend the period of five years referred to in this condition shall be made before the expiration of that period, to the Minister for the Environment by way of a request for a change in the condition under Section 46 of the Environmental Protection Act. (On expiration of the five year period, further consideration of the proposal can only occur following a new referral to the Environmental Protection Authority.)

8 Compliance Auditing

In order to ensure that environmental conditions and commitments are met, an audit system is required.

- 8-1 To help verify environmental performance, the proponent shall prepare periodic Progress and Compliance Reports in consultation with the Environmental Protection Authority.

Procedure

- 1 The Environmental Protection Authority is responsible for verifying compliance with the conditions contained in this statement, with the exception of conditions stating that the proponent shall meet the requirements of either the Minister for the Environment or any other government agency.

- 2 If the Environmental Protection Authority, other government agency or proponent is in dispute concerning compliance with the conditions contained in this statement, that dispute will be determined by the Minister for the Environment.

10. References

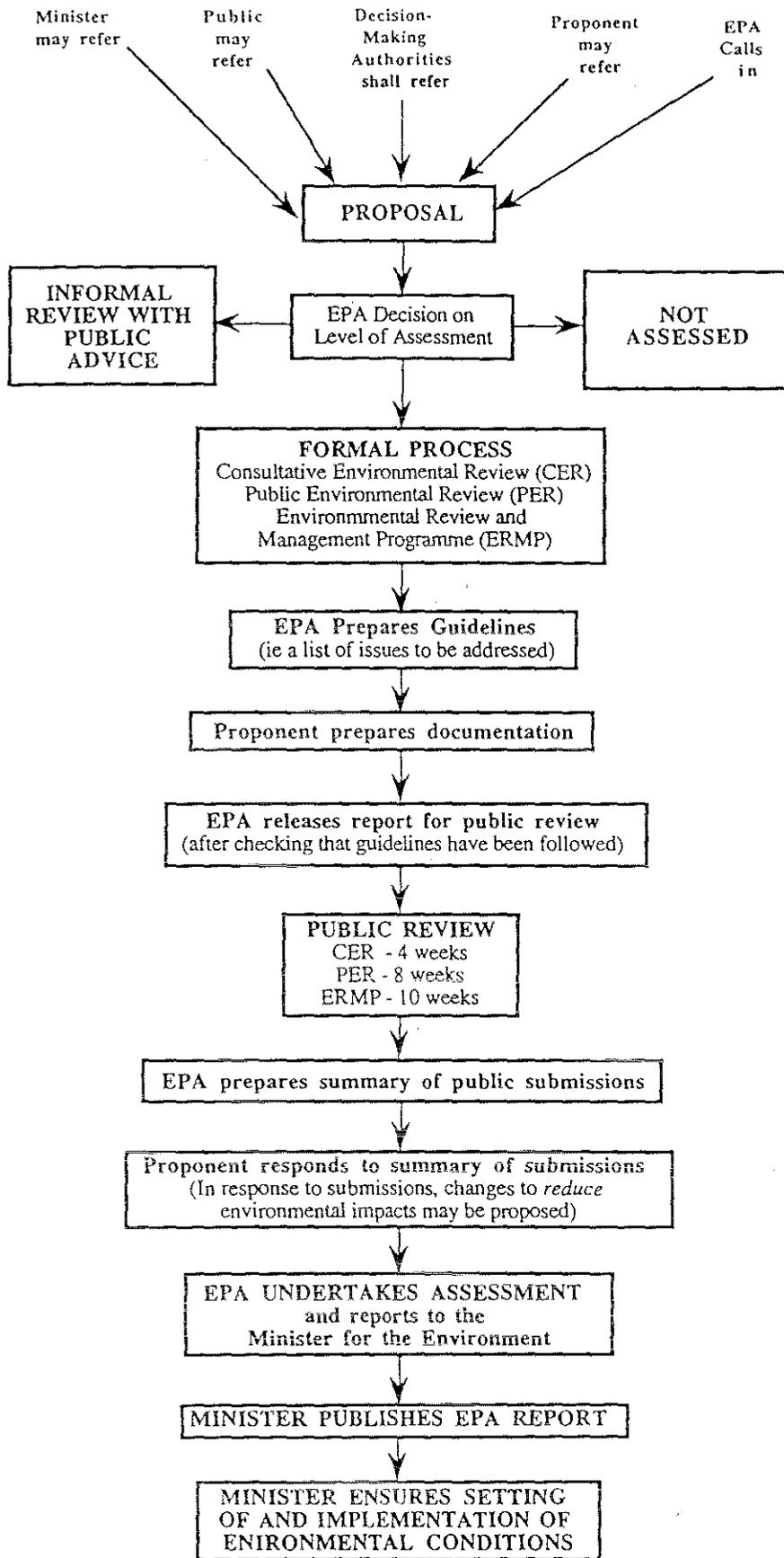
- Bamford, M. J. & A. R., (1993). *Survey of fauna habitats in the region of Lakes Coo loongup and Walyungup, Rockingham*. In: Public Environmental Review Selected South-West Corridor Land-Use Changes. Department of Planning and Urban Development, Perth, Western Australia.
- Beard, J. S. & Sprenger, B. S. (1984). *Geographical data from the Vegetation Survey of Western Australia. Vegetation Survey of Western Australia Occasional Paper No. 2*. Vegemap Publications, Applecross, Western Australia.
- Bowman Bishaw Gorham and Department of Planning and Urban Development, (1994). *Public Environmental Review Selected South-West Corridor land-use changes as reflected in South West Corridor Major Amendments to the Metropolitan Region Scheme*. Department of Planning and Urban Development, Perth, Western Australia.
- Churchward, H.M. & McArthur, W.M., (1980). *Landforms and soils of the Darling System Western Australia* In: Atlas of Natural Resources Darling System Western Australia. Department of Conservation and Environment, Perth Western Australia.
- Department of Planning and Urban Development, (1994). *South West Corridor Structure Plan Review (from Rockingham to North Mandurah)*, Working Papers 1 -9. Department of Planning and Urban Development, Perth, Western Australia.
- Environmental Protection Authority, (1983). *Conservation Reserves for Western Australia as Recommended by the Environmental Protection Authority. The Darling System - System 6 Part I: General Principles and Recommendations*. Department of Conservation and Environment Report 13, Perth, Western Australia.
- Environmental Protection Authority, (1983). *Conservation Reserves for Western Australia as Recommended by the Environmental Protection Authority. The Darling System - System 6 Part II: Recommendations for Specific Localities*. Department of Conservation and Environment Report 13, Perth, Western Australia.
- Environmental Protection Authority, (1991). *Subdivision: Concept Plan and Design, Lots 37 and 47 Brixton Street Kenwick*. Report and Recommendations. Bulletin 396, Perth Western Australia.
- Environmental Protection Authority, (1992a). *Environmental Protection (Swan Coastal Plain Lakes) Policy Approval Order 1992*. Government Gazette, 18 December 1992, Perth, Western Australia.
- Environmental Protection Authority, (1992b). *Proposed Urban Development of Lots 35 and 48 Brixton Street Kenwick*. Report and Recommendations. Bulletin 635. Perth Western Australia.
- Environmental Protection Authority, (1992c). *Ellenbrook Urban Rezoning, Subdivision and Development - Shire of Swan. Sanwa Vines Pty Ltd, Homeswest Pty Ltd*. Report and Recommendations. Bulletin 642. Perth, Western Australia.

- Environmental Protection Authority, (1993a). *Safety Bay Road Extension, Baldivis*. Report and Recommendations of the Environmental Protection Authority Bulletin 678. Environmental Protection Authority, Perth, Western Australia.
- Environmental Protection Authority, (1993b). *Jandakot Land Use and Water Management Strategy: A submission by the Environmental Protection Authority on the document released for review by the Department of Planning and Urban Development*. Bulletin 680. Environmental Protection Authority, Perth, Western Australia.
- Environmental Protection Authority, (1993c). *South West Corridor Structure Plan Review: A submission by the Environmental Protection Authority on the documents released for review by the Department of Planning and Urban Development*. Bulletin 683. Environmental Protection Authority, Perth, Western Australia.
- Environmental Protection Authority, (1993d). *Strategy for the protection of lakes and wetlands of the Swan Coastal Plain*. Report of the Environmental Protection Authority. Bulletin 685. Environmental Protection Authority, Perth, Western Australia.
- Environmental Protection Authority, (1993e). *A Guide to Wetland Management in the Perth and Near Perth Swan Coastal Plain Area - An update to EPA Bulletin 374*. Report of the Environmental Protection Authority. Bulletin 686. Environmental Protection Authority, Perth, Western Australia.
- Heddle, E.M., Loneragan, O.W. & Havel, J.J., (1980). *Vegetation Complexes of the Darling System Western Australia* In: Atlas of Natural Resources Darling System Western Australia. Department of Conservation and Environment, Perth Western Australia.
- Minister for the Environment (1993). *Statement that a proposal may be implemented (Pursuant to the Provisions of the Environmental Protection Act 1986) - Safety Bay Road Extension, Baldivis*. Perth, Western Australia.
- Portlock C., Koch A., Hanly, P., & Dutton, S., (1993). *Yalgorup National Park draft Management Plan*. Department of Conservation and Land Management, Perth, Western Australia.
- Semeniuk, V., Cresswell, I.D. & Wurm, P.A.S. (1989). 'The Quindalup dunes: the regional system, physical framework and vegetation habitats'. *Journal of the Royal Society of Western Australia*. **71**, pp. 23 - 47.
- State Planning Commission, (1993a). *Metropolitan Region Scheme Amendment No. 938/33 South West Corridor (Stage A) Cities of Cockburn and Armadale/Town of Kwinana/ and Shire of Serpentine-Jarrahdale*. Department of Planning and Urban Development, Perth, Western Australia.
- State Planning Commission, (1993b). *Metropolitan Region Scheme Amendment No. 937/33 The South West Corridor Stage B City of Rockingham*. Department of Planning and Urban Development, Perth, Western Australia.
- State Planning Commission, (1993c). *Metropolitan Region Scheme Amendments South West Corridor (City of Rockingham, Town of Kwinana and City of Cockburn). South West Corridor Transport Reserve*. Department of Planning and Urban Development, Perth, Western Australia.

- Trudgen, M. E., (1984). *Leschenault Peninsula - A flora and vegetation survey with an analysis of its conservation value and appropriate uses*. Department of Conservation and Environment, Perth Western Australia. Bulletin 157.
- Trudgen, M. E., (1991). *A flora and vegetation survey of the coast of the City of Mandurah*. Department of Planning and Urban Development, Perth, Western Australia.
- Trudgen, M., (1994). *A Botanical Survey of Areas Affected by the Proposed South-West Corridor Amendment with Comment on Conservation Values* In: Public Environmental Review Selected South-West Corridor Land-Use Changes. Department of Planning and Urban Development, Perth Western Australia.
- V & C Semeniuk Research Group, (1991). *Environmental and Landscape Audit Stage 2 Interim Report: The Southwest Corridor Study - a report to the Department of Planning and Urban Development*. Department of Planning and Urban Development, Perth, Western Australia.

Appendix 1

Environmental Impact Assessment flow chart



EPA decides within 28 days. Anybody may appeal to the Minister within 14 days on level set; Minister may direct higher level but not vice versa

DMA cannot allow implementation unless either no formal assessment or the Minister Authorises. Process not suspended

Draft guidelines usually issued within 14 days of first meeting with proponent

EPA usually completes summary in 2-3 weeks

Report release often 3-5 weeks after receipt of response to submissions

Anybody may appeal on EPA report to Minister within 14 days. Minister may remit to EPA or take appeal into consideration when setting conditions

Proponent may appeal on conditions within 14 days of issue

Appendix 2

Summary of submissions and proponent's response

(Please note that all headings within this appendix which are identified as 'Departmental Response' are referring to the Department of Planning and Urban Development as proponent.)

**RESPONSES TO SUMMARY OF ISSUES RAISED BY SUBMISSIONS ON THE
PUBLIC ENVIRONMENTAL REVIEW FOR SELECTED SW CORRIDOR
LAND USE CHANGES AS REFLECTED BY THE MAJOR
METROPOLITAN REGION SCHEME AMENDMENTS 937/33 AND 938/33**

The responses to the issues that have been raised in submissions to the Public Environmental Review (PER) for the South West Corridor must be seen in the context of the Department of Planning and Urban Development's role and responsibility to provide for the future housing and employment needs of Perth's growing population.

It is the nature of human settlement patterns the natural environment is substantially altered, some would say destroyed. The question then becomes one of deciding how best to arrange these settlement patterns, and all the transport and other infrastructure that this entails, in a way that minimises the adverse impacts on the natural environment, or at least protects the best of what is left of it.

The conclusions to the PER noted that from a strategic perspective, it is important to note that the character of the South West Corridor will change dramatically over the next 25-30 years. Whereas it is now predominantly a rural corridor, mostly undeveloped, it will change character over the next planning period to become a major urban part of the Perth Metropolitan Region, very different in character from what it is now. Unless conservation and urban objectives are reconciled, both will be prejudiced.

There is no denying that there will be substantial impacts over time on the existing natural environment of the South West Corridor. It is in the nature of human settlement patterns to profoundly alter the natural environment in order to make high density urban living efficient and sustainable. There will therefore be a need to accept essential elements of urban infrastructure impinging on environmentally sensitive area if it can be demonstrated:

- . that the item of urban infrastructure, road, rail or otherwise is essential and ;
- . that no better alternative workable solution is available.

The major amendments to the Metropolitan Region Scheme Amendments Nos 937/33 and 938/33 which are the basis for this PER were themselves part of the structure planning process. The Structure Plan for the South West Corridor has been through an exhaustive planning and consultation process. Alternatives to what has been proposed are not readily apparent. It is necessary, in the process of environmental review, to base the evaluation

of acceptability on achieving the best balance between urban and environmental objectives, accepting that in some cases these may be mutually incompatible.

The following responses made directly to each of the issues raised must be seen in this context. For the sake of convenience, the issue will first be re-stated and then the Department's response will follow directly typed in italics.

1.0 Environmental Assessment Process

Issue 1.1

The Public Environmental Review should have preceded the MRS Amendments 937/33 and 938/33 to allow for proper evaluation of the environmental impacts. The decision to zone areas now with full evaluation of environmental impacts will result in options being limited. It is also very likely that land values will be raised to the point where the implementation of good environmental options which arise from further evaluation or new information will be constrained.

Departmental Commentary

Prior to the proposals which are featured in both major amendments for the SW Corridor, reaching the amendment stage, they were preceded by a whole structure planning process in which there was wide public consultation and advertising of draft structure plans. Many of the proposals in both of the amendments have histories going back to 1974 in the case of the Amendment 937/33 and back to 1987 in the case of Amendment 938/33.

In the formulation of the Structure Plans and other plans which form the basis of major MRS amendments, the Department is guided by expert environmental advice from all quarters, from consultants, from the Department of Conservation and Land Management, the Environmental Protection Authority, the Department's own environmental section and on informal advice received from conservation groups and community advisory groups such as the South West Corridor Advisory Planning Committee, which had substantial environmental expertise represented on it.

The proposals in the Metropolitan Region Scheme Amendments 937/33 and 938/33 are the product of long and detailed consideration involving all relevant Government agencies. The process has included the production of a draft structure

plan which was put out for public comment.

The Department of Planning and Urban Development believes it is appropriate for the PER and the MRS to run concurrently in the early stages provided the outcomes of the PER, as will be specified in any Ministerial conditions to the PER, are embodied in the MRS. The Minister for Planning has stated that no decisions will be taken on finalising the form or contents of the major amendments until the PER process is complete.

Nevertheless, the Department of Planning and Urban Development would welcome any specific and practical advice, by way of submissions or otherwise, which would assist the Department to better incorporate environmental conservation into future urban planning.

Issue 1.2

Insufficient detail has been provided to give specific comment on all the projects identified in the PER. A formal assessment process should be required for each.

Departmental Response

The intention of the PER for the South West Corridor was to address issues at a strategic level for the Corridor as a whole, but to focus on those issues identified by the EPA guidelines which are being assessed by this PER. It is acknowledged by the Department of Planning and Urban Development and by the Environmental Protection Authority that formal assessments of individual projects contained within the Metropolitan Region Scheme amendments 937/33 and 938/33 may be required prior to implementation.

Issue 1.3

Why have commitments in the PER been given by the Department of Planning and Urban Development with all the stated provisos when the State Planning Commission is the proponent and has the power to make firmer commitments?

Departmental Commentary

The Department of Planning is the proponent for the PER. The Department can only make commitments to the extent to which it is legally empowered to do. This is the first time that the Department has acted as a proponent and the extent of its power to make commitments has not been tested.

Issue 1.4

The purpose of the Environmental Management Program proposed in the commitment is not clear unless DPUD will become/remain proponent for each construction project.

Departmental Commentary

The issue raised above is the crux of the matter insofar as the Department of Planning and Urban Development is concerned and is the reason why the Department was most reluctant to become involved in the environmental review of the major amendments for the South West Corridor as the proponent. It only did so at the instigation of the Environmental Protection Authority. It is for the Environmental Protection Authority to determine the relevance or otherwise of the Department of Planning in its role as proponent. The Department of Planning and Urban Development is unable to remove any of the qualifications as to its role or its power to act as proponent in the implementation sense than was given in the Public Environmental Review.

However, it should be recognised that the Environmental Protection Authority has the power to insist that environmental management programs be required from any proponent at the time of implementation of any project envisaged by the major MRS amendment irrespective of any actions or commitments by either the Department of Planning and Urban Development or the State Planning Commission.

The Environmental Protection Act overrides planning legislation and that the Environmental Protection Authority has the power to require any further environmental assessment or environmental program that it sees fit. The Environmental Protection Authority also has the ultimate power to stop any project if it regards it as being environmentally unacceptable.

Issue 1.5

There were a number of submissions which expressed support for the EPA formally assessing the environmental implications of land use rezoning and requests that the EPA will formally assess all major amendments to the MRS. There was disappointment that this assessment is limited to impacts on the conservation estate.

Departmental Commentary

This is a matter for the EPA to consider. It is for the Environmental Protection Authority to determine what requires to be assessed and to set the level of assessment. The EPA must also formulate guidelines which form the basis of the Public Environmental Review to be conducted by the proponent. The Department of Planning and Urban Development, acting as the proponent, followed the requirements as set out in the guidelines which were prepared by the EPA..

2.0 Comments on Specific Rezoning Proposals in the PER Affecting System 6.

Issue 2.1

In the proposed trade-off for the rezoning and development of some System 6 areas, areas of high conservation value have been traded on a hectare for hectare basis with areas of lower value, for example in the south west of M103. This is not acceptable.

Departmental Commentary

The criticism raised above is incorrect. The proposed trade-off for the rezoning and development of some System 6 areas for other areas, at the strategic level, within the whole of the South West Corridor, is in favour of an increase in the conservation estate and more areas of high conservation value.

The Department of Planning and Urban Development does not believe it reasonable, when arguing on the principle of the rearrangement of System 6 areas in line with the strategic objectives for the South West Corridor, to select very small areas within the so-called "traded areas" and compare the best of those with the worst of the traded areas. The Department believes that overall, the strategic planning for conservation in the South West Corridor, by any objective standard, is an improvement over what is represented by the System 6 areas and does not accept the above statement.

Issue 2.2

There is strong opposition to the deletion and development of the south west section of M103.

Departmental Commentary

This submission is objecting to the rezoning of an existing Parks and Recreation reserve, part of the Rockingham Lakes Regional Park, which falls east of Ennis Avenue. The area of land involved is approximately 120ha. This area is proposed to be zoned Urban (100ha) and Industrial (20ha) in the current major MRS amendment. This land is also part of System 6 Reserve M103.

The opposition expressed in this submission to this proposal must be seen in the overall context of the structure plan and the current major amendments for the South West Corridor. What is proposed amounts to a rearrangement of the Rockingham Lakes Regional Park, to remove some areas which have little or no conservation value, but high urban value and to add other areas which have higher conservation and recreation value, but are not appropriate for urban development. The Public Environmental Review demonstrated that by adding part of the Larkhill area to Parks and Recreation as proposed in the current MRS amendment and also extending the Parks and Recreation reserve to include Tamworth Swamp, east of Mandurah Road, the current area of the Rockingham Lakes Regional Park (ie. System 6 area M103) increased in area from 2570ha to 2697ha, an increase of 5%.

In line with the commitments made in the Public Environmental Review by the Department of Planning and Urban Development, the decision to delete the proposed public reservation from the northern part of the regional park (the proposed University site in Hillman, south of Dixon Road) from the MRS amendment and retain it as Parks and Recreation reserve will restore 75ha to the area of the Rockingham Lakes Regional Park, which in all represents a 6.5% increase in the overall area of Rockingham lakes Regional Park, over what currently exists.

In other words, the proposals to be embodied in the final version of major MRS Amendment No 937/33, will increase rather than reduce the size of Rockingham Lakes Regional Park, despite the proposal to remove the 120ha from the south west corner of the park, west of Ennis Avenue.

This 120ha of land in the south west corner of the park has been subject to intensive study and public consultation as part of the structure planning process. The issue as to whether this land would be more valuable as part of the Rockingham Lakes Regional Park rather than future urban and industrial land has

been thoroughly canvassed as part of the structure planing process, with the final structure plan coming out in favour of using the land for urban and industrial purposes, subject to other exchanges of land as are now incorporated in the MRS in Larkhill and Tamworth Swamp. The area in question, apart from being part of the regional Quindalup complex, has no priority identifiable environmental or natural vegetation qualities, aside from a few small wetlands which are part of the fringes of the Becher suite of wetlands which will be protected in the detailed urban design for the area.

On the other hand, the land is in the immediate part of urbanisation between Warnbro Sound and Ennis Avenue. It can be readily serviced and could be brought onto the market for homes within 12 months. It is a natural and logical rounding-off of the urban area. The proposal for a minor extension to the existing industrial zoning just to the south of this urban area, east of Warnbro Sound Avenue, is also a logical and natural rounding-off of the urban zone. Should this land have been retained as Parks and Recreation, it would have been awkwardly placed between industrial development and Ennis Avenue, and would not have retained very much practical value for recreation or as a habitat for wild animals.

It was a rational decision, based on considerable consultation with Government environmental agencies and the community, to revive the boundary of Rockingham Regional Lakes, in a manner which allowed for more orderly arrangement of land uses and regional open space, incorporating Port Kennedy to fit within the context of the tremendous pressures which will be places on the area in the future by massive population growth in the South West Corridor.

Issue 2.3

There is support for DPUD's commitment to leave the Hillman area of M103 in Parks and Recreation reserve.

Departmental Commentary

As stated in the Public Environmental Review, the role of DPUD is only to recommend land use proposals, and changes to Parks and Recreation reservations in the Metropolitan Region Scheme. However, in this instance, the Department of Planning and Urban Development is recommending that the Hillman area be retained in the Parks and Recreation reserve.

It must be emphasised, however, that the extent of DPUD's commitment was to make recommendations to this effect as the Department does not have the legal powers, in itself, to effect any changes to the Metropolitan Region Scheme.

Issue 2.4

There is opposition to the fragmentation of the Port Kennedy/Larkhill area which has been listed in the National Estate and which provides a last opportunity for a large conservation reserve in the coastal parts of the South West Corridor. The whole of Larkhill should go into the conservation estate. There are strong objections to the proposed equestrian estate and the proposed water treatment plant. The treatment plant should be located in the proposed industrial zone which is being excised from M103 to the north of Larkhill.

Departmental Commentary

The draft structure plan for the South West Corridor featured the whole of the Port Kennedy/Larkhill area as open space. The Port Kennedy Development Act and other Government initiatives in the area to do with regional recreational planning have resulted in the configuration of the MRS as is now advertised and featured in the Public Environmental Review.

The whole issue of the appropriate land uses and conservation objectives for the Port Kennedy/Larkhill area, are the subject for further study.

It may very well be that, as a result of the study, there are the modifications suggested in this submission being incorporated into the Larkhill area. On the other hand, it may be that the Government will require further modifications to the Metropolitan Region Scheme. As regards the current major amendment to the Metropolitan Region Scheme, the technicalities are that the only thing that could be done is for the Parks and Recreation reservation to be removed leaving the existing Public Purposes reservation throughout the whole of the Port Kennedy area. There is no way in the current amendment, that additional reservation could be made where it did not exist before, without the whole scheme having to be readvertised, which the Minister would not agree to do. In any event, the Department of Planning and Urban Development intends introducing further major amendments to the South West Corridor (September/October 1994) in which further modifications to the Parks and Recreation reservations in the area can be made once the more detailed planning of the area are more fully understood.

It should be noted that there are sections of local community opinion, including a vigorous campaign by the Rockingham City Council, to have much of the Larkhill area rezoned away from Parks and Recreation to permit a subdivision of the land to allow horse breeders to live and own horses as an extension to the Larkhill race track. The Larkhill area is not a simple matter of conservation, it is a matter of intensive lobbying by all sections of the community for all sorts of land uses, ranging from conservation - recreation - rural subdivision for horse racing, to full urbanisation. Conservation is just one of the claims being made on the Government owned land in the Larkhill/Port Kennedy area.

As regards the relocation of the water treatment plant further north, there may be opportunities to relocate the site or at least to significantly reduce the area of land required. However, this can only be done once the requirements for the treatment plant are more fully understood, and this will not be for a number of years until significantly more urbanisation has taken place throughout the South West Corridor.

Issue 2.5

The City of Rockingham intends to develop the Larkhill Regional Sporting Complex and associated semi-rural residential estate and as such, is opposed to any additional Parks and Recreation reservation which would compromise these intentions.

Departmental Commentary

As stated in 2.4 above, there are many competing claims being made for the ultimate use of the land in Larkhill. For these reasons, the Government intends that the Port Kennedy/Larkhill area be subject to more detailed master planning, with a view to identifying more precisely the conservation and other land use arrangements that can be accommodated in the area.

As a general statement, it must be recognised that the Port Kennedy/Larkhill area is the only potential land within the South West Corridor, not earmarked for urban development, which can be used for recreational and ancillary uses. As the population in the South West Corridor continues to grow, there will be ever increasing pressure to make productive use of the land, in the sense of improving its recreational utility for the community in the South West Corridor.

Nevertheless, the high conservation value of the Becher suite of wetlands is recognised within DPUD and every effort will be made to ensure that sensitive detailed planning of the area prior to development will protect as many wetlands as possible.

3.0 Comments on the Other System 6 Areas and Proposed Changes to System 6 in General.

Issue 3.1

The EPA should oppose any further deletions to System 6 areas. If System 6 areas continue to be deleted in these and future planning proposals, it will mean there is no guaranteed security for the conservation estate.

Departmental Commentary

The Environmental Protection Authority has the power and the responsibility to ensure environmental conservation throughout the State, including the metropolitan region. The Department of Planning and Urban Development has a similar responsibility to protect the environment but also has the responsibility of reconciling conservation objectives against many different aspirations and objectives within society.

The original formulation of the boundaries of System 6 areas were arbitrary, in the sense that they were based on cadastral boundaries rather than natural features, with no regard to the arrangement of the natural attributes of the environment within those cadastral boundaries. It would seem rational, therefore, for the EPA to adopt an approach whereby variations to the boundaries of System 6 are acceptable provided the conservation values in that locality are protected or provided the conservation estate within the metro area, and the objectives for System 6 as a whole, are maintained or enhanced.

The whole basis for this Public Environmental Review for the South West Corridor has been to demonstrate that the System 6 areas, and the environmental estate for the metropolitan region would be enhanced by the proposals contained in the major amendments and in the structure planning for the South West Corridor.

The Department of Planning and Urban Development believes that the

Environmental Protection Authority must recognise the importance of good human environment in the urban sense. The Metropolitan Region is a focus of human environment and human habitat and the EPA must take a balanced approach. It cannot act purely as an advocate for environmental conservation in the ecological sense.

In most circumstances, human habitat depends on comprehensively modifying the natural environment. In the metropolitan area, while there is population growth, urbanisation must be regarded as the highest and best use of land. Conservation must, therefore, be seen in the context of reconciling the need to create good human habitat while preserving the best of the natural environment. In many instances both will be complementary, but there are instances where they will be incompatible and difficult decisions will need to be made.

Issue 3.2

There is strong opposition to the proposal to remove the Wattleup Road Swamps and Lake Wattleup from System 6 area M93. The Wattleup Wetlands were supposed to be included in the Beeliar Regional Park. Lake Wattleup has a good dense vegetation on its eastern side and has been shown to be a very important wetland for water fowl. This area is also within the Kwinana Environmental Protection Policy Buffer Area B and as such, should not be zoned for Urban.

Departmental Commentary

The planning for the northern part of the Beeliar Regional Park, which includes System 6 M93, was the subject of a separate amendment to the Metropolitan Region Scheme 894/33A. This amendment was based on much research and community consultation and excluded the Wattleup wetlands because it was believed they could be protected under Local Authority landscape protection zoning.

There is no intention that the area including, or surrounding, the Wattleup Road wetland or Wattleup lake be urbanised because they fall within the Kwinana Air Pollution Buffer exclusion zone.

The proposal reflected on Figure 7 of the PER report that they be deleted from System 6 M93 was for the sake of consistency, relating System 6 to the ultimate configuration of Parks and Recreation Reserves in the South West Corridor. The

Department of Planning and Urban Development has no objection to this odd shaped protrusion of M93 being retained as part of System 6.

Issue 3.3

There is concern about the threat to the market garden swamps and the failure of the amendments to take account the need to protect the System 6 area and other System 6 areas eg. M103, M92 and M93.

Departmental Commentary

It is difficult to understand the point which is being made with respect to the current MRS Amendments 937/33 and 938/33. System 6 areas M92 and M93 are not affected by Urban zonings in the current major amendments and the PER proposes a whole series of enhancements to System 6 Reserve M103, which more than compensates for any impacts proposed by the current MRS amendment.

Issue 3.4

There is strong opposition to the deletion of the coastal reserve at Secret Harbour from the System 6 area and the changes which have been proposed.

Departmental Commentary

This submission is outside the current MRS Amendment 937/33. The issue has already been determined by the EPA..

Issue 3.5

There is a strong opposition to the deletion of M107. The east-west buffers between Singleton and Madora and San Remo and Madora on the east and west side of Fremantle Road are also required by Mandurah City Council by its approved structure plan for this area.

Departmental Commentary

This submission is outside the context of MRS Amendment 937/33 because it refers to areas in Mandurah and therefore outside the context of this Public Environmental Review. The matter was, however, considered in the context of the South West Corridor Structure Plan, which is not subject of this environmental review.

However, to put the issue in context, the Environmental Protection Authority has already conceded two of the four east-west buffers of M107 in Golden Bay and Secret Harbour in exchange for a widening of the coastal foreshore area and protection of parabolic dune features elsewhere on the property.

With regard to the east-west buffers between Singleton and Madora and San Remo and Madora, the submission is incorrect in that there has never been any extension of System 6 Reserve M107 on the eastern side of Fremantle Road. The reserves were between Mandurah Road and the coast.

In a most recent structure planning for Madora, now formally approved by the Mandurah City Council, these two reserves have been substantially reduced in order to better accommodate urban plans for the area.

The appropriateness of the original configuration of M107 must be seen in the context of the overall planning for the future of the South West Corridor. The Department of Planning and Urban Development cannot understand the rationale for the boundaries originally imposed in the System 6 area. It was apparently an attempt at urban design by those involved in the process. As such, it has failed because the boundaries are arbitrary in the sense that they bear no relationship to the natural topography of the area, the natural vegetation or any other feature which would normally be considered as the basis for determining such boundaries. Nor are they compatible with a good internal arrangement for urban design in these areas.

Also, this submission must be seen in the context of the overall strategic planning for conservation in the South West Corridor embodied in the South West Corridor Structure Plan and being interpreted into the Metropolitan Region Scheme by way of Amendment 937/33. In all, there have been significant gains to the conservation estate for the South West Corridor and it is better to concede some areas where the underlying rationale for the establishment does not stand up to arguments for their future urbanisation.

Issue 3.6

Four submissions from affected landowners support the deletion of System 6 Area M107 because they believe that the recommendation relates more to land use planning control than nature conservation. They argue that the exclusion of M107

and the inclusion of important wetlands and remnant vegetation areas reconciles long term regional environment and planning objectives, maintains the original intent of System 6 objectives and enhances the prospect of sustainable nature conservation reserves into the future.

Departmental Commentary

This submission is agreeing with the rationale put forward in the Public Environmental Review and is noted.

Issue 3.7

The proposals as detailed in the regional section of the PER will result in the loss of Mandurah Hill and Turtle Swamp, two areas of high conservation area, as well as visual amenity values (M107).

Departmental Commentary

Neither Mandurah Hill nor Turtle Swamp are part of MRS Amendment 937/33. Well prior to the Public Environmental Review, the Environmental Protection Authority had already agreed to the subdivision of the area around Turtle Swamp for a Special Rural zone. The actual Turtle Swamp will be contained in a local park as part of the Special Rural zone and will be protected by stringent development control conditions in the adjacent Special Rural Zone lots.

Similar considerations apply to the Mandurah Hill area. The actual hill which comprises a degraded dune just north of Crystaluna Drive is protected in a small area of local open space within the same Special Rural Zone.

These future management and conservation of these areas no relationship to it being within an existing System 6 area which has been ineffective as a planning tool in securing larger areas.

Issue 3.8

Thomas Peels' Historical House ruins are in M107. To retain the character of this heritage area, a larger area of land should be set aside around it including Turtle Swamp on the opposite side of the road.

Departmental Commentary

This submission is outside the context of MRS Amendment 937/33 and is subsequently outside the specific issues addressed in the Public Environmental Review.

This area has been subdivided for a Special Rural zone with the concurrence of the Environmental Protection Authority. Nevertheless, within the context of this Special Rural zone, provisions have been made for the protection of the Turtle Swamp.

So far as Thomas Peels' Historical House ruins are concerned, their protection is subject to protection under Heritage Legislation, rather than under the Environmental Protection Act. Because the land is all privately owned and has been subdivided, there is no prospect that a larger area of land around Thomas Peels' Historical House ruins to include Turtle Swamp can be set aside.

Issue 3.9

The minor amendments to establish the Beeliar Regional Park and the Leda Reserve have not been finalised. In the meantime, further excisions are being proposed for housing and the rapid transit route. It is urged that further excisions from these reserves be rejected, and that the State Planning Commission finalises these minor amendments before this major amendment is approved.

Departmental Commentary

This submission refers to minor MRS Amendment 894/33A (Beeliar) and 900/33A (Leda). The former is about to be finalised and the latter was finalised on 9th May 1994.

The proposals to modify them in terms of the current Amendment 938/33 must go through the normal legal processes which include the consideration of objections to excisions such as contained in this submission.

Issue 3.10

There is support for the inclusion of additional areas into System 6 M93 and M104 reserves as proposed.

Departmental Commentary

These proposals of additional areas into System 6 M93 and M94, as proposed in the major MRS amendment, and as discussed in the Public Environmental Review, are only a minor part of the full extensions to the regional open space proposals addressed in the major amendments and in the Public Environmental Review. In all, there have been very substantial increases to the conservation estate in the South West Corridor.

The support for the proposals is noted.

Issue 3.11

There is support for the inclusion of additional areas into System 6 M97 and M99, although it is believed by one submitter that reservation of Lots 47 and 48 Leslie Road, Wandi and of the Wandi Equestrian Estate and Recreation reserve is unnecessary and unwarranted, given protection provided by the Kwinana Town Planning Scheme.

Departmental Commentary

The support for the inclusion of additional areas into System 6 M107 and M99 as part of the Jandakot Botanic Park are noted.

Lots 47 and 48 Leslie Road are not included in the Parks and Recreation Reserve in MRS Amendment 938/33. Wandi Equestrian Centre, belonging to the Council, was considered a regional recreation facility and therefore was included into the Parks and Recreation Reserve.

Issue 3.12

Increases to the conservation estate and determination of good management boundaries and linkages as early as possible in the urban planning process are welcomed.

Departmental Commentary

The recognition of the positive aspects of the major MRS amendments and the structure planning upon which they are based as reflected in the Public Environmental Review, is noted.

Issue 3.13

There is opposition to the proposed Golf Course to be sited adjacent to the west of Lake Coo loongup. The proposal is not in keeping with conservation of wetlands, nor with System 6 recommendations to manage the area for preservation of Lake Coo loongup. A Golf Course is an elitist form of recreation. This land use will restrict others from passive recreation around the lake.

Departmental Commentary

The Rockingham Lakes Public Golf Course has been in existence for about 15 years and very much appreciated by the community in the area. The author of this submission should address the concern to the membership of the Rockingham Lakes Golf Course, which is immediately to the west of Lake Coo loongup and to the local residents of the area, who place great store in the amenity and aesthetic attraction of the Golf Course in their residential locality.

There are no proposals for any new golf course in the Coo loongup locality, nor so far as is known, plans for any expansion. The one that exists at present has been there a long while and is well appreciated by the local community.

The comment to the effect that golf is an elitist form of recreation is wrong. While the participants of the sport are predominantly male, they are drawn from all walks of life, especially to public golf courses. Public courses offer this popular form of recreation at very reasonable prices. As a form of open space, public golf courses are among the most patronised and best used of all open spaces. What is more important, is they are virtually self-funding and do not rely on public taxes for their maintenance. Golf courses have a very appealing aesthetic attributes as open spaces in urban areas, which makes their locality near to urban settlement a most desirable feature, which can attract high premiums in the value of residential land.

4.0 Rapid Transport Reserve

Issue 4.1

The transport reserve route is environmentally and socially unacceptable because

of its potential impact on the Spectacles, Leda, Lake Coo loongup, Lake Walyungup, Anstey Swamp and the Paganoni area. The Government view of approximately 30 years was that the siting of transport routes along rivers and wetlands provided the perfect solution in terms of location. This view has been well and truly discredited in the intervening years, however, this archaic solution is now being proposed in the South West Corridor. This preposterous proposal should be rejected, and a route should be chosen which is ecologically acceptable. The Department of Planning and Urban Development is trying to upstage the Department of Transport, which is doing a careful analysis of route options.

Departmental Commentary

It is difficult to provide a suitable answer where issues raised are unconstructively critical.

The transport reserve identified in Amendments 937/33 and 938/33, is the result of careful evaluation by the Department of Planning and Urban Development, of all the issues pertaining to development and conservation in the South West Corridor. The Department of Planning and Urban Development is very mindful of the impacts the proposed reservation will have on environmentally sensitive areas. It is also mindful of the potential impact that such a reserve could have on the communities which would be impacted upon if a route through residential areas was selected.

With respect to environmental areas, it is acknowledged that the transport reserve will have a significant impact. This is especially so through the Leda area, where the alignment is approximately from the north-east to the south-west which cut diagonally across the topography and natural vegetation lines which run north-south, parallel to the coast. However, the Department believes that the route selected is the best possible route, notwithstanding the environmental impacts, that satisfies the overall economic, social, engineering and environmental objectives for such a route.

Nevertheless, there have been practical suggestions made for minor variations to reduce the impact on System 6 areas which will be considered by the special Hearings Committee of the State Planning Commission in response to the submissions received to the major Metropolitan Region Scheme Amendments. The Department of Planning and Urban Development is also willing to consider any other suggestions which in any way improve on the social and environmental

acceptability of the route, providing they are practical in an engineering and cost efficiency sense and providing they meet the planning objectives to serve the South West Corridor as a whole.

Issue 4.2

The Department of Transport is conducting a study on possible transit routes, and the inclusion of a route in this amendment prior to the finalisation of the South West Area Transit Study (SWAT) means that the public are being cut out of the consultation process. A number of routes are being proposed in the SWAT Study and the public need to be able to consider the full range of possible routes based on land use, patronage, social, environmental, financial and economic grounds. Any action to formalise the MRS alignment in advance of the SWAT Study results and recommendations is considered to be premature, irresponsible, and not in the best interests of the community of Rockingham and South West Corridor.

Departmental Commentary

The Department of Planning and Urban Development has been a principle player in all the transportation studies which have been taking place for the South West Corridor since 1989. In formulating the alignment for the transport reserve now featured in MRS Amendments 937/33 and 938/33, the Department had the benefit of all the SWAT work as contained in Technical Reports Volumes No 1 and 2. These volumes extensively covered the subject of metro rail transport in the South West Corridor. All of the subsequent work that has been done has not been primarily focussed on rail-based transport.

For purposes of the current major MRS amendments Stages A & B the SWAT Study has now been concluded. The Department of Transport, which has responsibility for the SWAT Study, reported the issue of the transport reserve in the Metropolitan Region Scheme Amendments to the Urban Transport Committee, who made the following two recommendations (among others):

- 1. The Urban Transport Committee accepts the principle of planning for an inter-regional rapid rail link to the South West Corridor and a high speed bus transit system serving Mandurah, Rockingham, Kwinana and Fremantle.*
- 2. The Urban Transport Committee endorses the reservation of the MRS route*

to protect options for high speed transit to and through the South West Corridor at heavy rail standards to complete the metropolitan network.

This outcome from the SWAT Study, as represented by the Department of Transport and the Urban Transport Committee concurs with the proposed transport alignments as now reflected in the major MRS amendments for the South West Corridor.

Issue 4.3

The Department of Planning and the Minister for Planning appear to be acting independently of other State Government agencies, to pursue a transit alignment which has not been properly studied and which is unable to be supported on technical grounds, and effectively ignoring the considerable State Government funds and resources which have been expended to come up with technical results and recommendations. The results of this independent course of action has put them into conflict with local councils and communities.

Departmental Commentary

This is not the case. The alignment reflected in the current MRS amendments is able to be supported on technical grounds and does not ignore, in any way, the considerable State Government funds and resources which have been expended to come up with technical results and recommendations. Indeed, the alignment reflected in the MRS is a product of all of this work with modifications being made upon further technical investigation of environmental and other obstacles which had not been pursued as thoroughly as part of the SWAT process. The MRS alignments should be regarded as extensions of the SWAT work, rather than a separate exercise in competition to it.

It should be noted that the Urban Transport Committee and the Department of Transport, who have responsibility for the SWAT Study, which has now been concluded, have endorsed the transport reservation as reflected on the current MRS Amendments 937/33 and 938/33, subject to minor amendments and modifications which have been suggested and agreed through the public submission process.

Issue 4.4

The EPA is urged to recommend against the transport route proposed by the

amendment in favour of full public consultation with the range of options, including formal assessment of the options in due course.

Departmental Commentary

This submission is directed at the Environmental Protection Authority which must respond to the proposals in the Metropolitan Region Scheme in accordance with the requirements under the Metropolitan Region Scheme Act.

Issue 4.5

It is essential that the public transport route does not cut through conservation areas, and that a responsible route, which does not intrude into environmentally sensitive areas is sought. The most obvious route would be within the Kwinana Freeway reservation as this would cause minimum amount of damage to wetlands and also be the most convenient to the public, given that it has been predicated that the largest population growth will occur on the eastern side of the Freeway.

Departmental Commentary

The prediction that the largest population growth will occur on the eastern side of the Freeway in the South West Corridor is incorrect. Aside from the northern part of the South West Corridor, in the South Jandakot/Mandogalup area, where urbanisation occurs on both sides of the Freeway, all the remaining urbanisation to the south is presently planned to occur on the western side of the Kwinana Freeway.

At the northern end, where urbanisation straddles both sides of the Kwinana Freeway, the railway has indeed been placed along the Kwinana Freeway because it is central to that future urbanisation.

For the remainder of the corridor, the urbanisation is envisaged to occur on the western side of the Kwinana Freeway and will be split into two sub-corridors by environmental constraints. The alignment selected for the reservation has been designed to be as central as possible to all existing and future urbanisation which will occur in the South West Corridor both east and west of Mandurah Road/Ennis Avenue.

It is of note that all of the alternatives investigated in terms of the SWAT Study for rail-based (both metro and light rail) which were designed to serve the Town of

Kwinana and also penetrate the centre of Rockingham focussed towards the same crossing of the Garden Island Expressway/Mandurah Road/Mundijong Kwinana railway at the eastern end of Dixon Road. All SWAT options affect the Hillman part of Leda and M103 to some extent. This critical point has been the focus of virtually all alternatives explored and is dictated by environmental and engineering constraints and also the land use constraints imposed by future plans for the Kwinana industrial area.

A very important additional constraint for the operation of all high speed transport facilities is that they should have an exclusive and dedicated right-of-way. This means that all crossings of road or any other surfaces must be grade separated. The necessity for bridges and other forms of construction at heavy crossing points severely restricts the economic engineering flexibility for the location of the proposed railway reserve.

In effect, if the stated objectives of serving the Town of Kwinana and entering the centre of Rockingham with a grade-separated high-speed right-of-way to be met, there is very little alternative to the routes proposed in the Metropolitan Region Scheme amendments.

It is acknowledged that a route down the Kwinana Freeway would have less environmental impact but would not meet the planning objectives for the Corridor. This submission should be read in the context of the introduction to these responses.

Issue 4.6

Local residents would prefer railway to Fremantle rather than to Perth. This would help decentralisation. The proposal put forward in the amendment does not meet the needs of the South West Corridor.

Departmental Commentary

It was stated in the report to the major MRS amendments, that provision for a rail connection from Jandakot to Fremantle via an existing reservation already exists in the MRS. The desirability of such a connection has been confirmed by the Department of Transport as part of its submission to the Metropolitan Region Scheme Amendment. The decision of whether the route should be directed to Perth via Fremantle or via Kenwick, is a decision to be taken at the appropriate time

dependent upon circumstances prevailing at that time. Both alternatives are provided for within the Metropolitan Region Scheme.

Issue 4.7

The transport reserve goes through a proposed 460 hectare conservation reserve in Leda, and would alienate both the only wetland with permanent water from the conservation reserve and the wildlife including the population of the very timid Black Wallaby, which would be wiped out. This proposal contradicts the coalition policy statement on the environment made in 1993 (Page 14) which stated that in Government, the coalition "overturn the Lawrence Government's plans to turn Hepburn Heights and Leda into housing lots, consistent with her strong actions over the past 3 years to ensure that these beautiful tracts of land are kept in their original state".

Departmental Commentary

It is arguable whether a rapid rail system fenced on both sides and provided with underpasses at suitable points to allow fauna to cross under the railway would have an unacceptably severe impact on the local environment. Very little natural vegetation would be disturbed. The alignment is proposed to be moved to clear all of the wetlands in the Leda Open Space. The actual trains are completely sealed with non-opening windows, so there is no chance of pollution from rubbish being thrown out of the train. In short, the proposal for a railway will have very much less impact than any road or other motorised form of transport would have. In addition, being electrified, there will be no local pollution in the area.

It must be acknowledged during the construction phase of the railway, there will be significant impact on the local environment in the Leda area. However, after construction, any damage can be substantially reinstated and the net result should be very little impact on the natural environment in the Leda area. It should be noted, that from a conservation point of view, many national parks throughout the world consider railway transport through the park as the only acceptable form of transport. Private vehicles and roads are banned because of the lack of control of such vehicles through these areas and the difficulty of controlling the occupants.

The impact of the proposed railway through the Leda should not be understated, but it should not be overstated either. Insofar as the current major amendments fulfil coalition policy statements, the major amendments to the Metropolitan Region

Scheme, incorporating major extensions to regional open space as they do, which constitute a major enhancement to the conservation estate of the metropolitan region, could in fairness, be regarded as a substantial fulfilment of the coalition's promises with regard to protecting the environment.

Issue 4.8

One submission supported the rapid transport route through the Leda open space, subject to further assessment being done to minimise adverse impacts on the affected Leda wetlands.

Departmental Commentary

As a result of investigations in the Public Environmental Review, the Department of Planning and Urban Development, working with Westrail, has devised an alternative route, which is now clear of all wetlands through the Leda area and which has a lesser impact through the Hillman area, into the centre of Rockingham. These modifications were one of the positive outcomes of the Public Environmental Review process.

Issue 4.9

The south-east corner of the Spectacles affected by the rapid transport route comprises Melaleuca species over and understorey of sedges. The ground in most of this area is seasonally waterlogged, and by the EPA's own definition is a wetland and a known habitat for gazetted rare species, the Southern Brown Bandicoot. The two proposed westerly alignment rapid transport routes would interfere and thus diminish the high conservation value of land included in Zone 1 of the Spectacles Development Plan, which is the zone of highest conservation value, which should receive minimal use, even to the exclusion of controlled walk trails. The proposals, if implemented, would require substantial filling to support a railway or bus route. It will alienate and isolate a portion of the Spectacles and create noise which will impact adversely on habitat within the Spectacles.

Issue 4.10

The PER does not resolve the environmental issues related to the rapid transport route options in the vicinity of the Spectacles and therefore, the Department of Planning and Urban Development should conduct further assessment of the alternatives for the rapid transport reserve in the vicinity of the Spectacles with the

view to minimising potential adverse effects on this important area. It is preferable if the route option is realigned to the east side of the Freeway and integrated with the urban cell. This would have the advantage of avoiding the Spectacles, have negligible impacts on Lots 5, 6 and 7 Johnson Road, be more suited to different transport modes because it will avoid the expense of tunnelling required under Thomas Road dual carriageway, take advantage of grade-separated facilities ultimately required for the freeway at Thomas Road and connect to the critical point where the route crosses under Wellard Road in the vicinity of Homestead Drive, Leda.

Issue 4.11

One submission representing 13 landowners, has stated that the most appropriate alignment for the rapid transit line is that which departs from the Freeway well north of Thomas Road, skirts the Spectacles swamps and links into the old tramway at the base of the escarpment at Parmelia (westerly alignment). It is believed by the submitters that the final location of the route should be based primarily on good planning grounds. The easterly alignment proposed would severely impact upon the future residential area by severing future primary school catchments, creating movement and access problems for both vehicle and pedestrian traffic, reduce the opportunity for the creation of a new and clearly identifiable neighbourhood cell, reduce the viability of the station precinct by shifting it away from the existing townsite, and in general create an entirely unnecessary barrier through this new area of Casuarina.

Departmental Commentary

The three issues raised above to do with the Spectacles are inter-related and are therefore addressed concurrently.

The first misconception is the extent of future urbanisation east of the Kwinana Freeway in the Casuarina locality. No urbanisation has been planned in this locality on the eastern side of the Kwinana Freeway for the foreseeable future because of groundwater and regional drainage issues.

The suggested alternative to bring the proposed transport reserve down the eastern side of the Kwinana Freeway was examined in detail in the early stages of planning and was not adopted for a number of reasons. The route was taken over to the western side, just north of Beeliar Drive, to enable the future station location to be directly related to the major commercial/employment node and the

regional sporting and recreation facility, which is on the western side of the Kwinana Freeway, both north and south of Beeliar Drive. A station in this locality, on the western side of Kwinana Freeway is considered most important.

Having crossed onto the western side of the Kwinana Freeway, it is not practical to cross back to the eastern side, only to have to cross back to the western side to go through Kwinana and to enter into the City of Rockingham. Hence, the alignment has followed the western side of the Kwinana Freeway, until the locality of Thomas Road, where it has been diverted in a south-westerly direction through Kwinana and into the City of Rockingham.

In the major amendment for the MRS No 938/33, two alternative alignments for the transport reserve in the Thomas Road locality were advertised. The one alignment leaves the Freeway about 700 metres north of the Thomas Road intersection, traverses Lots 6 and 7 Johnson Road and cuts through the south-eastern corner of the proposed Spectacle Park, alienating approximately 4ha of the park from the western side. There is no reason why both sides of the park could not still be retained within the Parks and Recreation reserve, although it is conceded, for management purposes, the south-east corner would be alienated from the remainder.

The alternative alignment advertised in the Metropolitan Region Scheme, was to keep to the Kwinana Freeway reservation as closely as possible until south of the Thomas Road intersection and then swing out in a curve below the existing drain reserve to join into the westerly alternative rail alignment on the western side of the Spectacles Swamp. From the Department of Planning and Urban Development's point of view, and from an engineering perspective, both of these alternatives are regarded as being of equal merit. The westerly alignment, while cutting through the south-east corner of the Spectacles Park, could be better integrated into the future urban planning of the Casuarina/Parmelia area south of Thomas Road. The easterly alignment further south along the Kwinana Freeway, would have less environmental impact on the Spectacles but would be harder to integrate into the urban fabric of the future Casuarina urban area. It would also have more impact on Lots 5, 6 and 7 Johnson Road which are private residential properties.

Both of these alternative alignments have attracted submissions in response to Major Amendment 938/33 to suggest alternative alignments. The owners of Lots 5,

6 and 7 Johnson Road, between Johnson Road and the Kwinana Freeway opposite the Spectacles, have proposed an alignment which leaves the Kwinana Freeway further to the north and crosses over Johnson Road to the north of Lot 7 Johnson Road and then traverses through a degraded part of the Spectacles parallel to Johnson Road, to join the westerly alignment as currently reflected on the MRS. It is understood that the Town of Kwinana has resolved to support this alignment.

There is no easy solution for the alignment of the transport reserve through the Casuarina/Parmelia area in the locality of Thomas Road. It is acknowledged that a route across the Spectacles, especially as advocated by adjacent property owners, would have an environmental impact on the Spectacles. On the other hand, it is also acknowledged that the alternative along the Kwinana Freeway, to the southern side of the Thomas Road intersection, would give a less satisfactory integration with future urban areas in Casuarina/Parmelia. The Environmental Protection Authority policy is that where environmental areas are to be destroyed or degraded through the provision of essential infrastructure equivalent areas be replaced elsewhere. The Department of Planning and Urban Development believes that the inclusion of an additional 47ha to the area of the parkland, between Johnson Road and Kwinana Freeway, would constitute such a substitute area.

These difficult issues will be subject to hearings and recommendations by a special Hearings Committee of the Metropolitan Planning Council. The Department of Planning and Urban Development has decided, on balance, to recommend to this Committee the westerly alignment through the edge of the Spectacles, just north of the north-western corner of Lot 7 Johnson Road (the route advocated by the Town of Kwinana). Because the development of the Casuarina/Parmelia area in the Town of Kwinana, is under pressure for development and is likely to be substantially development within the next 5/10 years, the Department is faced with the requirement to reach a decision on the alignment as soon as possible.

The Department of Planning and Urban Development does, however, acknowledge that prior to the construction of any facility within the transport reserve, the Environmental Protection Authority may require further environmental assessment, including the production of an environmental management program. Such a program could dictate ways in which the facility was constructed, including the provision of security fences, underpasses and the like, to minimise impact on the environment and also the danger to the natural fauna in the area.

5.0 Wetlands, Drainage and Bushland

Issue 5.1

The reserve at Stakehill Swamp has been reduced so that there is no longer an appropriate buffer around the wetland, and some of the wetland itself is not reserved. The original reserve proposed in the South West Corridor Structure Plan should be reinstated.

Departmental Commentary

The Department of Planning and Urban Development agrees with this submission. It is obvious from submission received both in response to this Public Environmental Review and to the major amendment to the Metropolitan Region Scheme 937/33, that the boundaries for the Stakehill Swamp now proposed are unacceptable from every point of view. From an environmental protection point of view, the buffer areas around the swamp are inadequate. From a management point of view, the lack of access from public roads to the swamp, would make the management of the swamp, especially from the view of fire protection, virtually impossible. Also, from the point of view of the landowners affected, who now own the swamp, the boundaries reflected on the MRS are entirely objectionable. They would rather see no reservation over the swamp at all.

The Department of Planning and Urban Development is therefore recommending, in response to the major Metropolitan Region Scheme Amendment 937/33, that the entire issue of appropriate boundaries for the Stakehill Swamp be removed from Amendment 937/33 and referred back to the Department of Planning for further consideration, to be included in some subsequent major amendment to the Metropolitan Region Scheme, once the issues have been more satisfactorily resolved.

Issue 5.2

There is disappointment that the views of the Community Advisory Committee on the South West Corridor Structure Plan on Stakehill Swamp have not been reflected in the amendment. The reserve boundaries are ecologically unsound, lack any credibility, and are irresponsible.

Departmental Commentary

The role of the Community Advisory Committee, like the Department of Planning and Urban Development, is advisory. With regard to the advice given by that committee as part of the structure planning process, most was taken, some modified and some rejected. This is part of the planning and decision making process of Government.

The boundaries arrived at for purposes of MRS Amendment 937/33 were the result of intensive negotiation with the affected community and strenuous political lobbying by the Stakehill Rural Landowners Action Group. As stated in 5.1 above, it is acknowledged that the boundaries now reflected on Amendment 937/33 are unsatisfactory and should be reviewed.

Issue 5.3

One submission does not support the inclusion of Stakehill Swamp into Parks and Recreation reserve as it is considered that the provision of the Environmental Protection Authority (Swan Coastal Plain Lakes) Policy 1992 are sufficient to control land use without the need to reserve the land.

Departmental Commentary

This was the point of view put forward by the Stakehill Rural Landowners Action Group on behalf of the affected community who own the Stakehill Swamp. The group objects to any reservation of the Stakehill Swamp arguing that they, as landowners, are quite capable of looking after the environmental interests of the swamp and, in any event, the Environmental Protection Authority has the power under environmental legislation to ensure that they do.

The Department of Planning and Urban Development has taken a consistent approach throughout the structure planning and major amendment process throughout the metropolitan region. Areas with a high priority for conservation, especially wetlands, which are in the path of future urbanisation, should be reserved for Parks and Recreation in the Metropolitan Region Scheme to ensure their protection and proper management in the long term.

These issues and conflicts of interest between environmental objectives and community aspirations have not yet been resolved.

Issue 5.4

The integrity of the Spectacles wetland conservation area, protected and preserved by Improvement Plan No 22 and the Environmental Protection (Swan Coastal Plain Lakes) Policy, should not be violated in an effort to achieve balance between urban and environmental objectives under the expedient guise of reconciling conservation and development objectives with the enticing prospect of "enhancing" sustainable conservation reserves in the future.

Departmental Commentary

On the contrary, the Department of Planning and Urban Development, while accepting that the alignment of any transport corridor through the Spectacles reserve would have an environmental impact does not believe that the impact would be nearly as severe as is made out. Firstly, the alignment substantially traverses areas completely cleared and formerly used as horse paddocks for the most part. Secondly, the water level inside the southern wetland of the Spectacles, is controlled by drains which lead southward to the Serpentine at between 8 and 9 metres AHD. The lowest part of the transport reserve was at 11 metres AHD, approximately 130 metres away from the 9 metres AHD contour. These distances are well in excess of the EPA Policy of 1 metre AHD or 50 metres from fringing vegetation, whichever is the greater. Thirdly, even in the South West Corridor of the Spectacles, where the vegetation is at a good standard, it is not the original pristine vegetation. It is regenerated vegetation which has only occurred since the Industrial Development Land Authority acquired the land from private rural small holders with a view to developing land for industry and subsequently, not using the land. It is not a question of destroying pristine vegetation and the alignment would only alienate 4ha of this vegetation, while further north, the Department is proposing to add 47ha of almost pristine banksia woodland.

On balance, the Department believes that its recommendations for the alignment of the railway, taking account of all conflicting and competing interests are reasonable and cannot be dictated by environmental arguments in isolation.

Issue 5.5

There is support for the inclusion of Paganoni, Anstey wetlands and Tamworth Hill Swamp into the conservation estate.

Departmental Commentary

The support is welcomed and noted.

Issue 5.6

The rezoning of land west of Hammond Road in Jandakot from Rural to Urban Deferred is unacceptable. The land contains important damplands and breeding areas and is vital to the protection of the Beeliar Wetlands.

Departmental Commentary

The boundaries for the Beeliar Regional Park were determined after considerable detailed research, negotiation and community input. The area west of Hammond Road proposed to be zoned Urban Deferred in MRS Amendment 938/33 is outside System 6 Area M93, and outside the agreed boundaries for the Beeliar Regional Park.

Nevertheless, the importance of the wetlands and the damplands in this area is clearly acknowledged by the Department of Planning and Urban Development. The detailed structure planning for the Jandakot/Mandogalup Future Urban area makes provision to protect these wetlands in local parks and recreation reserves.

It should be noted that there is a distinction between Parks and Recreation Reserves in the Metropolitan Region Scheme, which is paid for by the State as opposed to local open space, which is provided during the subdivision and development process, as developer contribution or by negotiation with the Local Authority.

The net effect is the same. The open space provided can be set aside for conservation, but does not cost the taxpayer.

Issue 5.7

There is a need for a vegetated wildlife corridor from Thomson's Lake through the Spectacles, Bollard Bullrush Swamp, the Leda Reserve, Rockingham Lakes Regional Park, Anstey Swamp, to Paganoni Swamp. This is nearly achieved through the South West Corridor Plan, but it is recommended that the corridor between Bollard Bullrush Swamp and the Spectacles be widened so that Barney Swamp and the declared rare fauna areas between Thomas and Mortimer Road can

also be zoned Parks and Recreation (Lot 1200 and the area directly north of Lot 1205).

Departmental Commentary

The areas referred to in the above submission will substantially be incorporated into the open space system as a combination of the tramway park reserve featured on Amendment 938/33 and the local structure planning for the Casuarina/Parmelia area. The intention is that most of Lot 1200 and Lot 1205 be combined with the Crown drain reserve to form a wide conservation strip incorporating the drain reserve.

The reason the wide reserve was not reflected as Regional Open Space on Amendment 938/33, is to do with the distinction between how open space is acquired. Regional Open Space is to be acquired by the Government as Parks and Recreation Reserve. Local Open Space is provided as part of the development process at very little or no cost to the Government. This does not mean that Local Open Space must be developed as Parks and Recreation areas. It can be set aside for conservation.

The importance of the areas described in the above submission, is recognised in the planning of the Casuarina/Parmelia area and will be substantially accommodated in the planning of this area.

Issue 5.8

There is much support for the Jandakot Botanic Park as proposed in Amendment Stage A, though numerous suggestions were made for additional to the proposed park.

Departmental Commentary

The support for the Jandakot Botanic Park proposed in MRS Amendment 938/33 (Stage A) is noted.

Planning is an ongoing process and so too will be the planning for the Parks and Recreation reserves throughout the metropolitan region as they represent the conservation estate for the region. To establish any regional parks, such as the Jandakot Botanic Park, takes much negotiation and careful planning. The aspirations, livelihoods and security of many members of the community are

affected where parks and recreation reserves (and other reserves for that matter), are placed over their land. The legislation regarding compensation for the acquisition of Parks and Recreation reserves is not satisfactory in that there is no automatic provision for funds to acquire land for such reserves.

In fact, the State Treasury has advised the Department of Planning and Urban Development that no commitments outside the Metropolitan Region Improvement Fund should ever be made which bind the State to the acquisition of any land identified in the planning process. This includes Parks and Recreation reserves and all other reserves.

Bearing in mind that the Metropolitan Region Improvement Fund has only of the order of \$10m a year and that the Department has identified private property worth hundreds of millions of dollars throughout the metropolitan region for Parks and Recreation and other reserves, there are questions of priority, equity, personal hardship and ability to pay all built into the decisions about what priority should be allocated to designating land for Parks and Recreation.

These considerations also explain why, where there is an opportunity as part of the development process, to acquire property for Parks and Recreation without having to reserve them and acquire them in the Metropolitan Region Scheme, such as has been described above, advantage is taken of this process. However, as with the Jandakot Botanic Park, where there are no such development intentions for the area, there is no option but to reserve the land for Parks and Recreation.

6.0 Flora and Fauna

Issue 6.1

The list of birds in Appendix F of the PER does not include *Porphyria Porphyria Bellus*, which is known to the area.

Departmental Commentary

The omission is noted and a correction will be made to Appendix F of the PER.

Issue 6.2

One submitter totally opposes the development of East Parmelia as shown on the

plan prepared by Taylor and Burrell in February 1993 (east of Bollard Bullrush Swamp, Wellard). The rare species of *Diuris Micrantha* has recently been found in Lot 1200 between the drain and Johnson Road, Casuarina. In the prepared Structure plan, Lot 1200 which is long and narrow and is completely surrounded by residential development, which could have a detrimental affect on the rare flora from the leaching of fertilisers, stormwater drainage and so forth. The plan also shown an artificial lake for drainage purposes located next to the declared rare flora area. Part of the tramway reserve which was promised by the Department of Planning and Urban Development as a connecting corridor is used for medium density housing. The plan is not environmentally acceptable.

Departmental Commentary

This submission is outside the context of Major Amendment 938/33 and consequently, out of the context of this PER. However, the following comments are offered.

So far as is known, Taylor and Burrell have only prepared very generalised concept plans for the East Parmelia area. Until the alignment of the transport reserve has been settled by way of this PER and major amendment process to the MRS, nobody is in a position to produce a final structure plan for the Casuarina and east Parmelia area.

As noted in the Departmental Commentary to Issue 5.7 above, a considerable area of conservation open space is planned both as part of the tramway strip open space, the existing Crown drainage reserve and the inclusion of much of Lots 1200 and 1205 into an open space system to protect the rare flora areas raised in this submission. In any event, it turns out that no rare flora surveys have been completed by CALM or any other person, officially recognised, and that CALM have had to retract statements which they made to the Kwinana Council to the effect that declared rare fauna had been found in the particular area. In fact, no surveys have been done and the area was identified as a probable location for such plants. Even so, the Department is aware of the conservation significance of the area and will plan accordingly.

What this submission is really about, is objecting to any urbanisation of the East Parmelia area. As such, the submission is bound to fail, because there will be urbanisation of this area as identified in all regional and local planning for many years. What can be expected is that the most valuable of the conservation areas

are adequately protected.

The Department of Planning has great difficulty accepting statements such as made in this submission "the plan is not environmentally acceptable". The Department would ask under what standard is any development anywhere environmentally acceptable in a natural ecological sense. By the standards now being applied, there would be no Perth metropolitan region nor any urban development anywhere in Australia.

This response is not intended to be derogatory or flippant. The Department of Planning is faced with the very real problem of having to provide for the housing needs of the existing and future population of Perth. It is doing so in the best way it can see. The one consistent theme about environmental criticism of the nature outlined in this submission is that is always negative. It is about what should not be done rather than what should be done. It does not specifically help the Department of Planning and Urban Development in making balanced recommendations, taking all considerations into account, on which the decision makers must finally determine the issues.

7.0 Roads

Issue 7.1

The proposal to realign Hope Valley Road impacts on a strip of land up to 80 metres in depth along the entire northern boundary of the Spectacles, and will result in the loss of approximately 8,000 square metres, which will in turn result in the loss of native trees and the diminishing of the area set aside for public picnic and off-street parking facilities. This incursion is unacceptable and is contrary to Improvement Plan No 22.

Departmental Commentary

This submission refers to widening of the road reserve for Hope Valley Road on the southern side of Hope Valley Road, which is the northern side of the Spectacles Park gazetted area. The average width of the road widening reserve is approximately 15 metres over approximately 530 metres on the northern side of the Spectacles.

The reason for the road widening is to accommodate future traffic forecasts on

Hope Valley Road. At this particular point, the road reserve has been squeezed on the northern side by an existing major drain, which is part of the drainage system which interconnects all the wetlands within the Beeliar Regional Park system. The northern side of the drain bounds private property on which there are existing houses. It would be most difficult to move the drain which runs parallel to Hope Valley Road forming the northern boundary of Hope Valley Road in this particular locality. Hence the decision to take the required road widening from the southern side where there is no private property and the land has been substantially cleared. This northern part of the Spectacles is substantially degraded.

It should be noted that since the gazettal of Improvement Plan 22, there have been a number of changes. There will be more changes. The most important change to IP22, as reflected on the current MRS Amendment 938/33, is the addition of approximately 47ha of additional banksia bushland between Johnson Road and the Kwinana Freeway.

It is, however, acknowledged by the Department of Planning and Urban Development that the road widening of Hope Valley Road through the Spectacles is through an area which has been designated for Parks and Recreation. Any road works to improve Hope Valley Road will, therefore, be subject to an Environmental Management Program and the road will be developed in such a way that any impacts are minimised. It may even be, subject to further consideration in 10-15 years time when urbanisation has substantially occurred in the area, that the reserve may be reviewed and reduced.

The Department of Planning and Urban Development has been advised, and has accepted the advice, that there will be a requirement to upgrade Hope Valley Road in the future to service the future South Jandakot/Mandogalup urban areas and its interconnection with the remainder of the City of Cockburn on the western side of the Beeliar Regional Park.

Issue 7.2

The Garden Island Freeway alignment is opposed because it would have a severe effect on the important reserves such as M103, wetlands, and the Point Peron and Rockingham community. The justification for this road or the very large interchange reserve to the east of M103 is not clear.

Departmental Commentary

This submission is outside the current Major MRS Amendments 937/33 and 938/33 (Stages A and B).

In the years 1986-89 a major review of all the major roads in the metropolitan region was undertaken (Regional Roads Review, RRR). As a consequence of this major review, part of the Garden Island Expressway, west of Rae Road, was substantially downgraded from a Freeway status (Controlled Access Highway) to a Regional Road status. However, for the most part, the requirement for the Garden Island Freeway (or the Rockingham - Fremantle Freeway as it is alternatively known) was confirmed. It is therefore unlikely to be deleted from the Metropolitan Region Scheme.

It is acknowledged, that because the planning for the Rockingham - Fremantle Freeway pre-dated the environmental review process, that any construction of any facility within this reserve will be subject to environmental review at a level to be set by the Environmental Protection Authority. This will be the responsibility of Main Roads WA.

Issue 7.3

Port Kennedy entrance road alignment is objected to because it goes through sensitive wetlands.

Departmental Commentary

This submission is outside the context of MRS Amendment 937/33 and therefore outside the context of the PER.

Port Kennedy Drive, between Ennis Avenue and Warnbro Sound Avenue has already been constructed. Presumably, this submission relates to the westerly extension of this road into the future Port Kennedy Tourist Complex.

The alignment of this road has been subject to its own ERMP and is also subject to the Port Kennedy Development Act. Any decisions relating to the alignment of this road is the responsibility of the Environmental Protection Authority and the Government via the Port Kennedy Development Act. It is not the subject of this PER.

Issue 7.4

Safety Bay Road should be realigned to the south with either routes E or F to be adopted (as per EPA assessment in Bulletin 678 and Ministerial conditions), not route B as is currently being pursued.

Departmental Commentary

EPA Bulletin 678 stated that a number of options were acceptable subject to certain conditions. Route B was one of the acceptable options and has therefore been selected. The Ministerial environmental conditions will be the Council's responsibility to fulfil as it will be the constructing authority. In other words, Route B as reflected on MRS Amendment 937/33 is in accordance with the environmental conditions set by the Minister.

Issue 7.5

The proposed upgrading of Safety Bay Road between Ennis Avenue and Mandurah Road should require the preparation of an Environmental Management Program to minimise impacts on System 6 Area M103 and its associated wetlands.

Departmental Commentary

The construction of Safety Bay Road through System 6 Area M103 will be the responsibility of the Rockingham City Council. If the Environmental Protection Authority determines that an Environmental Management Program must be completed prior to construction, then it will be the responsibility of the City of Rockingham to see that this is undertaken.

Issue 7.6

The Kwinana Freeway reserve is very close to Folly Pool. This pool supports many water birds. Measures to reduce any impact on the wetland and the water birds that may breed here, should be taken prior to any construction proceeding.

Departmental Commentary

This submission is outside the context of MRS Amendment 937/33 because the reservation for the Kwinana Freeway already exists in the Metropolitan Region Scheme.

It is understood that Main Roads WA will be required to undertake Environmental Management Programs for the extension of the Kwinana Freeway prior to its construction. It is also understood that Main Roads WA is aware of the proximity of Folly Pool and will plan accordingly.

This issue is one between the Environmental Protection Authority and Main Roads WA.

Issue 7.7

The Nairn Road alignment affects the Environmental Protection Policy Lake. What will be done to manage this proposal so that ecological functions of this wetland are not lost?

Departmental Commentary

It is presumed that this submission is referring to a small wetland partially within the intended Nairn Road reserve, approximately 2km north of Paganoni Road.

The alignment of this reserve was determined through the subdivision process by the City of Rockingham. It will be the responsibility of the City of Rockingham to construct this road. At the time of subdivision, a reserve 40 metres wide, which is the alignment of the current blue road reflected on the MRS was provided. It has been surveyed and is a formal road under section 20 of the Town Planning Act. The current blue road reflected on MRS 937/33 is merely formalising an existing situation. Also, the gazettal of this road under section 20 of the Town Planning and Development Act, preceded the Environmental Protection (Swan Coastal Plain Lakes) Policy.

Nevertheless, it is acknowledged that this wetland is a most important conservation area. In time, it is intended that the whole of the Karnup area will become urbanised and in the process, it will be possible to realign Nairn Road in such a way as to avoid this EPP wetland. It is not considered appropriate at this time to realign Nairn Road because private property would be impacted upon and the Department would be forced to acquire and reserve more land which it could achieve without cost through the subdivision process.

In any event, the Environmental Protection Authority has the power to ensure the protection of the wetland in question as a condition of approval for the

construction of the road. At present, Nairn Road is an entirely unmade road.

8.0 Port Kennedy

Issue 8.1

There were a number of objections to the Port Kennedy development.

Departmental Commentary

The Port Kennedy development not subject of this MRS amendment. It is the subject of a special Act known as the Port Kennedy Development Act. It has been given approval to proceed by the Government subject to specific environmental conditions.

Issue 8.2

There is opposition to the land swap of the northern and southern conservation zones at Port Kennedy.

Planning Commentary

With reference to the response to Issue 8.1, the Port Kennedy Development is subject to the Port Kennedy Development Act and supersedes the Metropolitan Region Scheme. The proposal will be implemented according to specific environmental conditions which have been set.

Issue 8.3

All of Stage 2 Port Kennedy should be included in the Parks and Recreation reservation. The current Government, when in opposition, strongly supported the establishment of a Port Kennedy Scientific Park which was to include 100% of Stage 2.

Departmental Commentary

The Coalition Government Election platform did include an undertaking to establish a Port Kennedy Scientific Park. However, it did not include the specific undertaking to include 100% of Stage 2 in that Scientific Park. The current proposals reflected in MRS Amendment 937/33 for Parks and Recreation in the Port Kennedy/Larkhill area are intended as the initial part of the fulfilment of the

Government undertaking to create the Port Kennedy Scientific Park. Once the Parks and Recreation reservation is in place, it will be the responsibility of other agencies to formulate appropriate management plans.

9.0 Other Issues

Issue 9.1

The continuation of low housing density strategies for Perth (refer Table 1, Page 10 and surrounding text) is rejected. The Government should actively pursue the implementation of higher quality dwellings in each of the centres (Cockburn, Kwinana and Rockingham) and "infill" and "revitalising" city centre and inner suburbs, rather than accepting current trends which are destroying remaining bushland, threatening natural resources such as ground and surface water and soil for agriculture, and causing air pollution through increased traffic.

Departmental Commentary

This submission represents a fairly wide cross section of opinion in response to all the strategic and structure plans for the metropolitan region which reflect outward growth of the metropolitan region along four corridors. Corridor growth is the basis of Metroplan which is the strategy for metropolitan growth to the year 2021 as adopted by the State Planning Commission.

Despite the concerns expressed at the rate at which growth is occurring in the Metropolitan region it is most unlikely that any government would be able to significantly alter the style or direction of growth in the Perth Metropolitan Region in the short term - possibly to the Year 2021. It is quite clear that the inner communities of the metropolitan area have no intention of allowing any changes to the low density character of their areas. Consequently, there is very little potential, at least in the short term, for significant infill housing development as an alternative to outward expansion. There is also very little prospect of reducing the rate of growth of the Perth Metropolitan Region or decentralising it away from the region to other centres such as Geraldton, Bunbury and Albany.

The State Strategy for the next 50 years of State development acknowledges the Perth Metropolitan Region as the focal point for population growth in the State. The strategy foresees the continued growth for Perth despite putting more emphasis on decentralisation to regional centres.

At present, there is an understandable concern within the community that things are happening too fast and development is proceeding too quickly. The very reason for producing strategy and structure plans which have led to the current major MRS amendments throughout the metropolitan region, is to ensure that this expansion is directed in a way that least impacts on those most important environmental and other heritage aspects which the community seeks to conserve. However, in the end it must be recognised that the metropolitan region is a concentration of human activity and human habitat expressed as urban form demands a comprehensive modification of the natural environment. A radical change of attitude by the community as a whole would be required before there was any substantial alteration in the current growth trends being reflected in the Perth Metropolitan Region.

Issue 9.2

Consideration should be given to lifting the constraints of the Kwinana Air Quality Buffer Zone as it is not only impairing progress, it is also discriminating against landowners in this area from the freedom enjoyed by others outside the Buffer Zone.

Departmental Commentary

The Kwinana Air Quality Buffer Zone was imposed through environmental legislation and can only be altered by that legislation.

Nevertheless, there are good reasons to maintaining the Kwinana Air Quality Buffer Zone. Every state and major metropolitan area must have its significant industrial areas. The Kwinana area was identified as being appropriate as a concentration for such industrial uses since the Second World War and was incorporated into the major planning for the area by way of the Metropolitan Region Scheme in 1963. Any encroachment of urban development into the proximity of this area would have the effect of limiting the amount and type of industry that could be located in Kwinana. This is because the planning agencies and the Environmental Protection Authority have a responsibility for the safety, health and quality of life for people who live in proximity to such areas. It would be irresponsible to allow urban development to encroach onto an area where it is known that incompatible land uses might occur and thus create conflict situations. The Kwinana Air Quality Buffer Zone is considered a most essential element of good land use planning and is unlikely to be removed.

Appendix 3
List of submitters

Alcoa of Australia
City of Mandurah
City of Rockingham
Conservation Council of Western Australia
Conservation of Kwinana's Environment
Department of Conservation and Land Management
Martin Goff and Associates
Messers K & T Hallam
Messrs M & S James
Miss J Wilson
Mr & Mrs L & R Hancock
Mr A E de Jong
Mr A Hamsley
Mr D Fullard
Mr J Jones
Mr K Mclean
Mr R Gardiner
Mr/Ms B D McGowen
Mr/Ms D F James
Mr/Ms G E Rogers
Mr/Ms K Campbell
Mr/Ms M Morris
Ms C Heal
Ms D Harris
Ms F Chambers
Ms J Payne
Port Kennedy Land Conservation District Committee
Russell Taylor and William Burrell Consultants
The Greens WA
The Spectacles Wetlands Working Group
Town of Kwinana
Urban Bushland Council (WA)
Waterbird Conservation Group Inc
Wetlands Conservation Society

Appendix 4

Proponent's commitments

Proposal to change land use affecting System Six areas and lakes protected under the Environmental Protection Policy to Urban, Industrial, Special Uses and transportation purposes, to be reflected in the major Metropolitan Region Scheme Amendments for the South West Corridor. (Assessment number 838)

DEPARTMENT OF PLANNING AND URBAN DEVELOPMENT

10.0 COMMITMENTS BY THE PROPONENT

Subject to the understanding that DPUD is not a statutory decision making body (except in a minor way by delegation) and that DPUD has only an advisory role to the Minister for Planning, the State Planning Commission and the Metropolitan Planning Council, and subject to the understanding that many decisions made on the advice of DPUD can be overturned on appeal, and subject to the understanding that DPUD does not have responsibility for the actual construction of major roads and other items of transport infrastructure, DPUD, as proponent of this PER makes the following commitments.

1. The additional areas proposed for rezoning to Parks and Recreation in the 1993 Structure Plan for the South West Corridor will be zoned for this purpose. That is, subsequent to implementation of the current Stage A and B Amendments, DPUD will recommend that additional amendments are initiated to achieve all of the Parks and Recreation allocations as proposed in the Structure Plan.
2. In the event that minor modifications to proposed Parks and Recreation Reserves are considered desirable prior to formal zoning, then DPUD will recommend that adjustments be made to ensure that there will not be a reduction in the overall allocation of open space for conservation purposes in the South West Corridor.
3. During future implementation of infrastructure proposals within transport reserves established by the Stage A and B Amendments, DPUD will recommend that a detailed Environmental Management Program (EMP) is required prior to construction (to be prepared to the satisfaction of the EPA). In particular, the following elements will be addressed by future EMP's:
 - the rapid transport route and its effects on important areas of natural environment, including but not limited to System 6 area M103 (Rockingham Lakes), The Spectacles, Stakehill Swamp and Anstey Swamp;
 - the Eighty Road extension and its impingement on the Tamworth Hill EPP wetland;
 - the proposed Beeliar Drive and its crossing of M92 and an EPP wetland;

-
- the widening of Russell Road through the Beeliar Regional Park (M93), and
 - the proposed upgrading of Safety Bay Road through System 6 area M103.
4. As urbanisation of the South West Corridor progresses, DPUD will endeavour to ensure that the environmental protection requirements implicit to this PER are implemented, where appropriate, in Town Planning Schemes, District and Local Structure Plans and Subdivision Plans. In general, the aim will be to achieve adequate protection of Structure Plan wetlands (including EPP wetlands) and the following specific environmental features;
- the EPP wetland in the proposed regional sporting centre for the City of Cockburn (part of a proposed Parks and Recreation Reserve north of Beeliar Drive and east of the new Forest Road alignment) will be protected from recreational development;
 - the two small wetlands in an area of proposed Urban Deferred (west of Hammond Road and north of Russell Road) will be incorporated within open space;
 - the extreme north-eastern side of Tamworth Hill Swamp extends into a proposed urban area and, whilst completely degraded, it will be protected from adverse drainage and water quality changes which may affect Tamworth Hill Swamp;
 - the small areas of System 6 area M92 which are not included as Parks and Recreation Reserve will be incorporated into local open space; and
 - the southern 'spur' of System 6 area M93, which includes two wetlands, will be protected in local open space.
5. Where the rapid transport reserve crosses public land, such as the Leda open space and northern sector of M103, flexibility in the alignment will be accommodated via minor amendments to the MRS in the event that detailed environmental assessment (during preparation of the EMP) identifies an alternative, acceptable alignment with reduced environmental impact.

6. A detailed re-assessment of the configuration of the Garden Island Highway and rapid transport reserve will be conducted for the interchange area in the vicinity of Dixon Road (east) and the Mundijong railway, to determine whether or not the EPP wetland can be avoided and the rapid transport route deviated further to the north from Lake Cooloongup.
7. DPUD will prevail upon the City of Rockingham to negotiate with Special Rural landholders adjacent to the Nairn Road reserve to attempt to avoid the EPP wetland which will currently be affected by future road construction. The option of wetland replacement will be discussed with the City of Rockingham.
8. DPUD will conduct further assessment of the alternatives for the rapid transport reserve in the vicinity of The Spectacles, with a view to minimising potential adverse effects on this important area.
9. DPUD will recommend that the proposed Hillman Public Purposes Reserve be deleted from the Stage B Major Amendment to the Metropolitan Region Scheme on the basis of findings of this PER.

Appendix 5

Environmental Protection Authority advice provided on the remainder of the proposals contained within South West Corridor major Metropolitan Region Scheme Amendments A and B (938/33 and 937/33). This advice is not subject to appeal.



Secretary
State Planning Commission
469-489 Wellington Street
PERTH WA 6000

Your ref: 809/2/28/5
Our ref: TP/93.52
Enquiries: J Boyer

ATTENTION: MR I MACRAE

INFORMAL ENVIRONMENTAL ASSESSMENT OF PARTS OF SOUTH WEST CORRIDOR MAJOR METROPOLITAN REGION SCHEME AMENDMENT B

The following is the Environmental Protection Authority's advice on the proposals contained within the South West Corridor Major Amendment (B) Amendment Number 937/33.

It should be noted that the proposed Railways Reservation, changes to System Six areas M103 and M107, and the Safety Bay Road reservation are subject to a separate formal assessment. Advice on these issues will be provided in the Environmental Protection Authority's Report and Recommendations at the completion of that assessment.

1 System Six areas and wetlands

The Environmental Protection Authority's focus for conservation on the Swan Coastal Plain is primarily based on the System Six study and through a strategy for wetland protection which includes the Environmental Protection (Swan Coastal Plain Lakes) Policy. The major amendment has the potential to impact on wetlands and System Six areas. There are a number of issues which will need to be considered at this point and in future.

- 1.1 The reservation for Parks and Recreation of Stakehill Swamp, Tamworth Swamp, the Paganoni wetlands and other wetland and bushland areas is strongly supported.
- 1.2 Any future proposals which will result in direct impacts on the System Six areas and wetlands protected by the Environmental Protection (Swan Coastal Plain Lakes) Policy, for example, Nairn Road, should be referred to the Environmental Protection Authority for assessment.
- 1.3 Any other wetlands in the area should be protected through the planning system using the framework provided by Bulletin 686.
- 1.4 Any indirect impacts on System Six areas or wetlands be managed through the planning process.

- 1.5 Management plans to protect the Parks and Recreation Reserves should be formulated.

2. Other Vegetation

The Authority considers that decisions on the use of bushland areas outside Systems Recommendation areas and conservation areas should be made through the planning process, both at the State and local level.

- 2.1 The protection of areas outside System Six areas and areas of high conservation value should be addressed through the planning process.
- 2.2 Any endangered species should be protected on advice from the Department of Conservation and Land Management.

3. Water Quality and Water Balance

Drainage management will have to be undertaken to prevent adverse environmental impacts. A regional water balance and nutrient management study would need to be undertaken to ensure that the areas proposed for urban and urban deferred can be drained without adverse impact on the lakes, wetlands and native vegetation of the area, and the Peel-Harvey estuary.

Urban and Urban Deferred

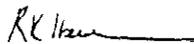
- 3.1 Drainage management will require the preparation of a regional water balance and nutrient management study. The drainage management of these areas may require formal assessment at the appropriate stage to ensure that there are no adverse impacts on lakes, wetlands, and native vegetation.
- 3.2 Urbanisation and other development in the Peel -Harvey Catchment would have to be in keeping with the provisions of both the Environmental Protection (Peel Inlet-Harvey Estuary) Policy and the Statement of Planning Policy No. 2: The Peel Harvey Coastal Plain Catchment.

4. Buffers

There are some incompatible land uses existing either within or adjacent to areas proposed for urban and urban deferred. The Authority does not recommend the urbanisation of land within the buffer zones of such land uses as unacceptable odour, noise and dust problems could be experienced by future residents.

- 4.1 Industry and intensive animal operations should be separated from residential and certain urban development (eg schools, hospitals).
- 4.2 Residential development should be separated from nearby lakes and wetlands to prevent midge and other insect nuisance problems.

It is hoped that this advice is implemented in the finalisation of the amendment and subsequent stages of the planning process.



R K Steedman
CHAIRMAN

5 May 1994



Secretary
State Planning Commission
469-489 Wellington Street
PERTH WA 6000

Your ref: 809/2/1/21
Our ref: TP/93.43
Enquiries: J Boyer

ATTENTION: MR A JACKSON

INFORMAL ENVIRONMENTAL ASSESSMENT OF PARTS OF SOUTH WEST CORRIDOR MAJOR METROPOLITAN REGION SCHEME AMENDMENT A.

The following is the Environmental Protection Authority's advice on the proposals contained within the South West Corridor Major Amendment (A) Amendment Number 938/33.

It should be noted that the Railways Reservation proposed by the amendment is subject to a separate formal assessment. Advice on this issue will be provided in the Environmental Protection Authority's Report and Recommendations at the completion of that assessment.

1 System Six areas and wetlands

The Environmental Protection Authority's focus for conservation on the Swan Coastal Plain is primarily based on the System Six study and through a strategy for wetland protection which includes the Environmental Protection (Swan Coastal Plain Lakes) Policy. The major amendment has the potential to impact on wetlands and System Six areas. In this instance the direct impacts of re-zoning are positive ones, however, there are a number of issues which will need to be considered in future developments.

- 1.1 The inclusion of System Six areas M97, M99 and M100 in Parks and Recreation reserve is supported.
- 1.2 Any future proposals which will result in direct impacts on the System Six areas and wetlands protected by the Environmental Protection (Swan Coastal Plain Lakes) Policy should be referred to the Environmental Protection Authority for assessment.
- 1.3 Any other wetlands in the area should be protected through the planning system using the framework provided by Bulletin 686.
- 1.4 Any indirect impacts on System Six areas or wetlands should be managed through the planning process.

2. Jandakot Botanic Park

It has been documented that only 5% of Banksia woodlands of the Bassendean Complex (Central and South) remain, and of this, only approximately 1.6% is represented in the reserve system. As such, the proposals for the Jandakot Botanic Park which will increase the representation of this vegetation association in the reserve system is supported. The following are recommendations made to improve the proposal.

- 2.1 Management plans to protect the Jandakot Botanic Park should be formulated.
- 2.2 Land should be included within the park to provide a linkage between Piara Nature Reserve and the proposed Parks and Recreation Reserve to the North East.

3. Other vegetation

The Authority considers that decisions on the use of bushland areas outside Systems Recommendation areas and conservation areas should be made through the planning process, both at the State and local level. The amendment has had some positive impacts through inclusion of certain areas in Parks and Recreation reserves, though there are a number of issues which will need to be considered in future developments and local authority rezonings.

- 3.1 The reservation for Parks and Recreation of wetland and bushland areas is strongly supported.
- 3.2 The protection of areas outside System Six areas and areas of high conservation value should be addressed through the planning process.
- 3.3 Any endangered species should be protected on advice from the Department of Conservation and Land Management.

4. Groundwater Management

Many of the proposals contained within the amendment have the potential to directly and indirectly impact on the Jandakot Groundwater Mound. The Environmental Protection Authority believes that this potable groundwater resource should be protected from adverse environmental impacts, and recommends accordingly:

Urban and Urban deferred

- 4.1 No further urbanisation beyond that which has already been given environmental approval by the Minister for the Environment in 1988 should be permitted on the Jandakot groundwater mound between the two lines of public water supply bores.
- 4.2 Drainage management for those areas on the mound which already have environmental approval must be in keeping with the South Jandakot Drainage management plan as required by the Environmental Conditions set in 1988.

Industrial

- 4.3 Land use controls for the Jandakot Industrial Area should be imposed through the planning process to ensure that activities which take place within this area do not have the potential to pollute the Jandakot groundwater resource.

5. Water Quality and Water Balance

Drainage of much of the land subject to this amendment will be difficult given the high water table. A regional water balance and nutrient management study would need to be undertaken to ensure that the area can be drained without adverse impact on the lakes, wetlands and native vegetation of the area, and the Peel-Harvey estuary.

Urban and Urban Deferred

- 5.1 Drainage management of the land in the Jandakot area which has previously been given environmental approval must be consistent with Environmental Conditions set by the Minister for the Environment in 1988.
- 5.2 The area to the south of Russell Road Jandakot has been proposed to be rezoned to urban deferred. This area should not proceed to urban until monitoring results from the South Jandakot Drainage Management Scheme indicate that environmental management of the drainage of the area can be successfully achieved as required by Environmental Conditions set in 1988.
- 5.3 Drainage management of those areas not currently within the provisions of the South Jandakot Drainage Management Scheme will require the preparation of a regional water balance and nutrient management study. The drainage management of these areas may require formal assessment at the appropriate stage to ensure that there are no adverse impacts on lakes, wetlands, native vegetation and the Jandakot Groundwater Mound. These areas include land generally South of Rowley Road, Jandakot.
- 5.4 The area to the West of Hammond Road Jandakot which is not within the catchment of the South Jandakot Drainage Management Plan and has not been given previous environmental approval, should not be rezoned to Urban Deferred until it has been established to the satisfaction of the Environmental Protection Authority and the Water Authority of Western Australia, that drainage management can be achieved without adverse impacts on the Beelihar chain of wetlands.
- 5.5 Urbanisation and other development in the Peel -Harvey Catchment would have to be in keeping with the provisions of both the Environmental Protection (Peel Inlet-Harvey Estuary) Policy and the Statement of Planning Policy No. 2: The Peel Harvey Coastal Plain Catchment.

5. Buffers

There are a number of incompatible land uses existing either within or adjacent to areas proposed for urban deferred. The Authority does not recommend the urbanisation of land within the buffer zones of such land uses as unacceptable odour, noise and dust problems could be experienced by future residents.

- 5.1 The Kwinana Environmental Protection Policy buffer should not be encroached upon by future residential development under any circumstances.
- 5.2 Due to the proximity of residential areas to the Jandakot Industrial Area on Forrest Road, industries should be made to ensure that their buffers can be contained within the industrial area.
- 5.3 Industry and intensive animal operations should be separated from residential and certain urban development (eg, primary schools, hospitals).

- 5.4 The Alcoa residue disposal area should be separated from future residential areas by an adequate buffer because of dust and its caustic nature.
- 5.5 Residential development should be separated from nearby lakes and wetlands to prevent midge and other insect nuisance problems.

It is hoped that this advice is implemented in the finalisation of the amendment and subsequent stages of the planning process.



R K Steedman
CHAIRMAN

5 May 1994