

Yangebup Road realignment, City of Cockburn

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

**Environmental Protection Authority
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**Realignment of Yangebup Road
from Hammond Road westwards, City of Cockburn**

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1. Introduction

The Environmental Protection Authority has assessed a proposal by the City of Cockburn to realign Yangebup Road between Hammond Road and Lorimer Road, within the suburb of Yangebup (Figure 1).

The realignment proposal has been incorporated in the Metropolitan Region Scheme (MRS) and the City of Cockburn Town Planning Scheme Number 2 for ten years.

The Kwinana Freeway, when extended to Yangebup Road, will cause an increase in vehicle movements on Yangebup Road.

The proposed construction works associated with the realignment of Yangebup Road are within the Cockburn wetlands chain, System 6 Area M93 (Figure 2), specifically between Lakes Yangebup and Kogolup. The realignment is also within the proposed Beeliar Regional Park and was foreshadowed in the report released in draft form for public comment by the Department of Planning and Urban Development in August 1990.

The area intended for the realignment forms part of an ecologically interconnected wetland chain with recognised high conservation values.

The proposal was referred to the Environmental Protection Authority in January 1990 and in recognition of the environmental concerns the level of assessment was set at Consultative Environmental Review (CER).

The proponent submitted the Consultative Environmental Review on 31 August 1990. A four week review period followed.

2. Project description

The Yangebup Road realignment involves closing the existing Yangebup Road along the southern margin of Lake Yangebup and realigning the road further south.

The proposed new alignment passes approximately halfway between Lake Yangebup and Lake Kogolup, on the higher ground which separates their respective surface drainage catchments.

Allowance has been made in the preliminary design for an ultimate development of a dual carriageway each of two lanes.

The first stage of development will comprise of a single, two lane carriageway with shoulders and table drain, to be built in 1991.

The second stage duplication will proceed when the annual average daily traffic exceeds approximately 15,000 vehicles.

3. Existing environment

In the Authority's Bulletin 374 (draft) "*A Guide to Identifying Wetland Management Objectives in the Perth Metropolitan Area*" Yangebup Lake is identified as a Category O wetland (O for open space).

The draft Bulletin states that wetlands in this category have been modified but are considered to play important roles in their urban and/or rural settings. Their management objectives are: to provide for human uses whilst maintaining and enhancing the existing natural attributes.

The management category for Lake Kogolup North at present is Category E (for Environmentally Sensitive Development) partly because of surrounding agriculture and industry. However, the Beeliar Regional Park proposal gives priority to Government acquisition of this land. Kogolup North will be category C (for Conservation) when the private property is acquired and agricultural activities cease. Category C wetlands possess relatively intact natural systems and their management priority is:- to maintain and enhance the natural attributes and functions.

The existing Yangebup Road alignment skirts the southern shoreline of Lake Yangebup about the 18 metres contour level, approximately 30 metres from the winter high water mark.

Lake Kogolup and Lake Yangebup are part of the eastern chain of wetlands within the Beeliar wetlands unit. These lakes and some adjacent lands have been proposed for inclusion in the Beeliar Regional Park, a draft report of which was released for public comment in August 1990.

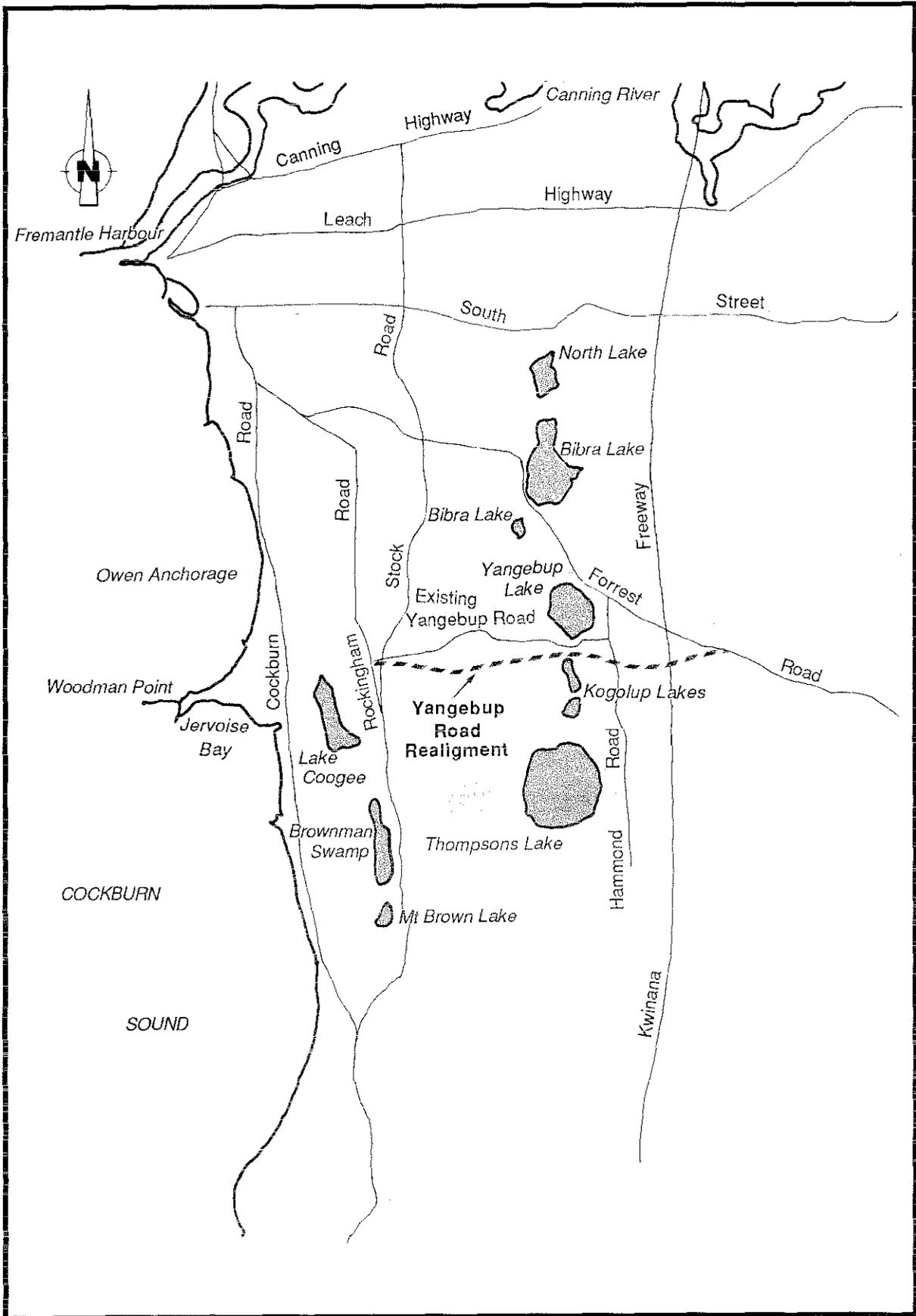


Figure 1: Location of proposed Yangebup Road realignment

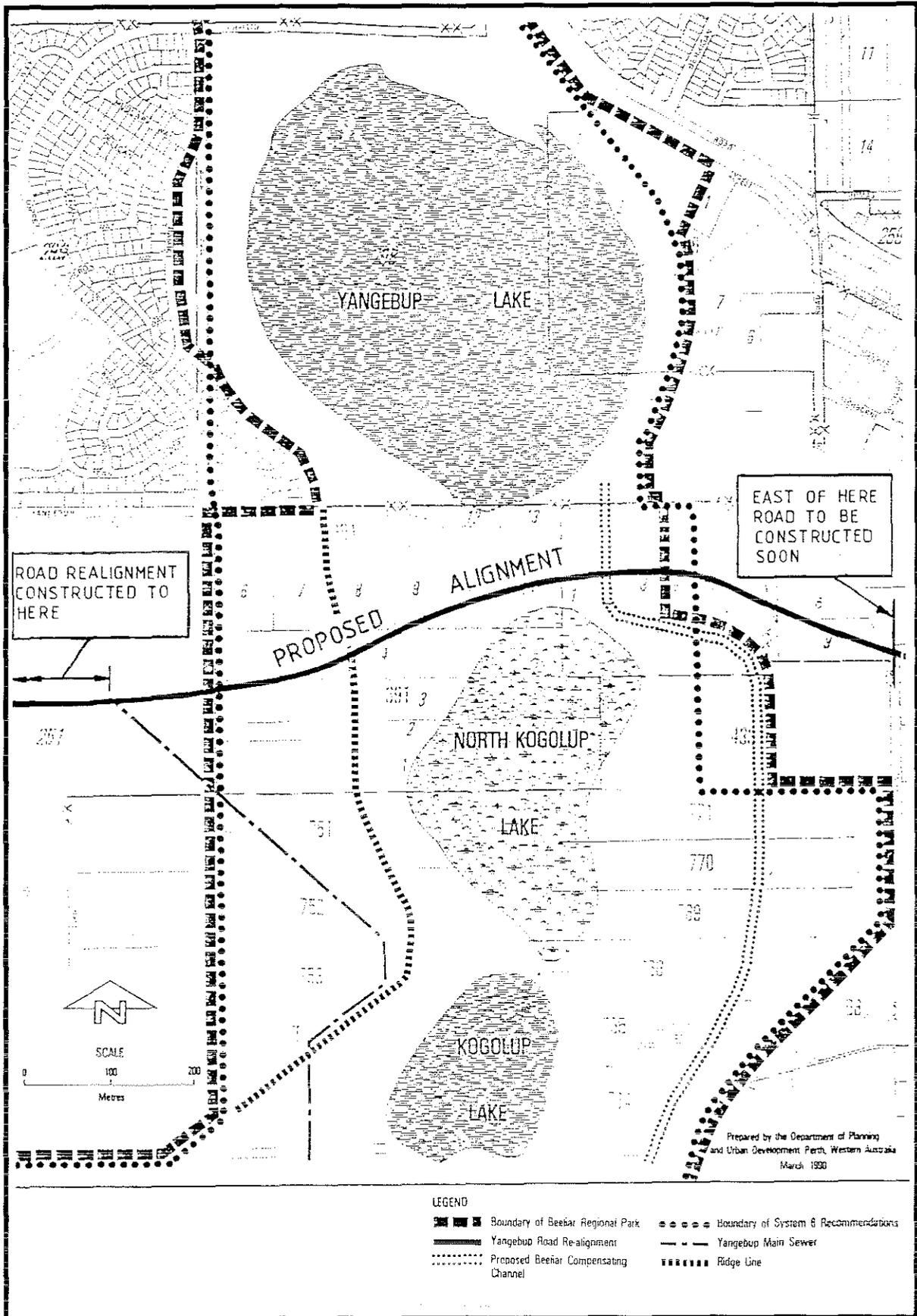


Figure 2: Proposed realignment through Beelihar Regional Park (after DPUD 1990)

The eastern lake chain of the Beelihar wetlands formed in a depression between two of the main geomorphic elements of the Swan Coastal Plain, the Spearwood Dune System and the Bassendean Dune System (DPUD 1990).

Soils in the development area are highly permeable, have low nutrient fixing ability and are susceptible to erosion following disturbance or clearing.

The lakes are situated on the western flank of the Jandakot Groundwater Mound where groundwater flow is generally to the west (DPUD 1990).

The Beelihar wetlands form an interdependent ecosystem which supports a diverse range of plants and animals. Many waterbirds and other fauna migrate from one wetland to another during the summer as the swamps and lakes gradually dry out. The fringing woodlands around Kogolup, Thomsons and North Lakes are important breeding areas for many bush birds, bandicoots, long-necked tortoises and other reptiles (CALM).

Vegetation communities of the area potentially affected by the proposed realignment include:

- Jarrah-Marri-Tuart association;
- Cleared Pasture/Grazing Lands;
- Jarrah Woodland;
- Littoral Flooded Gum-Paperbark; and
- Jarrah-Banksia Woodland.

The proposed realignment will result in the clearing of some natural vegetation.

Various species of fauna inhabit Lake Yangebup, Lake Kogolup and their surrounds. The area provides habitat for waterbirds, bushbirds, aquatic fauna including invertebrates, and terrestrial fauna. Yangebup Lake provides a habitat for at least 28 species of waterbird (Murdoch 1988). More recent studies by Murray and Middle (1989) indicate a total of 41 species of waterbirds have been observed at Lake Kogolup. A further 34 species of bush birds were also reported. The long necked tortoise, (Chelodina oblonga) which has breeding populations at North Lake and is believed to inhabit the Yangebup area in large numbers is found at Lake Kogolup and surrounding areas.

Of the terrestrial fauna, a diverse range of snakes, lizards, and mammals is present. Occasionally larger mammals including bandicoots and possums and feral species such as foxes and rabbits are sighted. Murray and Middle (1989) recorded a total of 27 indigenous and four introduced terrestrial species at Kogolup Lake.

Much of the land affected by this proposal is owned by Government agencies, but some remains in private ownership. Privately owned lands are used for grazing and horse agistment, limited market gardening and orcharding, industrial purposes (wool scouring) and to the west and north of the proposed realignment, residential land.

Within the proposed Beelihar Regional Park the acquisition of remaining private lands is seen as a priority.

The majority of the area affected by this proposal falls within the Beelihar wetlands and the proposed Beelihar Regional Park.

4. Environmental impacts and management

Based on its own investigations, information in the CER and submissions received during the review period, the Environmental Protection Authority has identified the following environmental issues:

- Impact on System Six Recommendation Area M93;
- Impact on conservation values of Beelihar Regional Park;
- Rehabilitation of previous road alignment and new works;
- Road drainage management - Wetlands; and
- Impact on flora and fauna.

After considering all of these issues and the proponent's commitments (Appendix 1), the Authority has concluded that the environmental impacts of this proposal are manageable and the project can be made environmentally acceptable.

Recommendation 1

The Environmental Protection Authority concludes that the project, as described in the Consultative Environmental Review and as shown in Figure 1 of this report, to realign Yangebup Road between Hammond Road and Lorimer Road is environmentally acceptable and recommends that it could proceed subject to the Authority's recommendations in this Assessment Report and the commitments made by the City of Cockburn for environmental management of the project.

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

4.1 Impact on System 6 area M93

Part of the proposed realignment is within the System 6 recommendation area M93 Cockburn Wetlands - Eastern Chain. The Environmental Protection Authority considers all System 6 areas are potentially significant for conservation purposes and the Authority is opposed, in principle, to any development proposals which threaten those conservation values. Notwithstanding the above, the Authority acknowledges the existing Yangebup Road, adjacent 22kv transmission line and underground gas pipeline already traverse this area.

Where a road already exists within a System Six area, consideration of its realignment, subject to its environmental acceptability is not inappropriate, particularly where the potential exists for an improvement in the status quo.

Inherent in the environmental acceptability of this proposal however, is the requirement for the proponent to compensate for the impact of the Yangebup realignment through a number of measures including the closure, removal and rehabilitation of the existing Yangebup Road alignment. The City of Cockburn proposes that the existing Yangebup Road be closed and removed between approximately Lot 8 or 9 (Location 391) in the west and Lot 7 or 8 (Location 677) in the east. The road is intended to be cul-de-sac'd either side of the closure with perhaps a small car-park on one or both sides.

The Authority considers that where it does not preclude lawful access to residences, as much as possible of the existing Yangebup Road within the proposed Beelihar Regional Park should be closed, removed and rehabilitated. The Authority believes that the rehabilitation should be extended beyond the road reserve to include the southern shore of Yangebup Lake. The Authority considers the proposed car-park should not be located within the boundaries of the proposed Beelihar Regional Park. The City of Cockburn is considered by the Authority to be the agency responsible for the revegetation of the existing Yangebup Road Reserve in conjunction with the other relevant management bodies.

Therefore, in order to minimise the impact of the proposed realignment on the conservation values of M93, the decommissioning and rehabilitation of the existing Yangebup Road reserve is considered essential.

Recommendation 2

The Environmental Protection Authority recommends that upon completion of Stage 1 of the Yangebup Road realignment the City of Cockburn prepare and subsequently implement a plan for the closure, removal and rehabilitation of the existing Yangebup Road to the satisfaction of the Environmental Protection Authority on advice from relevant management bodies.

4.2 Impact on proposed Beelihar Regional Park

A planning study for the proposed Beelihar Regional Park was released for public comment in August 1990. Regional Parks are areas which have regional significance for conservation, landscape or recreation; they provide for visitors from a regional sphere as well as for the local community. They are intended to enhance public enjoyment of natural or near natural environments (DPUD 1990).

The maintenance of landscape quality and amenity is essential to public enjoyment of the proposed Beelihar Park. The design and location of different forms of development, including roads, is a most

significant factor in the maintenance of landscape quality and aesthetic enjoyment. Control of all forms of development within, and adjacent to, the Beeliar Park is essential to protect landscape values (DPUD 1990). It is highly important to protect and sufficiently screen the Beeliar Regional Park and associated wetlands within from the impact of the road and the road users. A well vegetated, fenced road reserve has the potential to achieve this outcome as considered in Recommendation 3.

4.3 Road drainage management and wetlands protection

It has been estimated that Perth has already lost 75% of its original wetlands to development (EPA 1989). It is now imperative that all remaining metropolitan wetlands which currently retain some ecological value have their management objectives defined and that all developments around or near wetlands are undertaken in an environmentally sensitive manner (EPA Bulletin 374).

"As part of the hydrologic cycle, many wetlands receive surface runoff from adjacent land. In urban areas, much of this runoff is from impervious surfaces, where the runoff water picks up pollutants such as heavy metals, nutrients, particulates, hydrocarbons, and other toxicants." (Stockdale 1986) The long-term consequences of designing urban stormwater control measures which allow the entry of stormwater into these systems are uncertain. The Authority considers that special precautions should be taken with the use of lakes Kogolup and Yangebup for stormwater control, and in particular Lake Kogolup due to its high wildlife habitat value.

The Authority understands that drainage from the road pavement surface will be by shoulder run-off and a combination of infiltration and discharge within a table drain-storage basin system.

The Authority considers the drainage management proposed clearly reflects the proponents intentions to adequately address this issue. However, issues such as the exact location, size and detail of infiltration basin(s) require further consideration. The overflow of stormwater from storage basins during rarer storm events should be directed into Yangebup Lake rather than into Kogolup Lake. All road drainage works for stage one and the possible future widening of the realignment should be located only within the road reserve. Drainage design issues should be resolved in liaison with the Water Authority of Western Australia, as provided for in Recommendation 3.

4.4 Clearing of vegetation

The proposed realignment passes between Lakes Yangebup and Kogolup. The clearing of the alignment will result in the loss of some remnant natural vegetation within the Tuart-Marri-Jarrah association and the Jarrah-Banksia association. The vegetation of the area consists of some communities which are in relatively good condition. Despite impacts due to weed invasion, fire effects, water level changes and other human activities the vegetation of this area acts as an important buffer to the lakes and in their urban setting merits increased conservation status and protection. It is highly important to mask and/or integrate the proposed road realignment into the landscape. Final siting and design of the road realignment should therefore allow for maximum vegetation retention and utilise existing cleared land to minimise the destruction of remnant vegetation. The retention of existing vegetation should be supplemented with additional revegetation of the new road reserve as recommended. All aspects of the final road design and construction should be confined totally within the road reserve.

4.5 Fauna

Historically there can be little doubt that the Beeliar wetlands formed an interconnected ecological unit. "The wetlands are areas of high biological productivity and directly or indirectly support most of the wildlife on the Swan Coastal Plain" (EPA Bulletin 372).

In addition to providing a vital habitat resource for the local fauna, the Beeliar wetlands are also of regional and international importance. "The wetlands are visited by waterbirds which move to the coastal areas when inland water bodies dry during summer and by migratory wading birds from the northern hemisphere" (EPA Bulletin 372).

While there is a lack of information on the extent of movement of terrestrial fauna between Lake Yangebup and Lake Kogolup, there can be little doubt that in an urban context a road without regard

for faunal movement causes habitat severance and possible disruption to faunal movement. Without exhaustive scientific study there is no way to know precisely which species would be affected or to quantify the extent of movement between the two lakes. The Authority considers that the realignment is unlikely to adversely change the status quo given the decommissioning of the existing road and subsequent rehabilitation and restoration. Specific impacts on water fowl are mainly indirect, such as noise and light intrusion disturbing nesting and roosting. The Environmental Protection Authority regards the prevention of disturbance to nesting and roosting fauna as manageable and the City of Cockburn's commitment for noise and light as an indication on its part of a commitment to prevent disturbance.

The failure to fully consider the option of a faunal underpass is largely based on inadequate data. However, in the absence of this measure the imposition of a restricted speed limit and the immediate erection of wildlife crossing signs once the realignment is open, through the proposed Beeliar Regional Park would be beneficial to transient wildlife. The erection of wildlife crossing signs has been recommended below.

In the absence of extensive experience elsewhere, the Authority would encourage the City of Cockburn to discuss with the Department of Conservation and Land Management prior to the commencement of work the requirement, location and design of bunding to provide alternative nesting opportunities for tortoises and discourage direct road crossing.

Recommendation 3

The Environmental Protection Authority recommends that, prior to construction of the realignment, the City of Cockburn should prepare detailed road design plans which include;

- **details for revegetating and fencing the new road reserve,**
- **the erection of wildlife crossing signs,**
- **and a roadside drainage management plan,**

to the satisfaction of the Environmental Protection Authority on advice from relevant management bodies. The environmental objective of these plans should be to ensure the impacts of the realignment on the proposed Beeliar Regional Park, the wetlands and other conservation values are minimised.

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.

4.6 Other issues

4.6.1 Landscape

The City of Cockburn considers that if excessive cuttings or embankments are avoided at the detailed design stage, the marriage of road form with landscape can be a successful one. The Authority agrees with this viewpoint.

4.6.2 Spillage management

As Yangebup Road is expected to carry a proportion of industrial and commercial traffic there is a risk of accidental spillage of hazardous or toxic materials.

The City of Cockburn maintains that if such a spillage were to occur, emergency response procedures as set out in the Western Australian Transport Emergency Assistance scheme would be followed. If a liquid spillage entered the road drainage system the proponent has indicated the drainage design enables containment and treatment of the specific substance spilled except where such spillage occurred with a low frequency storm event. In the latter event the Authority accepts the proponents view that the risk is acceptable.

4.6.3 Rehabilitation Work

The integration of the 22kv powerline and below ground gas pipeline adjacent to the existing Yangebup Road with the recommended rehabilitation work has not been addressed in the proponent's report. The requirement for continued access to these facilities for maintenance purposes by the relevant agency is assumed by the Authority . It is considered that the continued presence of these utilities should therefore be included within the rehabilitation plan. The construction of a dual use pedestrian path / maintenance access in conjunction with sensitive powerline clearing profiles would be appropriate and should be discussed with the relevant agencies.

Appendix 1

Proponent's Commitments

The following commitments are made in this Consultative Environmental Review, by the proponent, the City of Cockburn:

1. The first stage of construction will consist of a single carriageway of two lanes, with unsealed shoulders and table drains. The second stage (of a second carriageway) will proceed when the AADT exceeds 15,000 vehicles per day. This is not expected until well into the next century.
2. Drainage facilities will be designed to contain up to a 1 in 5 year ARI storm within the road and drainage reserve, where it will be managed in purpose built storage/infiltration basins.
3. Spillage management will comply with the Western Australian Transport Emergency Assistance Scheme, and the City of Cockburn will provide resources and equipment to contain spillages when directed or requested by the control authority.
4. Accompanying the opening of the realignment, the existing roadway will be closed to through traffic from approximately Lot 8 or 9 (Location 391) to Lot 7 or 8 (Location 677). The precise details of such closure will be negotiated at the time with the management authority for the Beeliar Regional Park (at present, CALM).
5. There will be no filling or drainage of Lake Yangebup or Lake Kogoiup.
6. Construction phase impacts will be managed by specification of hygiene measures for construction equipment (to combat Dieback spreading) and by strict enforcement of clearing only within the road formation.
7. Street lighting will not be used within the Beeliar Park boundaries.
8. Bunding for noise shielding will be utilised where considered critical. Consultation with CALM officers at the detail design stage will highlight these areas.
9. Fauna Crossing warning signs will be installed if, after a one year review with CALM officers, road casualties are considered excessive.
10. All due endeavour will be made at the detail design stage to avoid excessive cut or fill which would excessively widen the clearing corridor for the re-alignment. This will be to the limits allowed by the proposed design speed standard.
11. All construction activities including drains, bunds, stockpiles, and access tracks will be confined within the road reserve. The only exception will be a limited number (no more than three) of connections of access tracks to existing roadways.