CATHOLIC EDUCATION OFFICE

BEELIAR PARK
CATHOLIC SCHOOL DEVELOPMENT

CONSULTATIVE ENVIRONMENTAL REVIEW

ALAN TINGAY & ASSOCIATES

APRIL 1992

PORT NO: 91/36

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AN INVITATION TO COMMENT ON THIS CER

The Environmental Protection Authority (EPA) invites people to make a submission on this Consultative Environmental Review

The Catholic Education Office has proposed the development of a primary school and church centre on Lot 7 and Lot 8 Yangebup Road Yangebup, within the City of Cockburn. In accordance with the Environmental Protection Act 1986, a Consultative Environmental Report (CER) has been prepared which describes these proposals and their likely effects on the environment. The CER is available for public review for 4 weeks from Tuesday 7 April 1992 to Tuesday 5 May 1992.

Comments from Government Agencies and from the public will assist the EPA to prepare an Assessment Report in which it will make recommendations to Government.

Why write a submission?

A submission is a way to provide information, express your opinion and put forward your suggested course of action - including any alternative approach. It is useful if you indicate any suggestions you have to improve the proposal.

All submissions received by the EPA will be acknowledged. Submissions will be treated confidentially unless it is stated that they can be used publicly, then they may be quoted either in full or in part in each report.

Why not join a group?

If you prefer not to write your own comments, it may be worthwhile joining with a group or other groups interested in making a submission on similar issues. Joint submissions may help to reduce the workload for an individual or group, as well as increase the pool of ideas and information. If you form a small group (up to 10 people) please indicate all the names of the participants. If your group is larger, please indicate how many people your submission represents.

Developing a submission

You may agree or disagree with, or comment on, the general issues discussed in the CER or the specific proposals. It helps if you give reasons for your conclusions, supported by relevant data. You may make an important contribution by suggesting ways to make the proposal environmentally more acceptable.

When making comments on specific proposals in the CER:

- clearly state your point of view;
- indicate the source of your information or argument if this is applicable; and
- suggest recommendations, safeguards or alternatives.

Points to keep in mind

By keeping the following points in mind, you will make it easier for your submission to be analysed:

- attempt to list points so that the issues raised are clear. A summary of your submission is helpful;
- refer each point to the appropriate section, chapter or recommendation in the CER;
- if you discuss different sections of the CER, keep them distinct and separate, so there is no confusion as to which section you are considering;
- attach any factual information you wish to provide and give details of the source. Make sure your information is accurate.

Remember to include:

- your name;
- address; and
- date.

The closing date for submissions is:

Tuesday 5 May 1992

Submissions should be addressed to:

The Chairman,
Environmental Protection Authority
Westralia Square
38 Mounts Bay Road
PERTH WA 6000

Attention: Ms Katrin Wilson

SUMMARY

1. INTRODUCTION

The Catholic Education Office proposes to establish a primary school including an oval, and church on Lot 7 and Lot 8 Yangebup Road, Yangebup within the City of Cockburn. This CER describes the proposal in detail, the development site, the potential impacts posed by the development, and puts forward management proposals to limit these impacts.

The proposed development involves approximately 4ha of land. Lot 7 is owned by Homeswest and Lot 8 is owned by the State Planning Commission (SPC) in conjunction with Lot 9.

2. DESCRIPTION OF THE DEVELOPMENT

Primary School

The primary school will accommodate approximately 500 students from pre-primary to Year 7. Development is expected to be completed in two phases with the initial phase commencing in late 1992 and the second phase in 1994.

Church Centre

The Church Centre includes a church for approximately 600 people, a small parish building and a presbytery. These will be located at the front of Lot 7 with direct access to Yangebup Road.

Oval

It is proposed to construct an oval on the northern portion of Lot 8. This land is not owned by the Proponent and has been set aside as lands for parks and recreation.

3. EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND THEIR MANAGEMENT

Groundwater

The development site is situated on the western side of the Jandakot Mound groundwater system. Groundwater flow is in a westerly direction toward the sea. There is very little chance for eastward groundwater flow into the lakes from the development site.

Fertilisers will be used to establish and maintain the oval. The soils of the development site are highly permeable, have a low fertility, and a low capacity to retain nutrients. Therefore, there is the potential for nutrients to be transported down to the water table. Management strategies will be implemented during preparation and maintenance of the oval to minimise this.

Vegetation and Flora

The site incorporates cleared land, olive tree stands and native vegetation. The native vegetation is predominantly Jarrah-Banksia Woodland over low shrub cover and is in poor condition.

The location of all buildings and the playing field will be restricted to areas which are either cleared land or support native vegetation of poor quality. The retention of the remaining native vegetation will be a priority.

Fauna

The general location supports fauna typical of Jarrah/Banksia Woodlands on the Swan Coastal Plain. Due to the highly disturbed nature of the understorey the proposed development site is unlikely to contain any rare or endangered fauna.

Wetlands

The development site is to the west of Yangebup Lake and North Kogolup Lake which form part of the Beeliar chain of wetlands.

The subject land is situated entirely within System 6 Area M93 Cockburn Wetlands - Eastern Chain. System 6 Area M93 was largely proposed to protect the chain of wetlands from North Lake to Wattleup Lake. The development site is also within the proposed Beeliar Regional Park. The purpose of this park is to preserve the integrity of the Beeliar Wetlands. The Proponent considers the development to be compatable with the recommendations related to the System 6 Area and the proposed Beeliar Regional Park.

Landscape Protection

The Proponent is aware that there is a concern to protect the view from Yangebup and Kogolup Lake and has taken appropriate measures to protect these views.

Odours from Wool Scourers

Jandakot Wool Scourers operate a wool processing operation to the north-east of the site of the proposed school. This industry has the potential to generate odour especially from its effluent ponds. The distance between these ponds and the nearest school building is about 1000m which is considered sufficient to prevent the school from being exposed to an unacceptable odour problem.

4. CONCLUSIONS

This CER has identified a number of potential environmental impacts that could result from the establishment of the Beeliar Park Catholic School at Yangebup. However, as a result of the design of the development and the proposed management strategies it is concluded that these potential impacts will be minor. In contrast, the school, church and oval will be of considerable benefit to the local community.

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1. INTRODUCTION

1.1 General Introduction

The Catholic Education Office proposes to establish a school, oval, and church on land in Yangebup within the City of Cockburn. The proposal is small in scale and the land involved is either cleared, planted with olive trees, or supports native vegetation in poor condition.

The land is within System 6 Area M93 which constitutes the proposed Beeliar Regional Park. This System 6 Area is extensive and contains wetlands and vegetation of high conservation value. The proposed park has been planned to protect these areas and to provide for passive recreation. Although the proposed school and church would occupy only a very small part of the park, the Catholic Education Office considered it appropriate to refer the proposal to the Environmental Protection Authority (EPA) for its consideration in accordance with the requirements of the Environmental Protection Act, 1986. In response, the EPA decided to formally assess the proposal and requested the Catholic Education Office to provide a Consultative Environmental Review (CER) to allow public comment.

The CER describes the proposal in detail, the development site, and the potential impacts posed by the development. It also describes management proposals designed to limit these impacts. The CER has been structured in accordance with Guidelines issued by the EPA and these are included in Appendix 1.

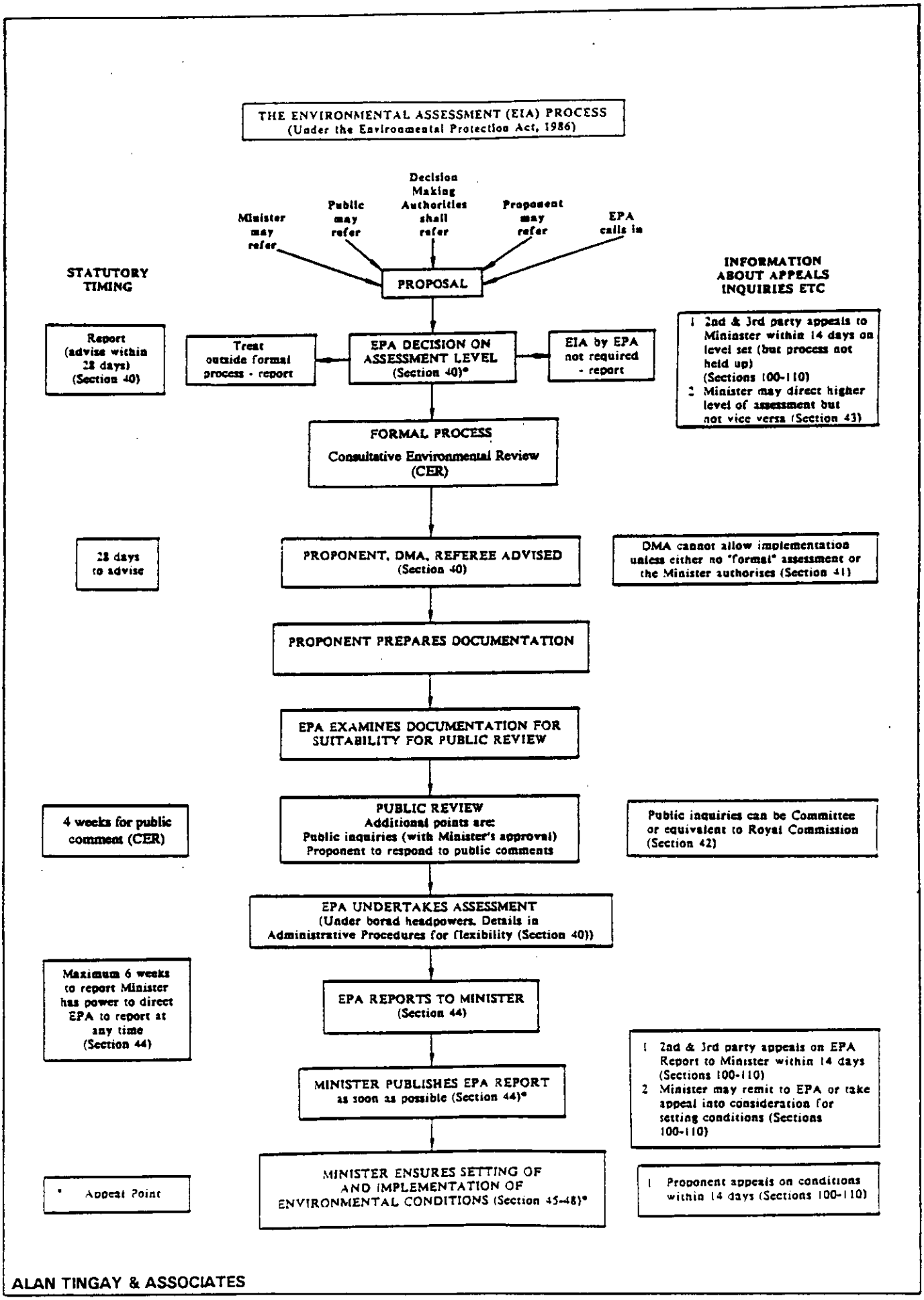
1.2 The Proponent

The Proponent of the proposal is the Catholic Education Office, 50 Ruislip Street, Leederville.

1.3 The CER Process

The Western Australian environmental impact assessment process is outlined in the Guide to the Environmental Protection Act (Environmental Protection Authority, 1987) and is illustrated in Figure 1. Essentially, the Proponent is required to notify the EPA of the proposal. The EPA then determines the need for a more detailed document such as a Consultative Environmental Review and provides the Proponent with a set of Guidelines for the preparation of that document. The Guidelines for the present CER are provided in Appendix 1.

After the CER has been prepared, it is reviewed by the EPA to ensure that it provides sufficient detail and a comprehensive coverage of issues. When this has been established, the CER is released for the public review period. At the end of this, a review of submissions is supplied to the Proponent and a response is sought. The EPA then prepares an assessment taking into account the public comments, and the proponent's final report.



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THE CONSULTATIVE ENVIRONMENTAL REVIEW (CER) PROCESS

FIGURE 1

The results of the assessment are published in the form of an Assessment Report which includes recommendations made to the Minister for Environment. Ultimately the Minister for Environment decides whether the proposal is acceptable and what conditions will be imposed upon it. Interested parties can appeal against the level of assessment set by the EPA, and against the content of the EPA Assessment Report, or any of its recommendations.

The environmental assessment process is specifically designed to enable members of the public to obtain details of the proposal and to formally comment on any matters of interest to them. These inputs are required within the specified public review period and are considered together with technical assessments and inputs from government departments. The public is encouraged to provide written comments to the EPA as part of the environmental review process. Details of the public review period and advice on how to make a submission are provided at the start of this CER.

1.4 Site Location

The site of the proposed development is about 22km south of Perth Central Business District and 13km south-east of the Fremantle City centre (Figure 2). It involves approximately 4ha being the northern parts of land known as Lot 7 and Lot 8 Yangebup Road, Yangebup in the City of Cockburn (Figure 3).

1.5 Land Ownership

The school and church site (Lot 7), together with the adjacent Lot 6, are owned by Homeswest. The adjacent Lot 8 on which an oval is proposed is owned by the State Planning Commission. The Catholic Education Office is currently negotiating with Homeswest to acquire Lot 7 and may seek at a later date to acquire neighbouring lots to the west and south. If this proposal is unsuccessful then the Proponent does not intend to proceed with the purchase of the land.

1.6 Land Zoning

The development site (Lot 7) is zoned 'Urban Deferred' under the Metropolitan Region Scheme and 'Rural' under City of Cockburn Town Planning Scheme No. 2. Lot 8 Yangebup Road is reserved for Parks and Recreation under the Metropolitan Region Scheme and the City of Cockburn District Town Planning Scheme Nos. 1 and 2.

Under the City of Cockburn District Town Planning Scheme No. 2, a primary school falls into the category of an 'Educational Establishment' which is defined as an 'AA' (discretionary) use requiring the approval of Council.

1.7 Adjacent Land Uses

The site is bordered by Yangebup Road to the north, parks and recreational reserves to the east and south, and Dunraven Drive to the west. The proposed Beeliar Drive is also to the south of the site (Figure 3).

Land to the west of the site has been subdivided and cleared for urban development. Residential areas exist northwest of the development site and north of Yangebup Road. Native vegetation occurs on the neighbouring Lot 6, Lot 4 and Lot 9.

The northern portion of Lot 6 is to be developed by the Association for Christian Education as a primary school for 200 students.

1.8 Community and Other Consultation

The following groups were approached by the Catholic Education Office and its consultants in the process of developing the plans for the primary school:

- Australian Conservation Foundation (ACF)
- Beeliar Regional Park Management Committee
- City of Cockburn
- Department of Conservation and Land Management (CALM)
- Department of Planning and Urban Development (DPUD)
- Environmental Protection Authority (EPA)
- Main Roads Department (MRD)
- Water Authority of Western Australia (WAWA)
- Yangebup Progress Association

1.9 Timing of the Proposal

It is proposed that construction of the primary school will begin in 1992 to enable it to be used at the commencement of the school year at the beginning of 1993. The Church Centre would be built in 3 to 4 years.

2. DESCRIPTION OF THE DEVELOPMENT

The principal components of the proposed development are a Catholic Primary School and a Church Centre. The Proponent has identified an immediate need for these facilities within the local community and expects that demand will continue to grow as more people establish themselves in the area.

All buildings will be contained on the northern section of Lot 7. However, an oval and associated parking is proposed within the northern portion of Lot 8. The proposed layout of the development is shown in Figure 4. The location of the primary school buildings on the western portion of the site (adjacent to the proposed Rehoboth School and the Yangebup residential area), is designed to ensure that the primary school effectively integrates with the local community.

2.1 Primary School

The primary school will accommodate approximately 500 students from pre-primary to Year 7. The development of the primary school is expected to be completed in two phases with the initial phase containing the following:

- Two pre-primary classrooms,
- 10 classrooms,
- Library,
- Toilets,
- External store,
- Canteen,
- Parking, and
- An oval.

The second phase will include four classrooms, administration building, basketball courts, toilets and parking. This will commence in 1994. The exact location of the basketball courts is yet to be determined but it is envisaged that they will be included within Lot 7. The area taken up by buildings on completion of the school and church will be approximately 2,400m^2 and a further 400m^2 will be brick-paved.

All primary school buildings will be single storey and designed to blend into the existing environment. Most will have bushland on three sides and will be set back some distance from Yangebup Road. Buildings will be built in natural materials and painted in colours that blend into the surroundings. Areas between buildings will be either paved or landscaped and planted with native species to enhance the amenity of the location.

Two entrances to the primary school and church will be provided from Yangebup Road (Figure 4). The two access roads will follow existing cleared tracks along the western and eastern boundaries of Lot 7. Both entrances are well clear of the intersection of Osprey Drive with Yangebup Road and are approximately 30m either side of the intersection of Pioneer Drive and Yangebup road.

2.2 Church Centre

The Church Centre includes a church for approximately 600 people, a small parish building and a presbytery. These will be located at the front of Lot 7 with direct access to Yangebup Road. The location of the Church in front of the Primary School reflects the need for the Church to be easily seen, found and accessed.

2.3 Oval

It is proposed to construct an oval on the northern portion of Lot 8 to satisfy the requirements of the primary school and provide a recreational amenity for the local residents (Figure 4). The playing field will be a public facility with adjacent carparking and will continue to be a Parks and Recreation Reserve for the adjacent residential community. The land will remain in the ownership of the SPC and it is proposed that an agreement be struck with regard to school access during school hours and public access at other times. This type of agreement is not without precedent in the metropolitan area. The Beeliar Park Primary School will pay for the cost of developing and maintaining the playing field.

The chosen location makes use of existing cleared areas thus ensuring minimum clearing of native trees. Earthworks will be required to make the oval level. Sand cut from the higher western sides of Lot 8 will be used to fill and landscape the eastern area. Low vegetated bunds will be incorporated on the eastern side of the oval so that it will not be visible from Yangebup and Kogolup Lakes.

An alternative location for the oval is on the southern half of Lot 7. The advantage of this location is that there is no need to provide earthworks to protect the landscape views from North Kogolup Lake. The disadvantages are:

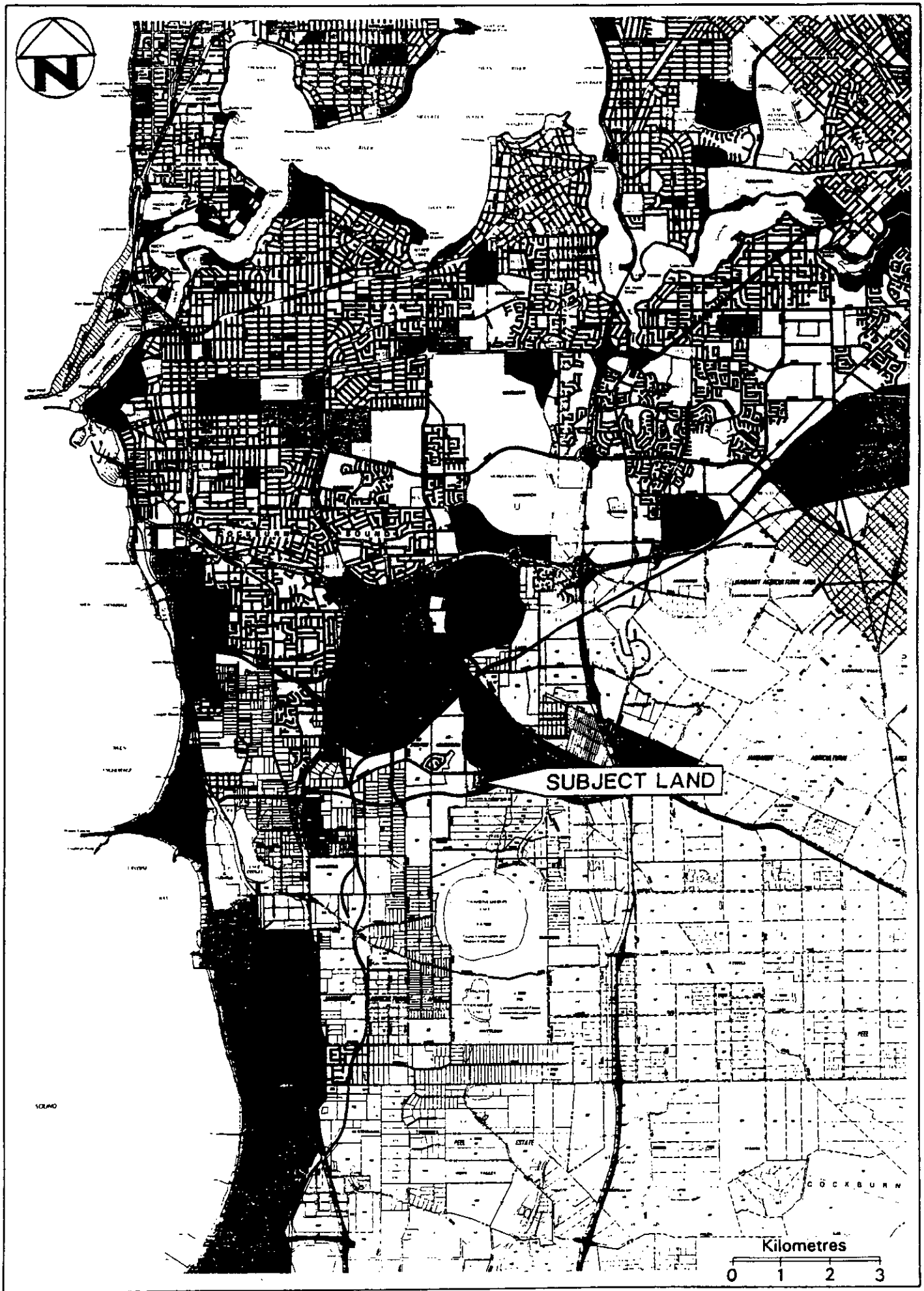
i) the area of playing field is markedly reduced,

ii) the oval will not be visible from outside the primary school grounds rendering it less accessible to the general community, and

iii) more trees would need to be cleared than in the preferred option.

On the basis of the above the northern part of Lot 8 was chosen as the development site for the oval.

It is proposed that the oval will be irrigated from a bore located between the oval and the school buildings and will require about 1600m^3 of water on a weekly basis. This bore will tap the superficial aquifer beneath the site. As the development is not a commercial proposal there is no requirement to licence the bore. However, permission from the Water Authority of Western Australia will be required for its installation.



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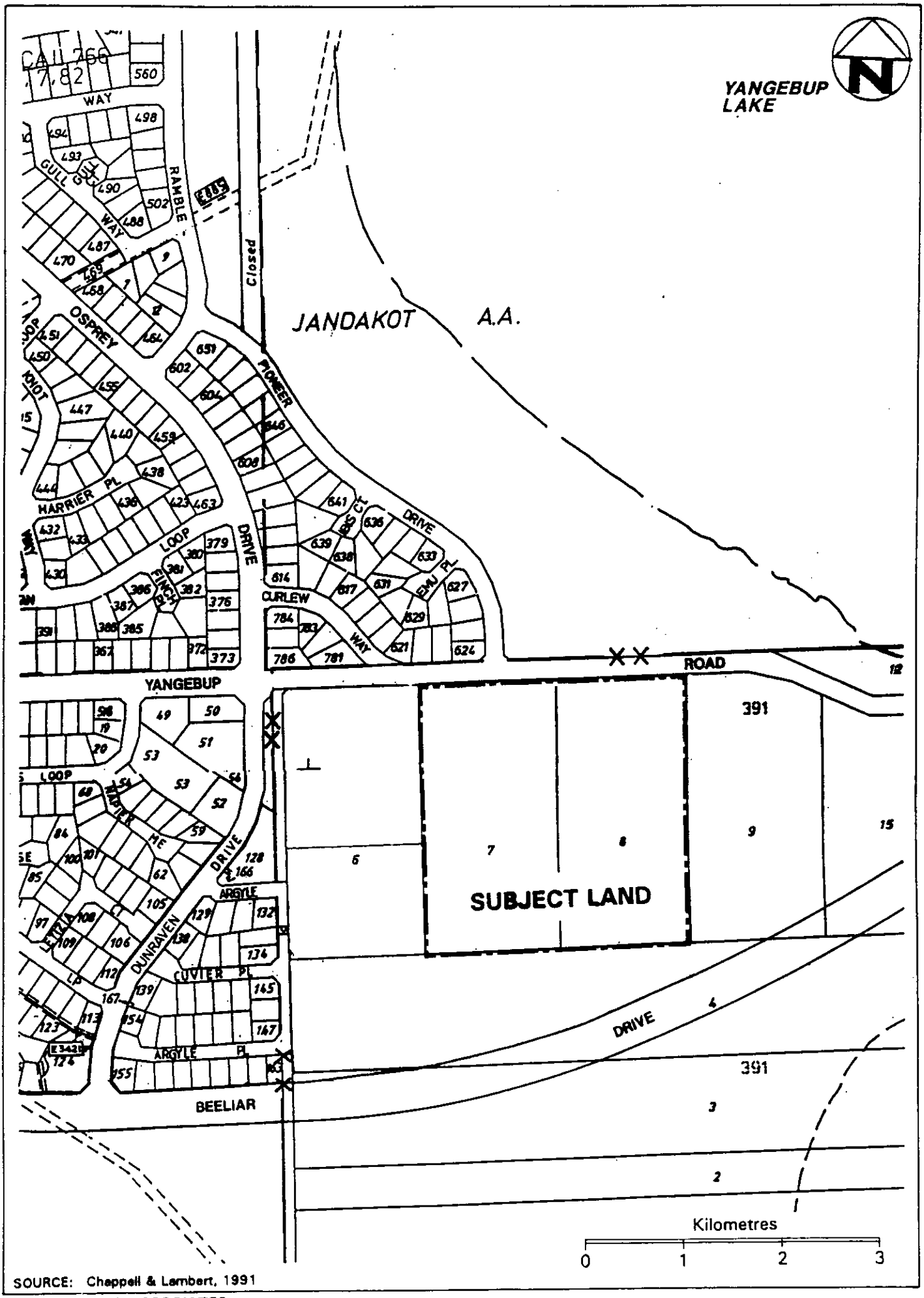
REGIONAL LOCATION PLAN **FIGURE 2**



SOURCE: Chappell & Lambert, 1991

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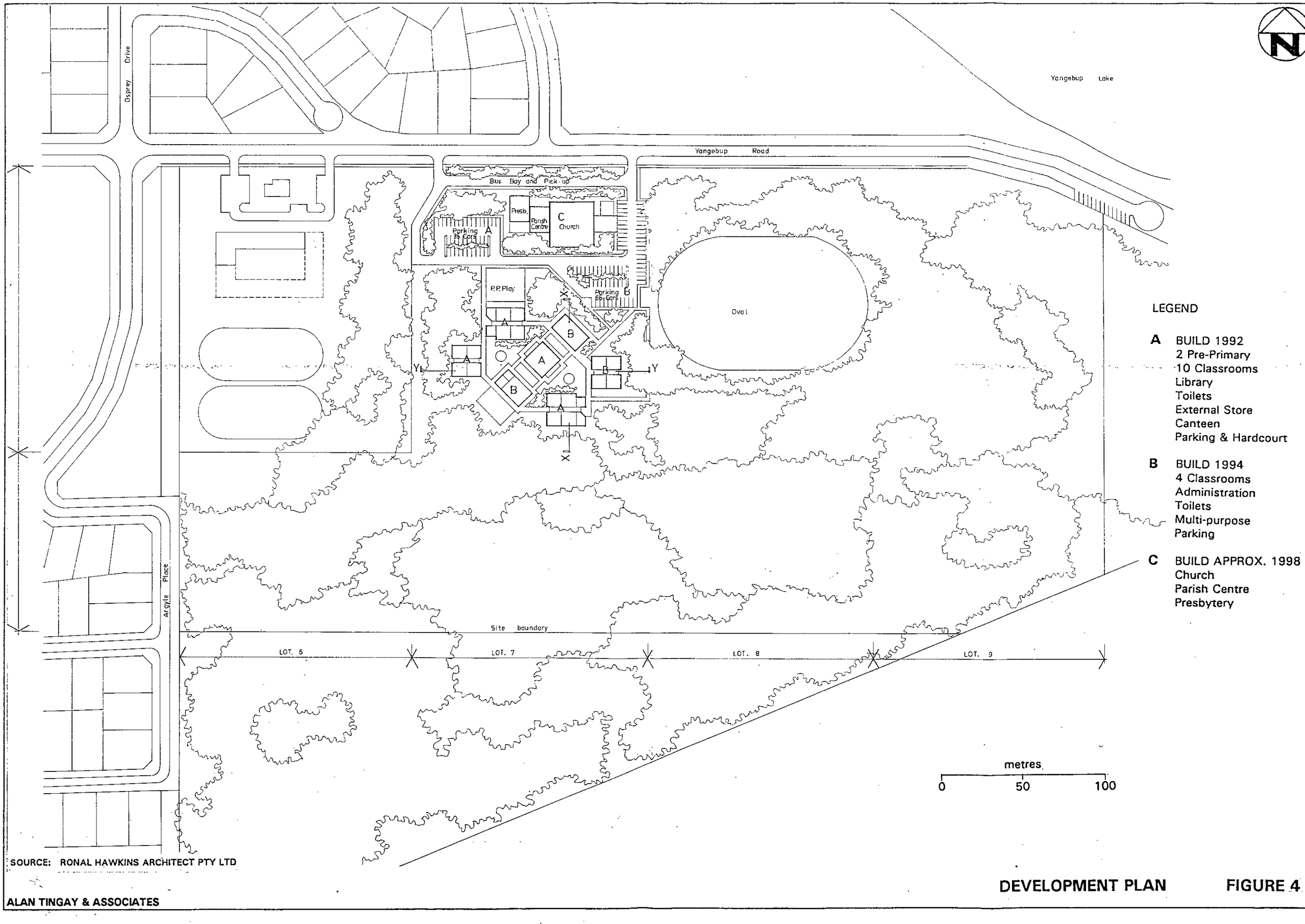
LOCALITY PLAN **FIGURE 3**



SOURCE: RONAL HAWKINS ARCHITECT PTY LTD

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DEVELOPMENT PLAN **FIGURE 4**

2.4 Access

Access to the site will be provided by Yangebup Road, Osprey Drive and Dunraven Drive. Yangebup Road is currently a district distributor while Osprey Drive and Dunraven Drive are local distributors, providing access from residential areas north and south of the site. Throughflow along Yangebup Road from west to east of the Lakes System will be stopped by the closure of Yangebup Road when the proposed Beeliar Drive is constructed to the south of the site. As a result, traffic volumes along Yangebup Road will be greatly reduced.

2.5 Surface Water Drainage

The primary school and Church Centre will be landscaped to limit the flow of surface waters and maximise the amount of water infiltrating the soil. In particular, the following features will be included into the design:

- Detention basins will be incorporated to receive any surface water that does not soak into the ground immediately,
- Brick paving with appropriately placed soakwells will be installed,
- Roadways and sealed areas will not be curbed, and
- Gardens will be heavily planted with native shrubs and as far as possible existing trees will be retained.

All stormwater will be contained and disposed of on site as a result of the above design features.

2.6 Sewage Disposal

All ablution facilities in the complex will be connected to the reticulated sewerage system.

2.7 Other Services

Discussions with the relevant servicing authorities indicate that essential urban services such as roads, reticulated water, sewer, gas, electricity and telephone can be readily extended to service the proposed development.

3. THE EXISTING ENVIRONMENT

3.1 Topography

The development site is located on an elevated portion of land relative to the surrounding district. A cross section and contour map of the development site is provided in Figure 5. The highest portion of the site is in the south-eastern corner of Lot 7. The land falls gradually away to the south and west and on the eastern side slopes down towards the Beeliar Lakes System. The north-west portion of the site slopes down toward Yangebup Lake.

3.2 Soils

The soils of the development site are of the Karrakatta unit (Churchward and McArthur, 1978) which consists of deep yellow sands over limestone. These sands are highly permeable, have low fertility, and low capacity to retain nutrients.

3.3 Groundwater

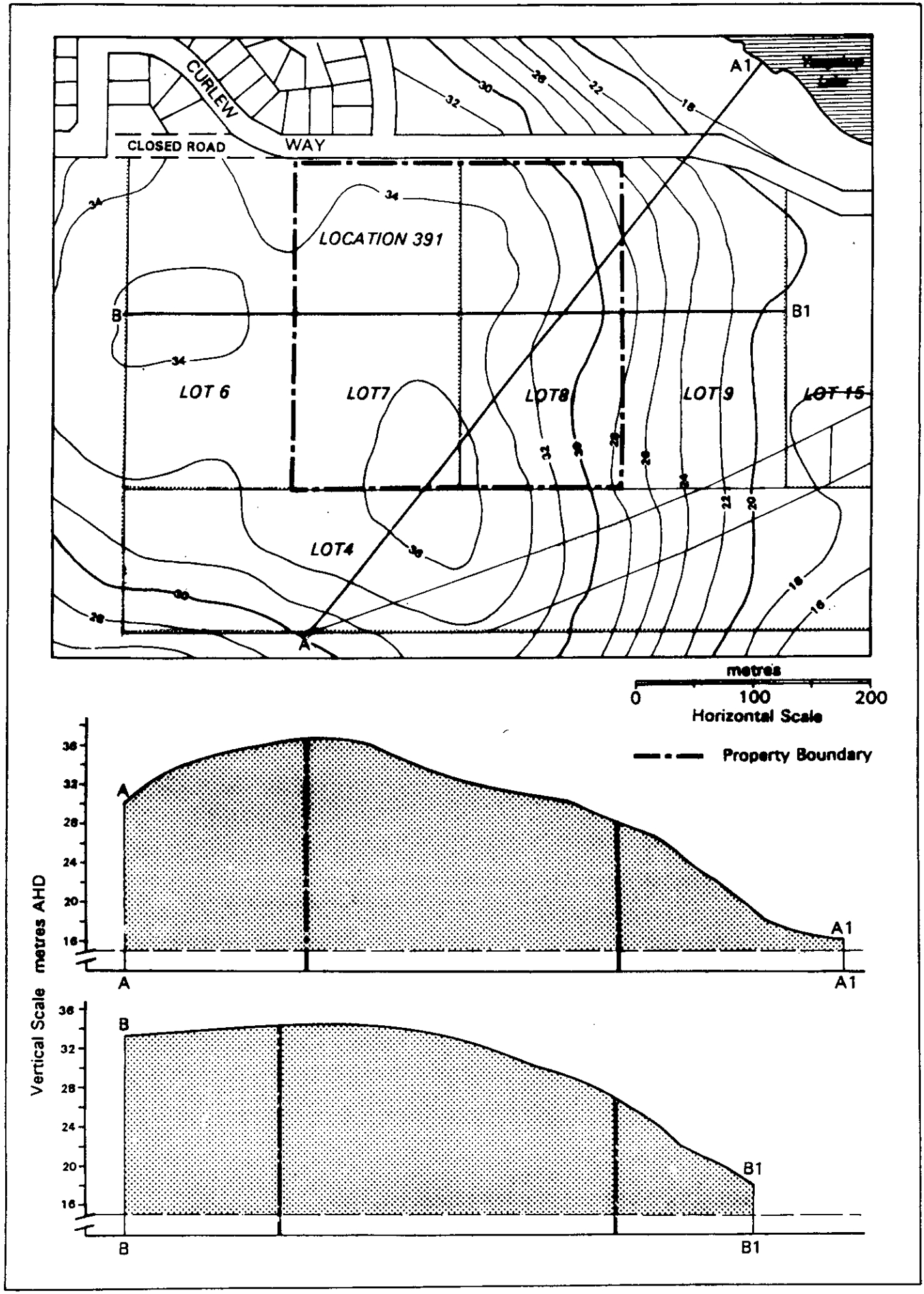
The development site is situated on the western side of the Jandakot Mound groundwater system. The depth to groundwater on Lot 7 and 8 is between 12 and 21m depending on surface topography. Groundwater flow is in a westerly direction away from the centre of the Jandakot Mound and toward the sea. The groundwater contours of the area are shown in Figure 6.

The Water Authority of Western Australia has advised that there is very little chance of eastward groundwater flow into the lakes from the development site. Figure 7 shows the groundwater flow through a typical wetland in the East Beeliar chain. Any rainfall which falls onto the site and which is not lost by evaporation or taken up by vegetation will percolate down to the groundwater table and then move westwards with the regional groundwater flow away from North Kogolup Lake.

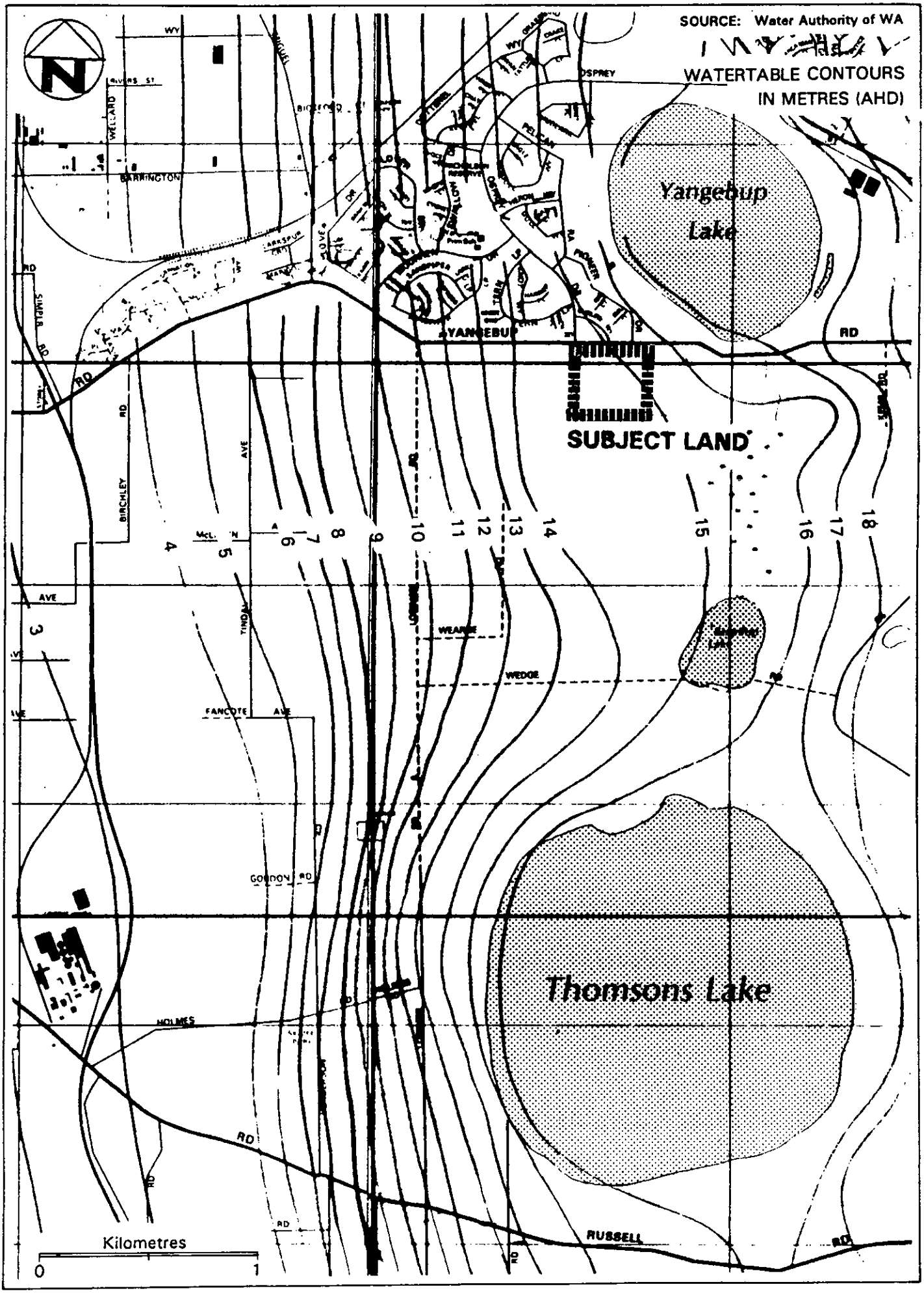
3.4 Vegetation

The development site and parts of neighbouring Lot 6 and Lot 4 were surveyed with regard to vegetation. The results of this survey are presented in Figure 8. The site incorporates cleared land, olive tree stands and native vegetation. The native vegetation is in poor condition. It is predominantly a Jarrah-Banksia Woodland over low shrubs. Few Tuart trees and no Marri trees occur on the site. *Banksia attenuata* is the most the dominant Banksia species with *B.menziesii* and *B.grandis* also common throughout.

The shrub component of the Jarrah-Banksia Woodland is dominated by *Hibbertia hypericoides, Xanthorrhoea preissii* and *Macrozamia riedlei*. Introduced weeds such as perennial Veldtgrass *(Ehrharta calycina)*, Capeweed *(Arctotheca calendula)* and



TOPOGRAPHY FIGURE 5



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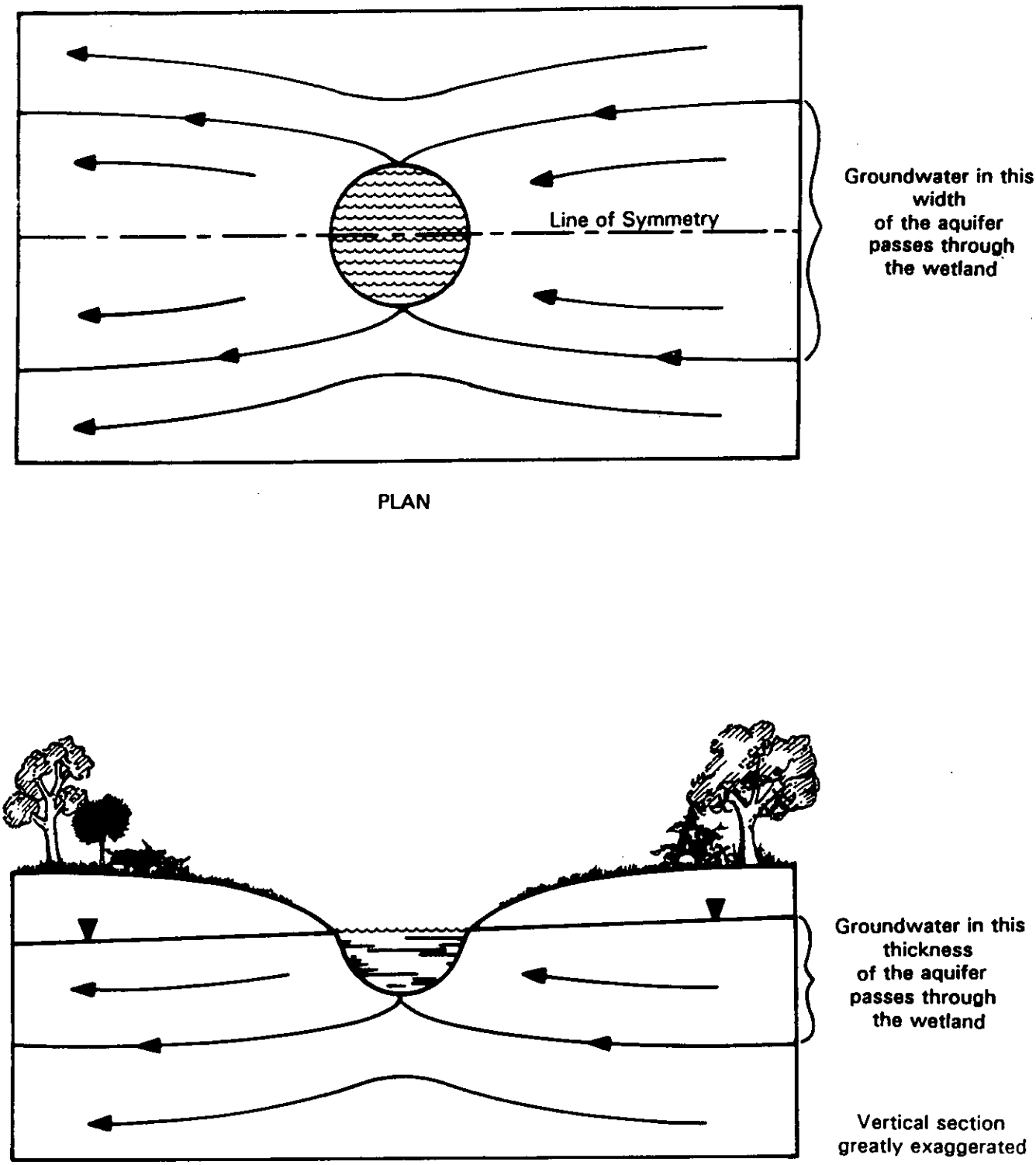
GROUNDWATER CONTOUR LEVELS **FIGURE 6**



SOURCE: WA WATER AUTHORITY, FEB 1991.

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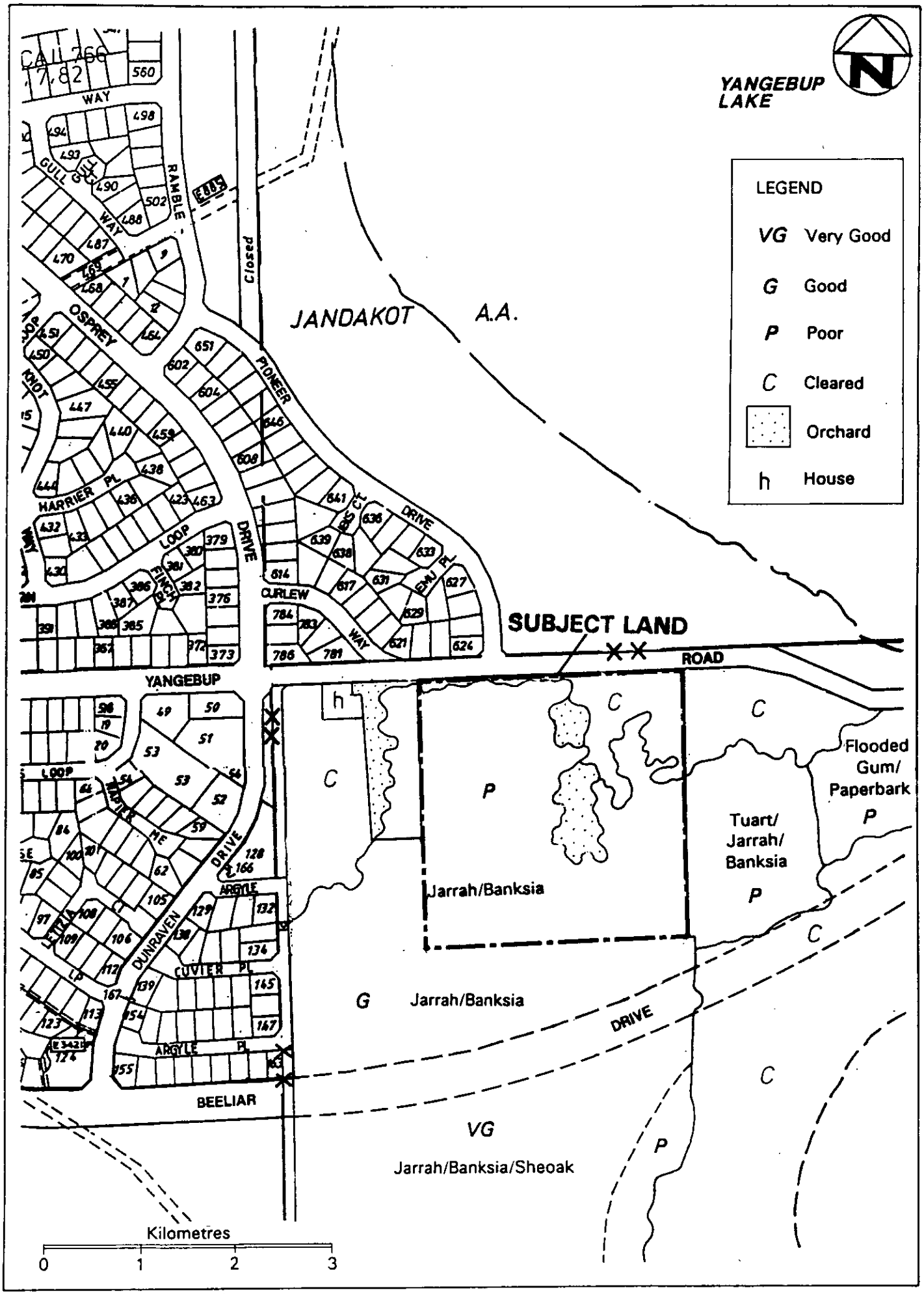
GROUNDWATER FLOW THROUGH A TYPICAL JANDAKOT WETLAND

FIGURE 7



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VEGETATION TYPE & QUALITY **FIGURE 8**

Blowfly Grass *(Briza maxima)* occur to such an extent that they are outcompeting the native shrubs and annuals.

The native vegetation of Lot 7 and Lot 8 is nearly completely composed of Jarrah/Banksia Woodland. The Jarrah have been thinned and those that remain have a maximum height of 8 to 10m and are multi-stemmed. This indicates that the site was logged at some time in the past. The understorey is semi-cleared and in poor condition. In contrast, the vegetation of Lot 4 and land further to the south is in good condition.

A total of 53 native species were found during the surveys of Lot 6, 7, and 8 (Appendix 2). None of the species are rare or endangered.

3.5 Fauna

The location supports fauna typical of Jarrah/Banksia Woodlands on the Swan Coastal Plain. However, due to the highly disturbed nature of the understorey the proposed development site is unlikely to contain any rare or endangered fauna. A provisional list of vertebrates derived from a study on the ecology of Lake Kogolup and surrounding areas (Murray and Middle, 1989) is given in Appendix 3.

3.6 Wetlands

The development site is to the west of Yangebup Lake and North Kogolup Lake which form part of the Beeliar chain of wetlands. The Beeliar Wetlands comprise lakes and associated minor wetlands located in two main chains parallel to the coast.

Yangebup Lake is used by several species of waterbird including two uncommon species, the Pink-Eared Duck and Blue-Winged Shoveller. The water quality of Yangebup Lake is poor compared to other lakes in the East Beeliar System and is affected by effluent from a wool-scouring plant on the eastern side, a tannery, and urban run-off from the South Lakes residential area (Arnold 1990).

The northern part of North Kogolup Lake contains a range of vegetation types including *Typha*, Twig Rush and Spike Rush sedgelands and fringing areas of Flooded Gum and Paperbark associations. Uncommon bird species have been seen at North Kogolup Lake and in the fringing vegetation.

Both Yangebup and North Kogolup Lake are classified as Management Category C (Conservation) according to the EPA Bulletin 374 (EPA 1990) which indicates that they possess a high degree of naturalness and should be managed to maintain and enhance natural attributes and functions.

3.7 System 6 Area M93

In 1983, the Department of Conservation and Environment (now the EPA) published its System 6 Report which made recommendations with respect to certain reserves. This study was designed by the EPA to identify areas on the Swan Coastal Plain and the adjacent Darling Range which were considered to have environmental significance and which should be retained by reservation and/or appropriate management. The study concentrated mainly on existing Government reserves but also included a few areas of publicly owned land.

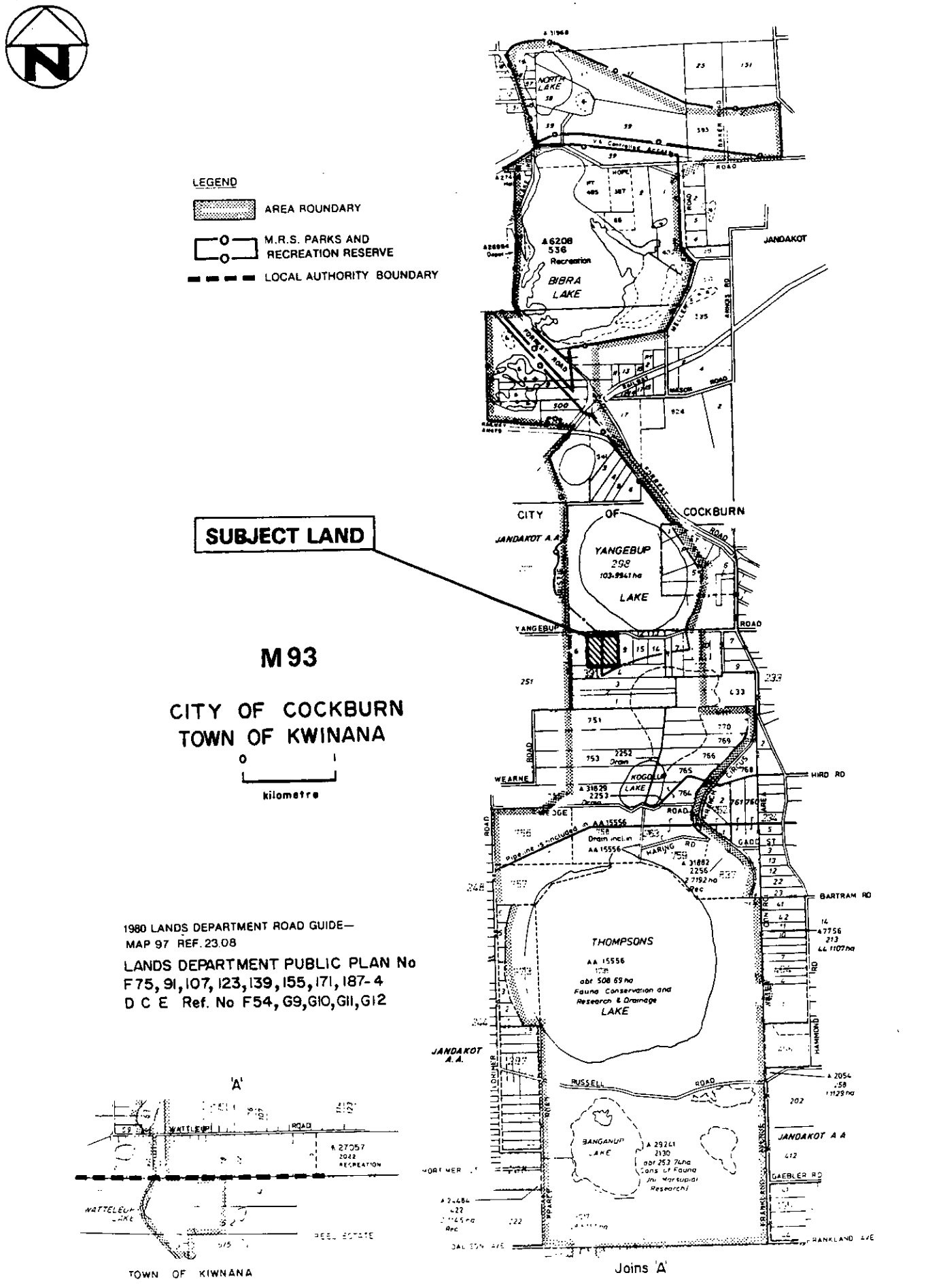
The subject land is situated entirely within System 6 Area M93 Cockburn Wetlands - Eastern Chain (Figure 9). Area M93 incorporates the series of lakes and associated land from North Lake to Wattleup Lake in the south. While the report states that the recommended area constitutes open space of regional significance it notes that "not all of this land has conservation and recreation as primary management objectives". This is because some of the land is used for industrial and other purposes.

The Report lists the important management considerations and recommendations for M93. These are as follows:

- ensuring that the lakes are managed primarily for conservation of flora and fauna and/or recreation,
- encouraging the growth and regeneration of local indigenous flora and preventing further deterioration of the vegetation.
- retaining the diversity of the wetlands,
- establishing adequate recreational facilities, and allowing only recreation consistent with the purpose of conservation of flora and fauna,
- establishing adequate buffer zones around the wetlands, particularly around South Lake so as to protect it from industrial and major road developments,
- limiting development on the eastern margins of North and Bibra Lakes to facilities for nature study,
- providing access appropriate to usage, including walk and cycle tracks linking the lakes as a linear access system,
- preventing use of any part of the area for sanitary landfill,
- monitoring the water quality of the wetlands and groundwater.

Recommendations:

- That our general recommendations on planning and management of Regional Parks be applied to this area.



SOURCE: Dept. of Conservation & Environment, 1983

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SYSTEM 6 AREA M93 **FIGURE 9**

- That the Metropolitan Region Planning Authority consider "reserving" the area from Kogolup Lake to Wattleup Lake for Parks and Recreation under the Metropolitan Region Scheme.

- That the recommendations of the Cockburn Wetlands Study (that Farrington Road should not be extended around the north of North Lake and that the proposed Roe Highway be modified to reduce its impact on the wetlands in the area) are endorsed.

3.8 Beeliar Regional Park

In April 1990, the Department of Planning & Urban Development (DPUD) released a report entitled "Beeliar Regional Park - Proposals for Establishment, Administration and Use", for public comment. The purpose of this report was to examine the status of the wetlands in the area, identify a boundary for the park and make recommendations regarding the inclusion of privately owned land within its boundary. The recommendations of the Beeliar Regional Park report are mostly consistent with and derive from the EPA's System 6 Report.

The criteria for determining the boundary for the Regional Park include:

- Acquisition of land, including cost and impact on private landholders.

- Adequate provision for recreation uses and future demands in a growing population area.

- Fire safe boundaries which afford protection to adjacent homes, and to the park itself.

- Adequate access for local residents and visitors from elsewhere in the region.

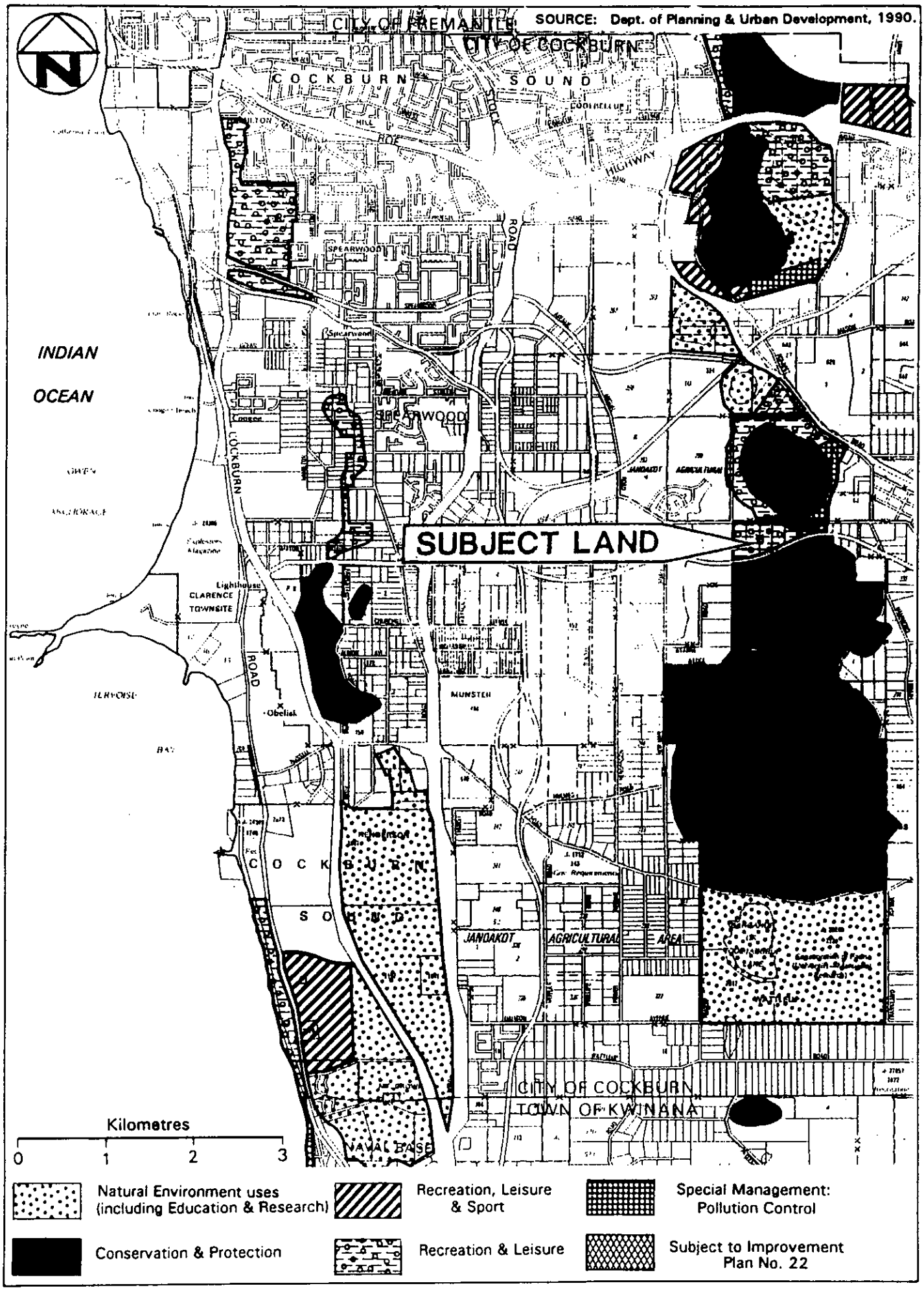
- The enhancement of views into and within the park.

- Provision for future services and roads.

- Ensuring sufficient buffer areas between housing and the wetlands to reduce nuisance from midges and other insect pests.

The development site lies entirely within the proposed boundary of the Beeliar Regional Park (Figure 10).

Specific reference is made within the DPUD document to the area containing the development site. Specifically Lots 6 and 7 are recognised as being zoned urban deferred. The report states "... these lots are within the System 6 Area and because of the known midge problem in this locality are recommended by the Consultative Committee for inclusion within the Parks and Recreation reservation." Also Lot 9 which fronts the Old Yangebup Road is recognised as having little conservation value.



PROPOSED BEELIAR REGIONAL PARK **FIGURE 10**

4. POTENTIAL ENVIRONMENTAL IMPACTS AND THEIR MANAGEMENT

4.1 System 6 Recommendations

The System 6 Area M93 was largely proposed to protect the chain of wetlands from North Lake to Wattleup Lake. While the study area does not contain wetlands or wetland vegetation, the upland vegetation is considered to be part of the buffer vegetation of North Kogolup Lake and Yangebup Lake.

The proposed development has the following features consistent with the EPA's management considerations:

i) No areas of good quality native vegetation will be destroyed. Surveys by both Alan Tingay & Associates and Murray and Middle (1989) describe the vegetation on the development site as degraded.

ii) The growth and regeneration of indigenous flora will be actively encouraged close to North Kogolup Lake through the rehabilitation programme of Lot 9 outlined in Section 4.5.2.

iii) Water quality of the wetlands will not be affected due to drainage and nutrient management.

4.2 Beeliar Regional Park Recommendations

In considering the appropriateness of the development on land earmarked for the proposed Beeliar Regional Park it is important to consider the factors that caused the subject land to be recommended for inclusion. The report on the establishment of the Park (DPUD, 1990) clearly states that Lot 6 and Lot 7 were included because of perceived problems relating to midges. This problem would make the land unsuitable for the purpose it was zoned, urban use. No doubt the attractiveness of inclusion of this land into the proposed park was enhanced because of it being owned by Government thereby negating the need to spend money acquiring the lots for inclusion.

The Proponent is of the opinion that the land is suitable for the development of a primary school since problems with midges generally occur in the evening, outside normal school hours. It is important to note that one of the considerations in establishing the proposed park boundaries was the adequate provision for recreation uses and future demands in a growing population area. The Catholic Education Office have identified a need for the school, church and oval described in this CER because of growth in the area. Accordingly the Proponent believes this proposal is in accordance with the criteria for the establishment of the boundaries of the proposed Beeliar Regional Park.

Officers of the Department of Planning & Urban Development (DPUD) and the Department of Conservation & Land Management (CALM) who have inspected the

subject land or are familiar with it, have indicated verbally that the proposed primary school development is appropriate and compatible with the Beeliar Regional Park which would then be adjacent.

4.3 Groundwater Protection

The proposed primary school complex is not expected to have any significant impact on the local groundwater. Increased recharge of the groundwater is likely as a result of run-off from buildings and bitumenised areas although this increase will probably not be detectable due to the small size of the development.

The laying of brick paving rather than grassed areas between the primary school buildings will reduce the need for irrigation as will the planting of drought resistant indigenous plants.

Fertilisers will be used to establish and maintain the oval. Given the low nutrient retention capabilities of the soil there is the potential for nutrients to be transported down to the water table. To prevent this the following management strategies will be carried out:

- Soil beneath the oval will be amended by the application of Alcoa red mud which is known to have good nutrient retention characteristics. This will be harrowed in at a rate of about 160t/ha.

- The application of fertilisers will be minimised to ensure only sufficient is supplied to maintain the grass in healthy condition. As a guide an application rate of 900kg/ha of 2% phosphorus fertiliser would be applied annually.

- A drought resistant turf will be selected that will require relatively little watering.

As a result of the above, it is predicted that the proposal will not adversely affect the quality of groundwater beneath the site.

With regard to the bore to be established for irrigation of the oval little impact on the water table level is expected due to the small volumes of water which will be required. The adjacent wetlands receive water from the east (Figure 7) thus drawing groundwater from the development which is west of the lakes has little potential impact given the low volume of water involved.

4.4 Flora and Vegetation

The location of all buildings will be restricted to Lot 7 and the playing field to Lot 8, both of which contain cleared land and native vegetation of poor quality. Despite this, the retention of the remaining native vegetation on these lots will be a priority. However, while clearing of trees will be kept to a minimum there will be a need to

remove some trees and shrubs. The preferred location for the oval is within an area which has been cleared of most native vegetation.

A significant proportion of Lot 9 (east of Lot 8 and beyond the general development area) has been totally cleared of native vegetation. This land is the responsibility of the State Planning Commission and is not owned by the Proponent. However, the Proponent is willing to undertake a comprehensive revegetation project for that part of Lot 9 which is cleared, together with the northern part of Lot 8 between Yangebup Road and the proposed oval (total area about 1.5ha). The project will be undertaken as a major primary school and community programme. Appropriate tree and shrub species will be planted which closely match the original vegetation. The revegetated area would provide wildlife habitats, particularly in the eastern and northeastern corner of Lot 9 where Flooded Gum and Paperbarks will be planted close to the perimeter of Yangebup Lake.

4.5 Fauna

It is considered that the majority of native fauna which inhabits the development site consists of birds. Generally the understorey is in poor condition and would be depauperate in fauna. The proposed development will require the clearing of an area of trees and shrubs and thus a reduction in bird habitat. This will be kept to a minimum because of selective clearing. However, the revegetation programme on Lot 8 and Lot 9 will provide more fauna habitats over the general area, particularly close to Yangebup Lake. As a result, no significant impact on fauna from the proposal is predicted.

4.6 Nuisance Insects

Midge swarms are known to affect lakes in the East Beeliar wetland chain. Research suggests that high midge densities are a function of eutrophication of the lakes although other factors such as clearing of native vegetation which fringes the lake may also contribute to the problem.

The development will not add to the midge problem in Yangebup or North Kogolup Lakes due to the control of drainage water and nutrients. It is considered unlikely that any midges would affect the school since these insects are active in the evening when the primary school will be closed. However, it is expected that the school will take all necessary precautions such as installing fly screens to keep insects out of classrooms and lights that do not attract midges so as to minimise this potential problem.

The lakes in the Beeliar Chain are also known to be breeding sites for mosquitoes that carry the Ross River Virus. Typically these mosquitoes are active during dawn and dusk during summer when environmental conditions allow them to disperse. A few cases of the disease have occurred within the City of Cockburn but generally the risk of infection is very low. Interestingly the probability of symptoms developing in children

under 12 is very low even when compared to the low probability of adults developing symptoms of the disease.

It is considered that the risk of contracting Ross River Virus associated with attending the Beeliar Primary School would be minor given that most attendees will live in the immediate area. The City of Cockburn and the Department of Health are responsible for the control of mosquitoes in the area should there be an unacceptable health risk.

4.7 Fire Management

The study area is part of the Metropolitan Fire District, administered by the West Australian Fire Brigades Board. As such, it receives fire protection services and management including maintenance of firebreaks, controlled fuel-reduction burning, and fire fighting operations.

The Proponent will ensure that a fire break is maintained around Lot 7 and Lot 8. A track already exists along this boundary. School children will be educated on the effects of fire on the biological environment and its hazards to life and property.

4.8 Landscape Protection

The Proponent is aware that there is concern regarding the protection of the view from Yangebup and Kogolup Lake. The following measures have been designed for this purpose:

- All buildings are situated behind (to the west of) the ridgeline which runs north-south down the western part of Lot 8,
- The oval on Lot 8 will be landscaped with low vegetated bunds on the eastern side to screen the playing fields and players from the Lakes.
- Lot 9 and other degraded areas will be rehabilitated.

4.9 Traffic

A Traffic Impact Study was undertaken by the Proponent to assess the impact of the development on the surrounding road system and the expected parking requirements.

In the short term, additional traffic on the road system will be minor. In the long term the traffic generated by the primary school will be up to 150 vehicles/hour on Osprey Drive and 140 vehicles/hour on Yangebup Road (west) during the morning. All the affected roads have sufficient capacity to carry the additional traffic. The primary school will require up to 60 carparking spaces for the first stage of development.

4.10 Odours from Wool Scourers

Jandakot Wool Scourers operate a wool processing operation within the Jandakot Industrial area which is to the north-east of the site of the proposed school. This industry has the potential to generate odour, especially from the effluent ponds which are adjacent to Yangebup Lake. The distance between the effluent ponds and the nearest school building is about 1000m. This buffer zone consists mainly of Yangebup Lake and is considered sufficient to prevent the school from being exposed to an unacceptable odour problem. The primary school will be no closer to the wool scourers than existing residential areas immediately to the north of the development site.

5. CONCLUSIONS

This CER has identified a number of potential environmental impacts that could result from the establishment of the Beeliar Park Catholic Primary School at Yangebup. However, as a result of the design of the development and the proposed management of the facility it is concluded that these potential impacts will either not occur or be minor.

As the proposed development would be within the System 6 M93 area and the proposed Beeliar Regional Park, careful consideration has been paid to the impact on wetlands and associated buffer of vegetation. The development has been designed to minimise the clearing of native vegetation and allow the facilities to blend in with the existing vegetation.

A report produced by DPUD (1990) on the establishment of the Beeliar Regional Park states that the development site was included with the proposed boundary because nuisance midges would make the area unsuitable for urban development. The Proponent believes these nuisance insects are mainly a problem outside school hours and thus would not impact upon the school. Previous studies by Murray and Middle (1987) and the Proponent have determined that the sites vegetation is degraded and consequently has little conservation value, thus there is little value in retaining the site within the Park to conserve vegetation. The Proponent has committed to retaining the remaining vegetation where possible and enhancing it by plantings to the extent of rehabilitating land it will not own. As a result of the above and other management strategies relating to nutrient management and retention of stormwater, it is concluded that the proposal is in accordance with recommendations for the proposed Beeliar Park which will contain the System 6 Area M93. Consequently, it is concluded that the development is compatible with the proposed Beeliar Park.

6. COMMITMENTS

Commitments represent the Proponents solutions to potential environmental problems posed by the development. Essentially they are promises by the Proponent regarding the methods by which certain aspects of the proposal will be carried out.

The Catholic Education Office commits to undertake the following commitments with respect to the Beeliar Park Catholic School Development.

1. The Proponent will minimise the removal of native trees and shrubs within the development site. This will be done to the satisfaction of the City of Cockburn.

2. The Proponent will carry out management strategies which will include the application of red mud, and minimisation of fertiliser application. Turf will be irrigated to minimise the potential for leaching of nutrients down to the water table. This will be done to the satisfaction of the City of Cockburn and the EPA.

3. The Proponent will replant parts of Lot 8 and Lot 9 Yangebup Road, Yangebup with indigenous vegetation. This will be done to the satisfaction of the EPA, the City of Cockburn, and CALM.

4. With regard to the oval on Lot 8 Yangebup Road, the Proponent commits to meeting the costs of establishment and maintenance. This will be done to the satisfaction of the City of Cockburn.

5. The Proponent commits to designing the development to contain and dispose of all stormwater on site. This will be done to the satisfaction of the City of Cockburn.

REFERENCES

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Department of Conservation & Environment (1983). "Conservation Reserves for Western Australia as recommended by the Environmental Protection Authority. The Darling System - System 6. Part II Recommendations for Specific Localities." Report 13.

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APPENDICES

APPENDIX 1

EPA GUIDELINES

BEELIAR PARK CATHOLIC SCHOOL DEVELOPMENT

GUIDELINES FOR THE CONSULTATIVE ENVIRONMENTAL REVIEW

In Western Australia, the environmental assessment process is about protecting the environment. The fundamental requirement is for the proponent to describe the proposal in some detail, to discuss the environmental impacts and potential environmental impacts of the proposal, and then to describe how those environmental impacts are going to be avoided, ameliorated or managed so that the environment is protected.

Throughout the process, it is the aim of the Environmental Protection Authority (EPA) to advise and assist the proponent to improve or modify the proposal in such a way that the environment is protected. However, it is the responsibility of the proponent to design and implement proposals which protect the environment, and to present the design proposals for review.

These guidelines have been prepared to assist the proponent in identifying issues which should be addressed within the Consultative Environmental Review (CER) Beeliar Park Catholic School Development. They are not intended to be exhaustive and the proponent may consider that other issues should also be included in the document.

The CER should facilitate a review of the key environmental issues The purpose of the CER should be explained, and the contents should be concise and accurate as well as being readily understood. Specialist information and technical description should be included only where it assists the understanding of the the proposal. Where specific information has been requested by a Government Department or the Local Authority this should be included in the document.

It is not intended that the document be unduly lengthy. Rather it is intended that all relevant material should be succinctly presented in order that the key environmental issues may be assessed.

The principal function of the CER is to place this project in the context of the regional environment and progressive developments, including the cumulative impact of this development. It seeks to explain why this project is being proposed in the way it is, at this place and at this time. It should also set out the environmental impacts the project will have, and what management steps the proponent intends to use to avoid, ameliorate or mitigate any negative environmental impacts.

A copy of these guidelines should appear in the CER document.

PROJECT DESCRIPTION

It is important to include a description of the proposal itself, including specifically what is proposed, how it is to be carried out, the timing of the project, and what measures will be taken to ameliorate possible negative effects.

Detailed plans of the site should be included showing:

- existing land uses and land status;
- adjacent land uses;
- roads and services;
- proposed land uses;
- System 6 areas boundaries;
- Beeliar Park proposal boundaries; and
- Wetlands.

These plans may be included in the text, or included as appendices to the report.
In addition, fauna and flora surveys should be included to facilitate assessment and planning

ENVIRONMENTAL IMPACTS AND MANAGEMENT

Predicted environmental impacts and proposed measures to overcome or minimise these problems should be discussed in sufficient detail so as to allow an adequate assessment to be made.

The specific environmental concerns with the Beeliar Park Catholic School Development proposal revolve around a number of issues, which include:

- System 6 recommendations - it is important that this proposal be seen in the context of the whole of the system 6 area, and demonstrate its compatibility with the recommendation;
- Beeliar Park recommendations - it is important that this proposal be seen in the context of the proposals for the Beeliar Regional Park, and demonstrate its compatibility with the objectives of the Park proposal;
- Protection of the nearby wetlands;
- Drainage management, effluent disposal, nutrient management;
- Protection of groundwater;
- Flora and fauna conservation and rehabilitation of vegetation. (The vegetation on site has regional significance);
- Midge, mosquito and insect nuisance -management;
- Fire management;
- Landscape amenity; and
- Odours from nearby wool scourers.

COMMITMENTS

Specific commitments should be given to all components of the management programme. Where appropriate, the commitments should include

a) who is responsible for the commitment and who will do the work,
b) what is the nature of the work
c) when and where the work will be carried out and
d) to whose satisfaction will the work be carried out.

A summary of commitments in numbered form should be given. A set of well written concise commitments covering the key issues of the proposal and its effects will help to expedite assessment of the proposal.

APPENDIX 2

SPECIES OF FLORA

Appendix 2

BELLIAR CATHOLIC SCHOOL
SPECIES OF FLORA

BOTANICAL NAME	COMMON NAME
Acacia cochlearis	Rigid Wattle
Acacia huegelii	-
Acacia saligna	Orange Wattle
Acacia stenoptera	-
Acacia wildernowiana	Grass Wattle
Anigozanthos manglesii	Mangles Kangaroo Paw
Arnocrinum preissii	-
Anthropodium capillipes	-
Asteridia pulverulenta	Common Bristle Daisy
Astroloma pallidum	Kick Bush
Banksia attenuata	Slender Banksia
Banksia grandis	Bull Banksia
Banksia menziesii	Firewood Banksia
Bossiaea eriocarpa	Common Brown Pea
Burchardia umbellata	Milkmaids
Caladenia flava	Cowslip Orchid
Calandrinia liniflora	Parakeelya
Conostephium pendulum	-
Conostylis aculeata	Prickly Conostylis
Crassula colorata	Dense Stonecrop
Daviesia divaricata	-
Dianella divaricata	Flax Lily
Drosera erythrorrhiza	Red Ink Sundew
Drosera pallida	Pale Sundew
Drosera stolonifera	Leafy Sundew
Eucalpytus marginata	Jarrah
Eucalyptus gomphocephala	Tuart
Gompholobium tomentosum	Hairy Yellow Pea
Haemodorum spicatum	-
Hardenbergia comptoniana	Native Wisteria
Hibbertia hypericoides	Yellow Buttercup
Hibbertia racemosa	Stalked Guinea Flower
Homalosciadium homalocarpum	-
Hovea trisperma	Common Hovea
Hypocalymma robustum	Swan River Myrtle
Jacksonia sternbergiana	Stinkwood
Kennedia prostrata	Red Runner
Lepidosperma angustatum	-
Leucopogon propinquus	-
Loxocarya flexuosa	-
Macrozamia riedlei	Zamia
Meuhlenbeckia adpressa	Climbing Lignum
Nemcia capitata	Bacon and Eggs
Persoonia longifolia	-
Petrophile linearis	Pixie Mops
Podotheca angustifolia	Sticky Long Heads
Quinetia urvillei	-
Scaevola canescens	Grey Scaevola
Senecio lautus subsp maritimus	Coastal Groundsel
Tetraria octandra	-
Thysanotus sparteus	-
Trachymene pilosa	Native Parsnip
Xanthorrhoea preissi	Blackboy

APPENDIX 3

FAUNA LIST DERIVED FROM MURRAY AND MIDDLE (1989)

APPENDIX 3

Fauna List Derived from Murray and Middle, 1989

Frogs

Hylidae	*Litoria moorei*(Motorbike frog)
Leptodactylidea	*Heleiopous eyrei* (Moaning frog)

Lizards

Agamidae	*Pogona minor* (Bearded dragon)
Gekkonidae	*Phyllodactylus marmoratus*
Pygopdidae	*Lialis burtonisd* (Burton's snake lizard)
Scincidae	*Hemiergis peronii quadrilineata*
	Tiliqua rugosa (Bob-tail skink)
	Leiolopisma trilineatum
	Cryptoblepharus plagiocephalus
	Menetia greyii
	Morethia obscura
	Lerista elegans
	Ctenotus labillardiari
	Ctenotus lesueurii
Varanidae	*Varanus gouldii* (Gould's goanna)

Snakes

Elapidae	*Pseudonaja affinis* (dugite)

Mammals

Introduced	*Felis catus* (Cat)
	Vulpes vulpes (Fox)
	Oryctolagus cunculus (Rabbit)

Bushbirds

Laughing Turtle-Dove
Common Bronzewing
Red-capped Parrot
Port Lincoln Ringneck
Pallid Cuckoo
Laughing Kookaburra
Rainbow Bee-eater
Welcome Shallow
Tree Martin

Bushbirds (continued)

Black-faced Cuckoo-shrike
Scarlet Robin
Golden Whistler
Rufous Whistler
Grey Shrike-thrush
Grey Fantail
Willie Wagtail
Splendid Fairy-wren
Western Gerygone
Western Thornbill
Red Wattlebird
Little Wattlebird
Singing Honeyeater
Brown Honeyeater
New Holland Honeyeater
Western Spinebill
Spotted Pardalote
Striated Pardalote
Silvereye
Australian Magpie-lark
Grey Butcherbird
Australian Magpie
Australian Raven