

**Special rural rezoning, subdivision and
development - Lot 2 Swan Loc 934, 2383, 2482 and
2829, Badgerup Road, Wanneroo**

V Mobilia and M D'Uva and the City of Wanneroo

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

**Environmental Protection Authority
Perth, Western Australia
Bulletin 592
Assessment No 395
November 1991**

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 recommendations.

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 assessment report 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
18th Floor, Allendale Square
77 St George's Terrace
PERTH WA 6000

CLOSING DATE

Your appeal (with the \$10 fee) must reach the Minister's office no later than 5.00 pm. on 22 November 1991.

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1. Location and background

The site is on Badgerup Road, approximately 2km north west of Lake Gnangara. It includes the central portion and eastern half of Badgerup Lake. This wetland is part of System 6 area M8.

Little Badgerup Swamp (also part of M8) is located just to the south, and, while not on land covered by this development, is likely also to be affected by this proposal. It is necessary, therefore, to include Little Badgerup Swamp in the discussions below.

The 1983 System 6 report, or "Red Book", of the Environmental Protection Authority identified areas which are desirable for National Parks, Nature Reserves and major associated recreational areas. The region extends from Moore River to the north, to Blackwood River to the south, and east from the coast approximately 80 kilometres. This report was endorsed by Government as the basis for areas to be protected from development.

Figure 1 shows the location of this subdivision, and the location of the two wetlands recommended for protection in the System 6 report.

The subdivision proposal was referred to the Authority in April 1990, and it was formally assessed under Part IV of the Environmental Protection Act 1986 due to its implications for the System 6 area and wetlands. Formal assessment means that the Environmental Protection Authority conducts an investigation of the proposal and advised the Minister for the Environment who makes legally binding decisions. The level of assessment was set at Consultative Environmental Review.

2. The proposal

The owners, V Mobilia and M D'Uva, propose to rezone, subdivide and develop Swan Locations 2829, 2383, 2482, portion Location 934 and Lot 2 to create 15 "Special Rural" lots ranging in size from 1ha to 1.297ha. The site is currently zoned "Rural" under the City of Wanneroo's Town Planning Scheme No 1, and there are few land use controls that currently apply to the land. A copy of these provisions is included in the Appendix.

The Water Authority of Western Australia has indicated that scheme water could be provided by extending the main in Goldview Road. However, it is likely that the extra water required for the new lots could not be handled by the existing main, and it would need to be upgraded. The developers could be required to contribute to the cost of this upgrading. Reticulated sewerage would not be provided on these lots.

The City of Wanneroo set a condition of its approval that Locations 2829, 2383 and 2482 be given up, free of cost, as Public Open Space (see Figure 1).

3. Planning issues

The Department of Planning and Urban Development has recently released for public comment a report called "The Draft North-West Corridor Structure Plan". This report gives a broad description of how that region will develop in the future. The land described in this Bulletin is included in that Structure Plan.

Lake Badgerup, Little Badgerup Swamp and some of the adjoining land, including the land referred to in this Bulletin, is described in the Structure Plan as being for Parks and Open Space. If the Structure Plan was implemented then the wetlands would be adequately protected, but would mean that this proposal could not go ahead. However, the Authority has decided that it has a responsibility to assess this proposal now on its merits.

Another option that would also provide adequate protection for these wetlands would be to include the wetlands and a buffer as part of the Parks and Open Space with strict controls on what activities can occur on the surrounding land. In this case, this proposal could proceed.

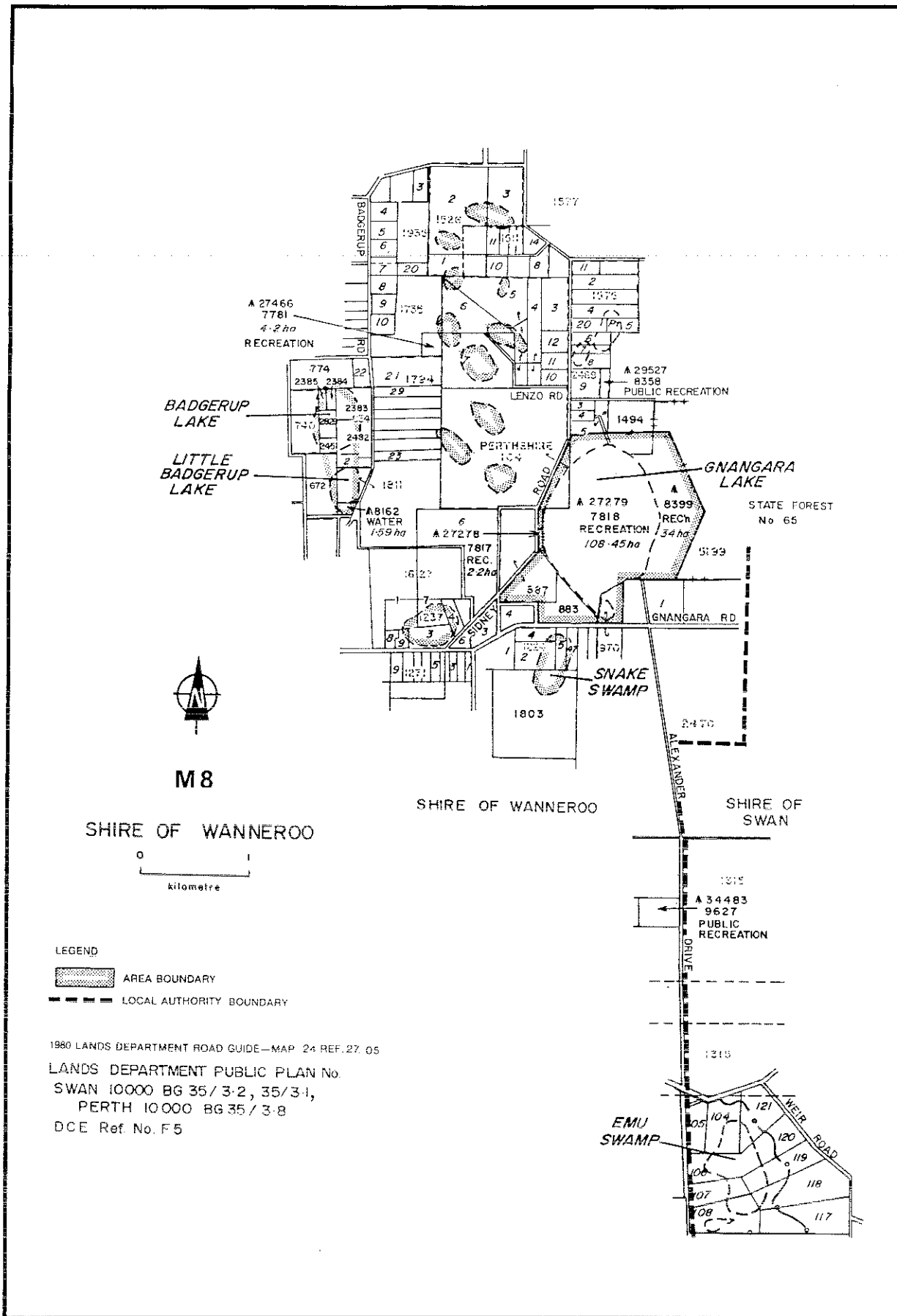


Figure 1. Location of the proposed development.

This Bulletin describes in detail the conditions under which this proposal could proceed so as to be environmentally acceptable. This does not mean that planning approval will automatically follow.

4. Environmental issues

4.1 Overview

The main environmental concern regarding this proposal is the protection of both Lake Badgerup and Little Badgerup Swamp. They are both System 6 wetlands (part of the M8 suite), and are included for protection in the Swan Coastal Plain Wetland Environmental Protection Policy released in March 1991. Regulations were published at the same time to ensure the wetlands in the Policy area were protected during the submission period. As a generality, any area which holds water at the beginning of summer (December 1) is classified as a lake and thereby given protection; it must not be drained, filled or polluted.

The main other issues related to the protection of these wetlands are:

- identifying and protecting their environmental value;
- providing an adequate buffer of native vegetation; and
- controlling land use on the lots to avoid nutrient run-off into the wetlands and to ensure that the water levels in the wetlands are not significantly altered.

4.2 Protecting the wetland proper

One way of ensuring that Lake Badgerup is not filled is for all of the wetland to be included as part of the Public Open Space. As discussed earlier, the City of Wanneroo required that the developer give up Locations 2829, 2383 and 2482 as Public Open Space. This land does not include all of the Lake.

4.3 The environmental value of Lake Badgerup and Little Badgerup Swamp

The "environmental value" of a wetland has two components. It relates to how a wetland is important as a wildlife habitat, and how it is important to people.

Both wetlands, while being partly degraded, are valuable waterbird habitats because they have extensive beds of bullrushes and hold water for most of the year. The System 6 Red Book recommends that these wetlands become "parkland for recreation and as a refuge for waterbirds".

Both wetlands are on private property and few people visit them. They are, therefore, of limited value to people other than the owners of the land at present.

The Environmental Protection Authority has developed a method to determine the environmental value of wetlands. This is contained in the Environmental Protection Authority's Bulletin 374, published in 1990. A simple field sheet is used to record the physical and biological details of each wetland. The details from that sheet are then used to score the wetland on two scales — a "natural attributes" score and a "human-use attributes" score. The higher the score, the more that wetland is valued for that attribute.

These scores are then used to place wetlands into one of five management categories as follows:

- wetlands scoring highly on both attributes are called High Conservation wetlands - category H;
- wetlands scoring highly on natural attributes scale only are called Conservation wetlands — category C;

- wetlands scoring highly on human-use attributes scale are called Conservation and Recreation wetlands — category O;
- wetlands with moderate scores on both attributes are called Resource Enhancement wetlands — category R; and
- wetlands scoring poorly on both attributes are called Multiple Use wetlands — category M.

In 1990 Murdoch University carried out a study to evaluate the wetlands within the City of Wanneroo using Environmental Protection Authority Bulletin 374. Lake Badgerup was evaluated as a category R wetland, whereas Little Badgerup Swamp was a C wetland.

"C" wetlands are very important as wildlife habitats. The Environmental Protection Authority recommends that developments around such wetlands should be managed so as not to cause any degradation. "R" wetlands are less important as wildlife habitats and developments around these wetlands should be planned so as to improve their value.

The recommendations contained in this Bulletin are aimed at maintaining and improving the environmental values of these wetlands.

4.4 Buffer of native vegetation

An adequate buffer of native vegetation is needed to protect Lake Badgerup. This buffer will have two functions. Firstly, it would separate the water habitat of the lake from the variety of human activities on the surrounding land. Secondly, it would provide a complementary habitat for the waterbirds breeding in the bullrushes and feeding in the open water.

This buffer has two components. Firstly, there should be the "active" buffer that is part of the open space and managed in conjunction with the wetland proper. Secondly, there should be a "transition zone" on the lots that abut the open space area. This land could remain in private ownership, but there should be restrictions on the land use activities permitted within that zone. The building envelopes and access for stock should be kept out of this zone.

The exact width of the active buffer should be determined in consultation with the Environmental Protection Authority when the detailed documentation for the sub-division, if approved, is drawn up. As a guide, however, the following objectives should be met:

- the existing paperbarks that fringe the lake should be included in the buffer;
- the buffer should be wide enough to provide a barrier between the wetland and the land used for human activities;
- the shape and form of the basin containing the wetland should be used to define the edge of the buffer area;
- where there are no native trees within this buffer area, rehabilitation should be carried out prior to the lots being sold; and
- the buffer should be included as part of the Public Open Space.

The width of the transition zone should be based, in part, on the shape of the proposed lots. The exact width of this zone should be determined by the City of Wanneroo on advice from the Environmental Protection Authority.

4.5 Controlling land uses on the lots and managing the water levels in the wetlands

The measures described above go a long way to addressing the issues regarding the protection of the wetland vegetation, and the protection of the waterbird habitat values of Lake Badgerup. However, the quality and quantity of the water in the wetlands is also important, and the nature of the surrounding land uses are likely to have some impact on both these parameters.

Most of the wetlands on the Swan Coastal Plain are formed when the land is low enough to expose the underground aquifer. Lake Badgerup and Little Badgerup Swamp are two such wetlands.

The sandy soils of the Coastal Plain have poor nutrient holding capacity, and any excess nutrients applied to the soils in the form of fertilizers will end up in the aquifer carried by the water as it permeates down through the soil. The water in the aquifer moves from east to west, carrying these nutrients to any down-stream wetland.

High nutrient levels in wetlands can cause rapid growth of algae. This usually occurs during the spring and summer months when the water temperature rises. These algal blooms upset the normal ecological functions of the wetland by causing deaths in other flora and fauna.

Another problem associated with high nutrient levels is that such conditions can promote rapid growth in the population of non stinging mosquito-type insects called midge. These often swarm out of the wetland to invade the surrounding land causing discomfort for nearby residents.

The vegetation cover on the land has an important effect on the level of the watertable. Trees and shrubs, in particular, constantly use water from the aquifer as part of a process called evapo-transpiration. When these larger plants are cleared less water is used for this process and the watertable rises in response. If there is a wetland nearby this clearing activity, its water levels will also rise. Such a rapid changed in water levels can cause deaths in the wetland vegetation, and can allow weeds to invade. Direct drainage of stormwater into a wetland will have a similar affect.

To avoid these problems, and to protect the environmental values of these wetlands, the land uses immediately up-stream of the wetlands should be controlled so that nutrient loss to the groundwater is minimised or eliminated. Further, clearing of remnant vegetation on all land within the immediate vicinity of each wetland should not be permitted. The balance of land in this proposal not part of Lake Badgerup is up-stream from both this lake and Little Badgerup Swamp.

The key aspect of nutrient management for this subdivision are:

- restricting high fertilizer using activities on the new lots;
- controls on the number of animals kept on the lots; and
- controlling the production of nutrients from the effluent systems.

To avoid the high nutrient using activities like vegetable growing, these lots should be zoned for residential purposes rather than commercial. Should owners want to keep stock on these lots, for example horses, then their numbers should be controlled so as to minimise and prevent nutrient loss to the ground water, and to prevent any degradation of the vegetation.

To control the nutrient loss from the septic systems, the number of such systems should be minimised, and they should be located well away from the wetlands. To control the number of on site effluent systems, lot sizes should be maximised.

The key aspects for managing the water levels in the wetlands are:

- no further clearing of native vegetation, and
- no stormwater should drain directly into either wetland.

5. Summary of public submissions

Three public submissions were received. The respondents were:

- Coalition for Wanneroo's Environment;
- Greenforce; and
- a member of the public.

The key issues as seen by the public submissions were:

- the proposal is inconsistent with the System 6 recommendations;
- water quality may be compromised by nutrient input from adjoining land use;
- an adequate buffer for the lake is not provided;
- land use controls may be hard to police and enforce;
- the water balance may be changed; and
- proposed land use is incompatible with protection of the Gnangara Mound.

6. Conclusions and recommendations

6.1 Introduction

The Environmental Protection Authority is aware that a number of decision making authorities must provide approvals for a development such as this one to proceed. These other authorities, including the Department of Planning and Urban Development and the local authority, must provide planning and other approvals.

Recommendations by the Environmental Protection Authority, and ultimately the decision of the Minister for the Environment, primarily address the potential environmental impacts of land uses associated with special rural subdivisions in close proximity to wetlands.

Notwithstanding the Environmental Protection Authority's advice and the Minister for the Environment's decision, the proposal may or may not be approved by other decision making authorities.

Accordingly, the Environmental Protection Authority wishes to provide advice and recommendations in two parts. The first part comprises advice to the other decision making authorities before they make decisions on whether or not to approve the proposal.

The second part contains the recommendations relevant to the proponent and the local authority. It is only applicable if the proposal were to receive subsequent approval by decision making authorities.

6.2 Advice to the decision making authorities

The Environmental Protection Authority advises that any environmental approval granted through this process does not imply that planning approval will automatically follow. A number of planning issues, which may include environmental aspects, may need further consideration. Some of the issues to be addressed include the following matters:

- what portion of the site should be included as part of Parks and Open Space in the North - West Corridor Structure Plan and the Metropolitan Region Scheme; and
- the final zoning of the land, if any, not included as part of Parks and Open Space in the North - West Corridor Structure Plan and the Metropolitan Region Scheme.

6.3 Recommendations

Recommendation 1

The Environmental Protection Authority has concluded that the proposal to sub-divide the land Lot 2 Swan Loc 934, 2383, 2482 and 2829, Badgerup Road, Wanneroo as modified during the process of interaction between the proponent, the Environmental Protection Authority, the public and the government agencies that were consulted is environmentally acceptable.

In reaching its conclusion, the Environmental Protection Authority identified the main environmental factors requiring detailed consideration as:

- protection of Lake Badgerup and provision of an adequate buffer of native vegetation;
- management of effluent disposal;
- water balance considerations; and
- controls on land use on the sub-divided lots.

Accordingly, the Environmental Protection Authority recommends that the proposal could proceed subject to the Environmental Protection Authority's recommendations.

On the proponent

Recommendation 2

The Environmental Protection Authority recommends that the developer be required to undertake the following:

- 2.1 That portion of Lake Badgerup located on this land and an adequate buffer of native vegetation be included as part of the Public Open Space. The extent of the lake and the buffer that surrounds it should be defined to include the wetland proper and all the remaining fringing wetland vegetation. The width of this buffer should be sufficient to provide adequate protection of the lake from the surrounding land uses. The width of that buffer should be determined to the satisfaction of the Environmental Protection Authority, using the objectives described in section 4.4 of the Bulletin.
- 2.2 If a portion of the area referred to in recommendation 2.1 contains no stands of native vegetation or only degraded stands of native vegetation, the proponent shall rehabilitate the area with appropriate indigenous trees and shrubs to the satisfaction of the Environmental Protection Authority.
- 2.3 A storm water drainage system is constructed capable of retaining on site for a one in 10 year flood event. Further, this drainage system should be design so that no direct drainage enters either Lake Badgerup or Little Badgerup Swamp

On the Local Authority

Recommendation 3

The Environmental Protection Authority recommends that the local authority be responsible for the ongoing implementation and management of the following:

- 3.1 Lot sizes to be no less than 1 hectare.
- 3.2 Septic systems be located at least 100m from either of the two wetlands with a minimum of 2m vertical separation between the base of the leach drain or soakwell and the highest known groundwater level or bedrock. Health Department of Western Australia approved alternative domestic wastewater treatment system with adequate phosphorus retention capacity could be installed provided that the base of the system or modified irrigation area are above the highest known water table or are installed to the satisfaction of the Environmental Protection Authority.

- 3.3 The only permissible land use is for residential purposes, and no more than one residence shall be permitted on each lot unless it can be demonstrated that an additional residence would not result in any significant additional nutrient application.**
- 3.4 Livestock be allowed at a rate that will not cause further degradation of the land.**
- 3.5 Any remnant vegetation should be protected.**
- 3.6 Ancillary land uses may be permitted provided that they do not involve any further significant nutrient application or any additional clearing of land.**
- 3.7 All lots abutting the wetland should have a wetland buffer transition zone where land use activities are restricted. This area should contain no buildings or stock.**

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 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.

Appendix 1

Amendment No 437 to the City of Wanneroo's Town Planning Scheme No 1 - provisions of approval for the land subject to the recommendations in this Bulletin.

TOWN PLANNING AND DEVELOPMENT ACT, 1928 (AS AMENDED)

CITY OF WANNEROO

TOWN PLANNING SCHEME NO 1 - AMENDMENT NO 437

The Wanneroo City Council under and by virtue of the powers conferred upon it in that behalf by the Town Planning and Development Act, 1928 (as amended), and the Metropolitan Region Town Planning Scheme Act, 1959 (as amended), hereby amends the above Town Planning Scheme by:

1. Rezoning portion Swan Location 934 and Swan Locations 2383, 2482 and 2829 Badgerup Road, Wanneroo from Rural to Special Rural.
2. Including the following Special Provisions applicable to this Special Rural Zone in Schedule 4, Part 2 of the Scheme Text:

Special Rural Zone No 19.

Description of Locality:

Portion Swan Location 934 and Swan Locations 2383, 2482 and 2829 Badgerup Road, Wanneroo.

Special Provisions;

- (i) the minimum lot size shall be 1 ha and all subdivision shall be carried out in accordance with the Development Guide Plan;
- (ii) the land being used for residential, equestrian and/or non-commercial horticultural purposes only;
- (iii) the keeping of livestock and poultry for commercial purposes is prohibited;
- (iv) the land is to be managed in such a manner as to avoid the land being laid bare of vegetation resulting in loose, wind erodable, conditions. In particular, lots shall not be cleared of trees except where necessary to permit construction of houses and outbuildings or where trees are dead or pose a hazard to safety;
- (v) Council may also permit the clearing of 2000m² in a central location for the establishment of a non-commercial private product/pasture area. This cleared area shall be no closer than 10m to a side boundary;

- (vi) no more than one horse shall be permitted on each lot subject to compliance with Special Provision (iv) and subject to the prior erection of fencing and facilities to the satisfaction of the Soil Conservation Board of the Department of Agriculture. Should a horse be kept and damage is being caused to trees by the horse then Council may require that the horse be removed from the lot until such time as improvements to the satisfaction of Council have been made to the fencing, which is intended to protect the trees;
- (vii) the subdivider shall ensure that each prospective purchaser of a subdivided lot acknowledges in writing, at the time of purchase of a lot, the requirements and regulations of the Rights in Water and Irrigation Act regarding the use of groundwater and the protection of groundwater supplies. As the lots are within a proclaimed groundwater area it is unlikely that a licence will be issued for the use of groundwater for amounts more than 1500m³ per annum, ie sufficient for house and domestic garden requirements and for the irrigation of approximately 0.1 ha of pasture or other crops;
- (viii) all on-site effluent disposal systems are to be located above the 47.5m (AHD) contour line except for the two southernmost battleaxe lots.

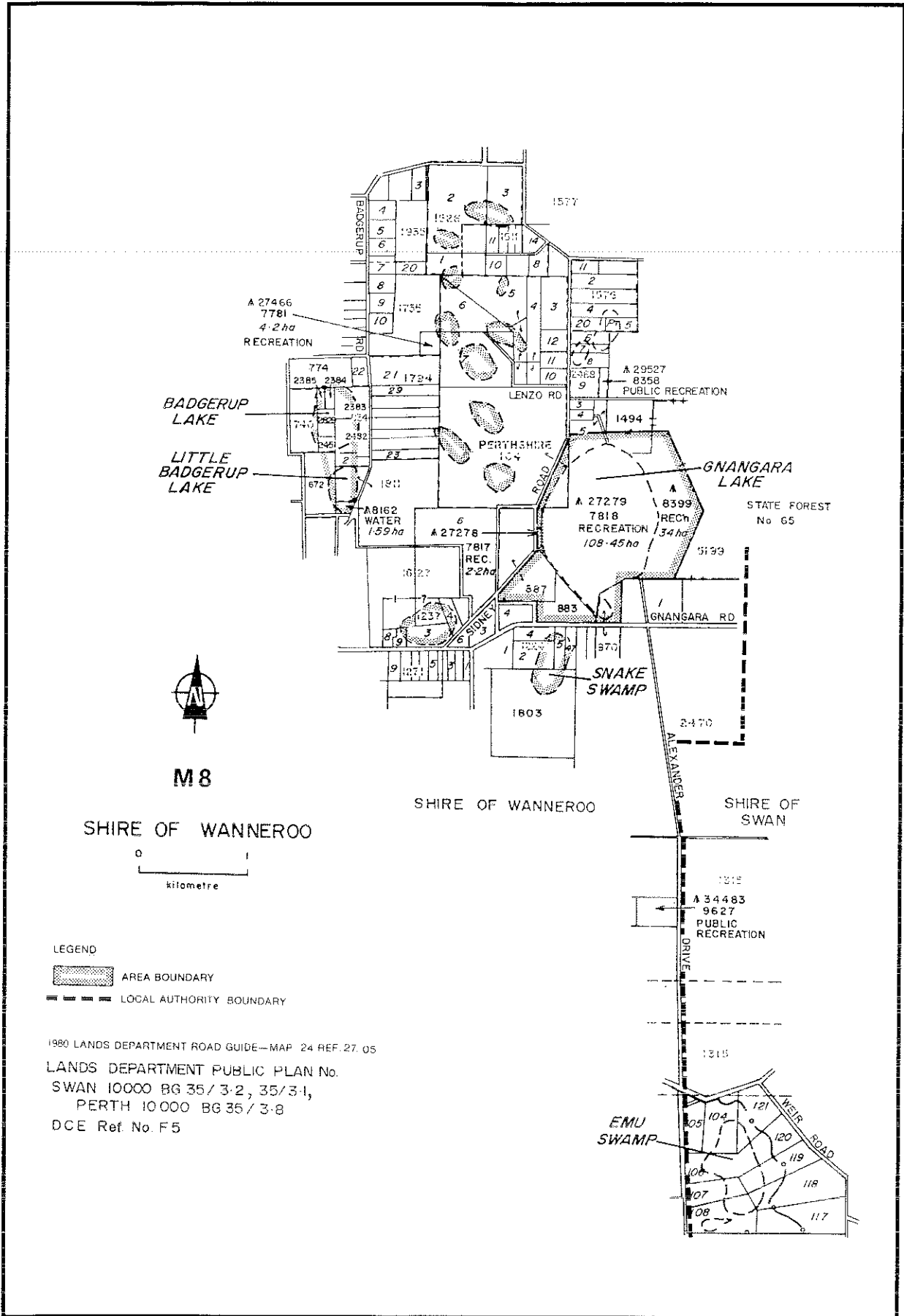


Figure 1. Location of the proposed development.