

**Proposed Rural Residential Subdivision
Lot 5 Lexia Avenue, Upper Swan**

GM & CM White

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

**Environmental Protection Authority
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Summary and Recommendations

This report provides the Environmental Protection Authority's (EPA's) advice to the Minister for the Environment on the proposal by Mr GM & Mrs CM White to subdivide their 24.6 hectare property, Lot 5 Lexia Avenue, Upper Swan into nine rural residential lots of greater than 2 hectares each.

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Relevant Environmental Factors

It is the EPA's opinion that the following environmental factors are relevant to this proposal:

- (a) Specially Protected (Threatened) Fauna – impacts on the critically endangered Western Swamp Tortoise and its habitat;
- (b) Regionally significant vegetation, wetlands and watercourse – impacts on the adjacent Ellen Brook Nature Reserve and the Ellen Brook itself, which dissects the property; and
- (c) Surface and ground water quality – potential for pollution of surface and ground water, and impacts on the Western Swamp Tortoise habitat and catchment of the Swan and Canning Rivers.

Conclusion

The proposed subdivision will increase the density of development adjacent to the Ellen Brook Nature Reserve to a level at which impacts on the critically endangered Western Swamp Tortoise, regionally significant vegetation and surface water quality are considered unmanageable. As a consequence, the EPA considers the proposal by Mr GM & Mrs CM White to subdivide Lot 5 Lexia Avenue, Upper Swan into nine lots for rural residential development is environmentally unacceptable as it cannot be managed to meet the EPA's objectives.

Recommendations

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is to subdivide Lot 5 Lexia Avenue, Upper Swan into nine rural residential lots.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3 of this report.
3. The Minister notes that the EPA has concluded that the proposal cannot be managed to meet the EPA's objective in relation to:
 - (a) Specially Protected (Threatened) Fauna;
 - (b) Regionally significant vegetation, wetlands and watercourse; and
 - (c) Surface and ground water quality.
4. That the Minister notes that the EPA has not included in this Bulletin "conditions and procedures to which the proposal should be subject, if implemented" because the EPA holds the view that the proposal should not be implemented.

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1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the environmental factors relevant to a proposal by Mr GM & Mrs CM White to subdivide Lot 5 Lexia Avenue, Upper Swan into nine rural residential lots. The proposed subdivision plan is included as Figure 1.

Lot 5 Lexia Avenue is located immediately adjacent to the western side of the Ellen Brook Nature Reserve, on land zoned Rural under the Metropolitan Region Scheme and General Rural in the City of Swan Town Planning Scheme No. 9. The Ellen Brook itself divides the property. Further details of the proposal are presented in Section 2 of this Report.

The proposal was referred to the EPA by the Western Australian Planning Commission in March 2001. The EPA, in recognising the high environmental sensitivity of its location encouraged the landowner to reconsider the proposal. The Department of Environmental Protection also met with the proponents to explain the EPA's environmental concerns regarding the proposal, and discuss alternatives. However, the proponents did not modify the proposal.

As the proposal appeared unlikely to meet the EPA's environmental objectives, the EPA set the level of assessment at Proposal is Unlikely to be Environmentally Acceptable (PUEA) in October 2001. At that time a brief statement of reasons for the PUEA level of assessment was made publicly available as set out in the EPA's Administrative Procedures for Environmental Impact Assessment. No appeals on the level of assessment were received by the Minister for the Environment.

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Accordingly, Section 3 discusses environmental factors relevant to the proposal and Section 4 presents the EPA's conclusions and recommendations. References are listed in Appendix 1.

2. The Proposal

The proposal is to subdivide the 24.6 hectare Lot 5 Lexia Avenue, Upper Swan into nine rural residential lots of greater than 2 hectares each (as shown in Figure 1).

The property is located immediately adjacent to the western side of the Ellen Brook Nature Reserve No. A27620, and the Ellen Brook itself divides the property. The location of the property is shown in Figure 2.

The land is zoned Rural under the Metropolitan Region Scheme and General Rural in the City of Swan Town Planning Scheme No. 9. There are limited planning controls under the City of Swan Town Planning Scheme No. 9 for the General Rural Zone to manage land use associated with the proposed subdivision.

3. Relevant Environmental Factors

The EPA considers that this proposal is situated in a particularly sensitive location. In the EPA's opinion, the following environmental factors are relevant to the proposal:

- (a) Specially Protected (Threatened) Fauna;
- (b) Regionally significant vegetation, wetlands and watercourse; and
- (c) Surface and ground water quality.

The relevant factors are discussed in Sections 3.1 to 3.3 of this report.

3.1 Specially Protected (Threatened) Fauna

Description

The subdivision area is situated immediately adjacent to the Ellen Brook Nature Reserve, one of only two remaining habitats for the critically endangered Western Swamp Tortoise.

The Western Swamp Tortoise is the most endangered tortoise or turtle on earth, with the wild population of only 140 individuals living in the claypan swamps within the Twin Swamps Nature Reserve and the Ellen Brook Nature Reserve, managed by the Department of Conservation and Land Management (CALM). Although the Perth Zoo is successfully breeding the tortoises for reintroduction into the wild, breeding is made difficult by the low numbers of adult females available; young hatchlings taking 10 to 15 years to reach sexual maturity; the females only producing up to 5 eggs per year; and their breeding history being not well known (EPA 2001).

Threats to the survival of the Western Swamp Tortoise in the wild include:

- Impacts on the habitat from intensification of development in the area;
- Fire;
- Predation;
- Changes in water quality and quantity; and
- The small amount of habitat available.

In recognising these constraints and sensitivities of the species, the Environmental Protection Authority (EPA) has initiated the development of an Environmental Protection Policy to provide statutory protection of the habitat of the Western Swamp Tortoise. The *Revised Draft Environmental Protection (Western Swamp Tortoise) Policy 2001* (EPA 2001) is currently available for public comment.

Assessment

The EPA's objective in regard to this environmental factor is to protect the remaining populations of the critically endangered Western Swamp Tortoise and their habitats, consistent with the objectives of the *Revised Draft Environmental Protection (Western Swamp Tortoise) Policy 2001* and the provisions of the *Wildlife Conservation Act 1950*.

Increasing the density of human populations adjacent to the reserve is likely to lead to a range of incremental pressures on the habitat of the Western Swamp Tortoise which may threaten the viability of the existing wild population. This is particularly the case for properties in close proximity to the habitat reserves. These pressures include an increase in the risk of fire within the adjacent Ellen Brook Nature Reserve by accidental ignition and spread of fires. Landowners adjacent to the Nature Reserve may also apply pressure to CALM to control burn the Nature Reserve to reduce the risk of bushfire and damage to their properties.

Increasing the density of residents adjacent to the Ellen Brook Nature Reserve is also likely to increase the occurrence of weed invasion into the reserve by the introduction of plant species not locally native to the area in residents' gardens, as crops and in animal feed. Weeds in the Ellen Brook Nature Reserve replace native bushland and reduce the habitat of the Western Swamp Tortoise and the condition of regionally significant vegetation (see section 3.2 below).

Although the Ellen Brook Nature Reserve is currently fenced to prevent access of unwanted predators, the increased density of residents may increase the likelihood of damage to the fence, providing access for predators, such as dogs and cats, to the reserve. Domestic animals will also add to the nutrient loadings of the site and may contribute to a reduction in water quality within the Ellen Brook Nature Reserve.

CALM has advised (letter to WAPC, 2 April 2001) that the south-eastern corner of Lot 5 Lexia Avenue is within the surface catchment for the ephemeral winter-wet claypan swamps in Ellen Brook Nature Reserve and as such has been identified as potential habitat for the Western Swamp Tortoise. CALM are interested in acquiring this smaller area for extensive rehabilitation and incorporation into the Nature Reserve, and has been discussing this with the landowner (the proponent).

It is also expected that the density of the proposed subdivision is likely to have detrimental impacts on the quality of surface water, upon which the Western Swamp Tortoise is dependant. This is further explained below in section 3.3.

As a number of the threats to the remaining populations of the Western Swamp Tortoise are related to human population pressures, such as fire, weeds and domestic animals, there is a need for low density development with land use controls immediately adjacent to the Ellen Brook and Twin Swamps Nature Reserves where these human population pressures will be most threatening. Away from the area immediately surrounding the Nature Reserves where impacts are largely related to the surface water catchment, controlled subdivision may be more viable as impacts are more able to be managed.

Accordingly, it is the EPA's opinion that the proposal cannot be managed to meet the EPA's environmental objectives.

3.2 Regionally Significant Vegetation, Wetlands and Watercourse

Description

The adjacent Ellen Brook Nature Reserve occurs on the eastern side of the Swan Coastal Plain, an area of high floristic biodiversity where most (>97%) of the native vegetation has been cleared. The values of the Ellen Brook Nature Reserve have been recognised for many years as part of System Six area M17 (Department of Conservation and Environment 1983). The Government's *Bush Forever* policy recognises the reserve (Bush Forever Site 301) as containing regionally significant remnant vegetation (State of Western Australia 2000). The Ellen Brook itself dissects the subdivision area and has also been identified in *Bush Forever* as Site No. 300.

The Ellen Brook Nature Reserve contains two threatened ecological communities. The Marri woodland in the northern half is listed as critically endangered (floristic community type 3c) and the shallow, ephemeral winter-wet swamps in the southern half is listed as vulnerable (floristic community type 8) (English and Blyth 1997). Limited floristic survey of the nature reserve have recorded 236 species of native plants, including two species of declared rare flora and eight priority flora. The wetlands within the nature reserve and Ellen Brook itself are classified as conservation category (State of Western Australia 2000). The high conservation values of the Ellen Brook Nature Reserve are also recognised by its inclusion in the Register of the National Estate (Australian Heritage Commission 2000) and the Directory of Important Wetlands (Australian Nature Conservation Agency 1996).

The Ellen Brook forms part of a regionally significant bushland and wetland linkage from the Swan River north to Bullsbrook and north-west to state forest areas and forms valuable habitat for fauna movement between larger areas of bushland.

Assessment

The EPA's objective in regard to this environmental factor is to maintain the abundance, integrity, functions and environmental values of regionally significant vegetation, wetlands and watercourse.

A number of the population pressures described above as impacts on the habitat of the Western Swamp Tortoise are also relevant to maintaining the values of the regionally significant bushland, wetlands and the Ellen Brook. Fire, weed invasion and nutrient enrichment of surface water is likely to have degrading impacts on the vegetation and water quality of these regionally significant areas.

Other than setbacks to the Ellen Brook, the subdivision plan does not propose any mechanisms for protecting these features from degradation.

Accordingly, it is the EPA's opinion that the proposal cannot be managed to meet the EPA's environmental objectives.

3.3 Surface and Ground Water Quality

Description

While the relationship between groundwater, surface water flows and the swamp systems within the Ellen Brook Nature Reserve is not well understood, it is generally considered that Lot 5 Lexia Avenue is located within the groundwater catchment, and at least the southern portion of Lot 5 is located within the surface water catchment of the habitat area within the Ellen Brook Nature Reserve. Subdivision at this density, with limited land use controls under the General Rural zone, is likely to increase nutrient and effluent export from parts of the site through surface and groundwater. This may lead to reductions in water quality within the seasonal wetlands of the habitat area, potentially threatening the viability of the wild population of the Western Swamp Tortoise.

In addition to the impacts of water quality on the Western Swamp Tortoise, the subdivision area is within the catchment of the Swan and Canning Rivers, the subject of the *Environmental Protection (Swan and Canning Rivers) Policy 1998*. The Ellen Brook catchment is currently the highest contributing catchment of nutrients to the Swan and Canning Rivers. The Ellen Brook itself traverses the property and collects surface water and shallow groundwater from parts of the property.

Assessment

The EPA's objective in regard to this environmental factor is to maintain or improve the quality of surface and ground water to ensure the protection of existing and potential uses, including ecosystem maintenance, of the swamps within the Ellen Brook Nature Reserve, the Ellen Brook and the Swan and Canning Rivers.

Rural subdivision of the density proposed may act to reduce the quality of surface water exported from the site through increases in the density of nutrient producing and pollutant causing activities such as domestic animals, fertiliser and pesticide application, effluent disposal systems and the like. Unless carefully managed nutrients and pollutants are likely to drain from the lot into the Ellen Brook Nature Reserve or the Ellen Brook itself.

Residents in proximity to wetland environments, such as that within the Ellen Brook Nature Reserve, are often exposed to nuisance midge and mosquito swarms. While the area does not have a current midge problem, numbers are likely to increase as a result of nutrient enrichment of the wetlands from fertilizers usage. Control of midge and mosquitos is generally by chemical spray. Chemicals may also be used to treat pests on grown produce such as an orchard or vegetable crops which may be associated with the proposed subdivision. Application of chemicals could drift as spray into the Nature Reserve or effect water quality which would adversely impact on the Western Swamp Tortoise population, as described above.

Accordingly, it is the EPA's opinion that the proposal cannot be managed to meet the EPA's environmental objectives.

4. Conclusions and Recommendations

The EPA has concluded that the proposal to subdivide Lot 5 Lexia Avenue, Upper Swan for rural residential development, by Mr GM & Mrs CM White, is environmentally unacceptable as it cannot be managed to meet the EPA's objectives.

The EPA submits the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is for the rural residential subdivision of Lot 5 Lexia Avenue, Upper Swan.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 3 of this report.
3. The Minister notes that the EPA has concluded that the proposal cannot be managed to meet the EPA's objective in relation to:
 - (a) Specially Protected (Threatened) Fauna
 - (b) Regionally significant vegetation, wetlands and watercourse; and
 - (c) Surface and ground water quality.
4. That the Minister notes that the EPA has not included in this Bulletin "conditions and procedures to which the proposal should be subject, if implemented" because the EPA holds the view that the proposal should not be implemented.

Figure 1. Proposed Subdivision Plan

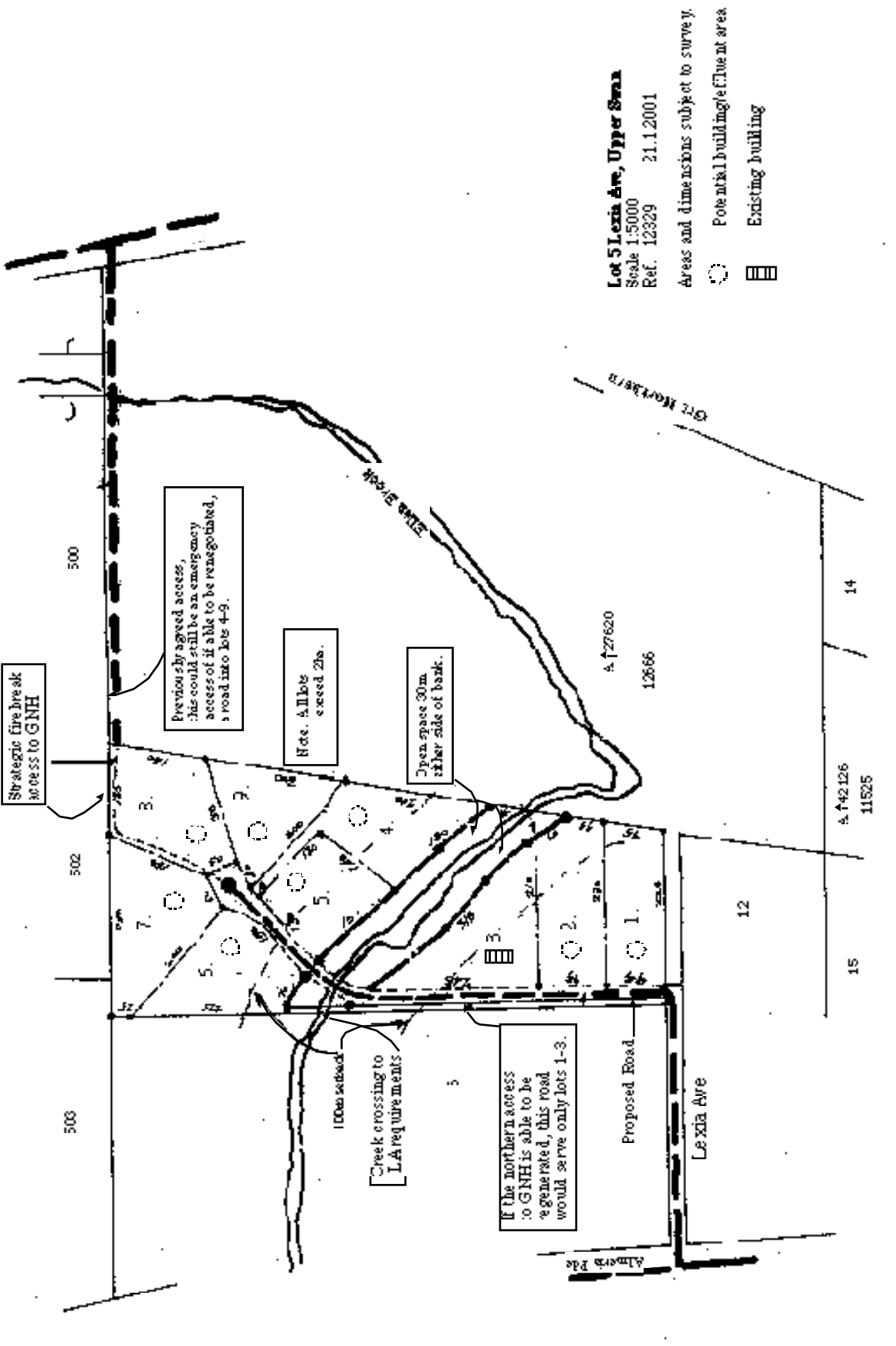
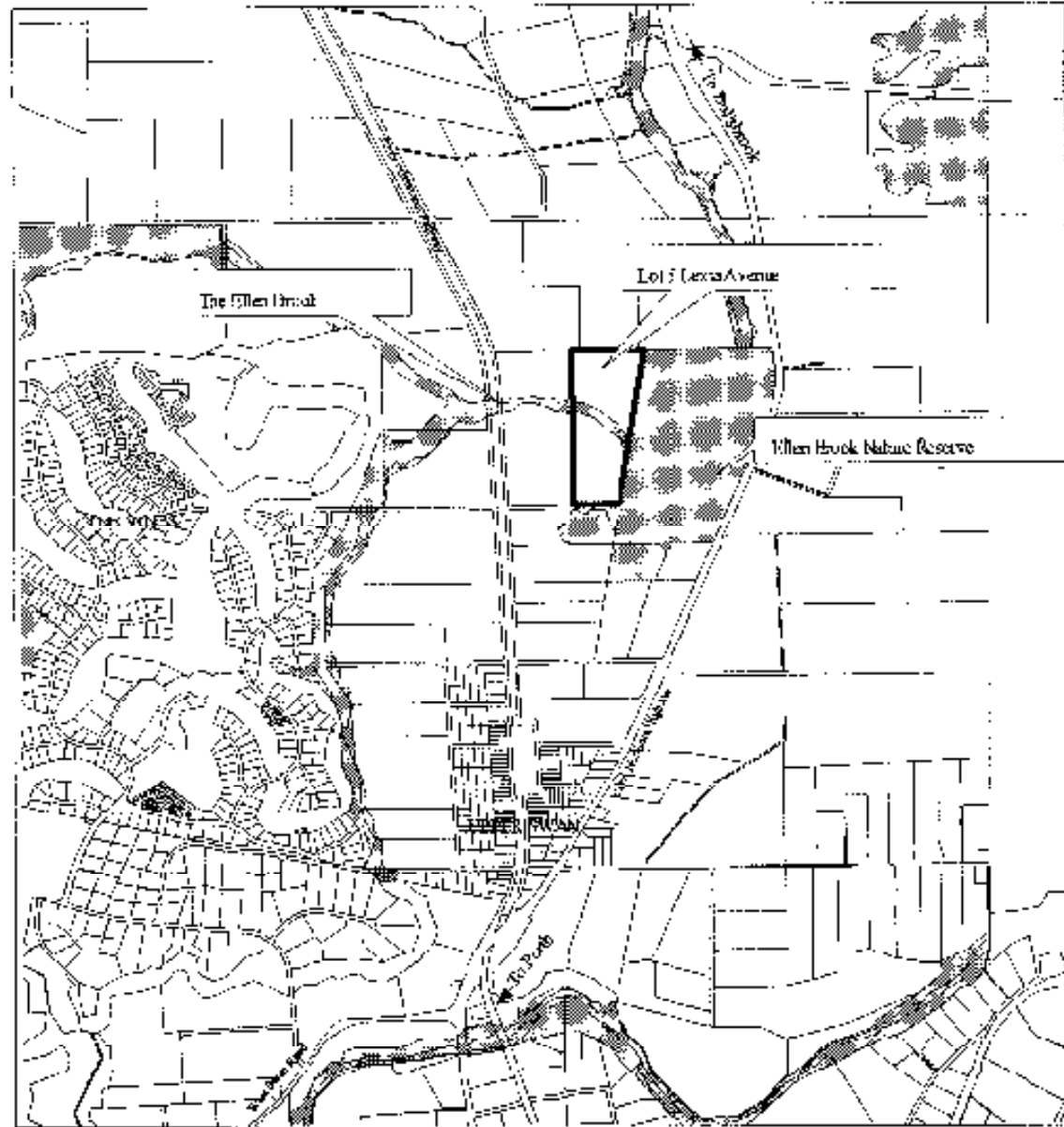



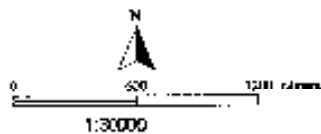


Figure 2. Location of Lot 5 Lexia Avenue, Upper Swan



-  Proposal boundary
-  Bush Forever (State of WA 2001)
-  Lot boundaries

Bush Forever and lot boundary has provided by
the Department of Planning and Infrastructure



DATE: 2000. This map is for
information only and does not
constitute a guarantee of
accuracy or reliability.



Appendix 1

References

- Australian Heritage Commission (2000) *Register of the National Estate Database*. AHC, Canberra, ACT.
- Australian Nature Conservation Agency (1996) *A Directory of Important Wetlands in Australia*. ANCA, Canberra, ACT.
- Department of Conservation and Environment (1983) *Conservation Reserves for Western Australia. The Darling System – System 6. Parts 1 and 2. Report 13*. Department of Conservation and Environment, Perth, WA.
- English V and Blyth J (1997) *Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province*. Project Number N702, Final Report to Environment Australia. Department of Conservation and Land Management, Perth, WA.
- Environmental Protection Authority (2001) *Revised Draft Environmental Protection (Western Swamp Tortoise Habitat) Policy 2001*. Report to the Minister for the Environment and Heritage as required under section 28 of the Environmental Protection Act, 1986. EPA, Perth, WA.
- State of Western Australia (2000) *Bush Forever*. Volume 2 Directory of Bush Forever Sites. Department of Environmental Protection, Perth, WA.