

STATE FOREST 65 — PINJAR PLANTATION, NORTH BUSHLAND, PINJAR

Boundary Definition: protected area with bushland boundaries (remnants in pine plantation)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 94, 285, 286

Area (ha): bushland 87.9 (3 remnants from 3.3 to 53.4 ha)

Map no. 9, 10

Map sheet series ref. no. 2034-I NW

Other Names: part of proposed Gnangara Park

Local Authorities (Suburb): Shire of Wanneroo (Yanchep)

Includes CALM Managed Land: State Forest 65

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes

Bassendean Sands (Qpb: S8)

Spearwood Dunes

Sands derived from Tamala Limestone (Qts: S7)

Tamala Limestone (Qtl: LS1)

VEGETATION AND FLORA

Vegetation Complexes

Spearwood Dunes

Karrakatta Complex — North

Floristic Community Types: not sampled, unable to infer types

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes

WETLANDS

No wetlands mapped

THREATENED ECOLOGICAL COMMUNITIES

Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated uplands

Vegetation and Flora: limited survey (McArthur and Mattiske 1985, Connell 1995)

Structural Units: mapping (McArthur and Mattiske 1985)

Uplands: *Dryandra sessilis*, *Melaleuca huegelii* and *Grevillea* sp. Open Shrubland to Open Heath; *Banksia attenuata* and *B. menziesii* Low Open Forest to low Woodland

Vegetation Condition: Very Good (Connell 1995)

Total Flora: not known

Significant Flora: the Heath/Shrubland limestone vegetation is the most eastern occurrence of its type and warrants further field study

Fauna: not known

Linkage: no adjacent native vegetation

Other Special Attributes: included in Gnangara Park proposal (Bailey 1997)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities

Recommendation: Sites with Some Existing Protection; the existing care, control and management of these Sites is endorsed. (Proposed 'Gnangara Park' - Cabinet 1996) (see Table 3, Volume 1).

STATE FOREST 65 — PINJAR PLANTATION, NORTH BUSHLAND, PINJAR

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SECTION 1: CADASTRAL INFORMATION

(Lots, locations and derived information to be updated in the public submission period)

Bushplan Site no. 94, 285, 286 Map no. 15 Map sheet series ref. no. 2034-I NW

Other Names: not known Area (ha): total 87.9; bushland 87.9 (3 remnants from 3.3 to 53.4 ha)

Local Authorities (Suburb) Shire of Wanneroo (Yanchep)

Zoning MRS: State Forests

Ownership Categories State Government

TPS: Landscape Lot/Location/Reserve numbers (Purpose), Street name 5608 street not identified State Forest 65

CALM Managed Land

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LANDFORMS AND SOILS

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Supergroup 3 - Uplands centred on Bassendean Dunes and Dandaragan Plateau

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THREATENED ECOLOGICAL COMMUNITIES

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Landscape Features: vegetated uplands

Vegetation and Flora: limited survey (McArthur and Matiske 1985)

Structural Units: mapping (McArthur and Matiske 1985)

Uplands: Dryandra sessilis, Melaleuca huegelii and Grevillea sp. Open Shrubland to Open Heath; Banksia attenuata and Banksia menziesii Low Open Forest to low Woodland

Vegetation Condition: Very Good (Connell 1995)

Total Flora: not known

Significant Flora: the Heath/Shrubland limestone vegetation is the easternmost occurrence of its type and warrants further field study

Fauna: no known information

Linkage: no adjacent native vegetation

Other Special Attributes: included in Gnaragara Park proposal (Bailey 1997)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

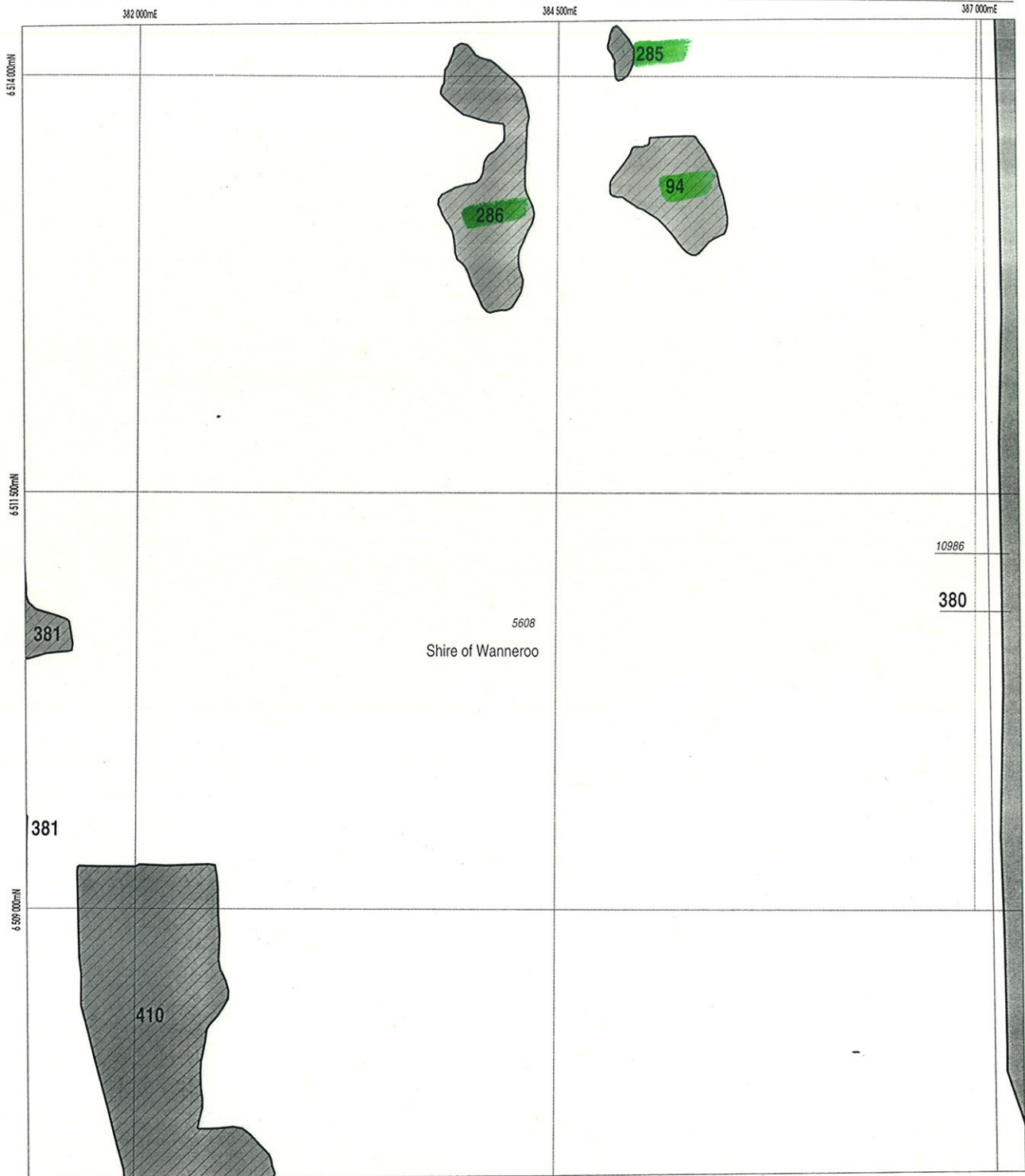
Criteria: Representation of ecological communities

Opportunities and/or Constraints

Opportunities: Bushplan Site subject to Gnaragara Mound Crown Land EPP; under TPS Landscape Zoning

Recommendation: The existing care, control and management of this Bushplan Site is endorsed. This site lies within the proposed 'Gnaragara Park' (concept announced by Cabinet in 1996) within which areas of remnant native vegetation, such as this Bushplan Site, should be managed in the future to retain and enhance their conservation values.





LEGEND

- 472 Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- 696 Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

2034 - I NW

IV	15 NW	NE
	SW	SE
III	2034	II

1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

PERTH'S BUSHPLAN MAP INDEX

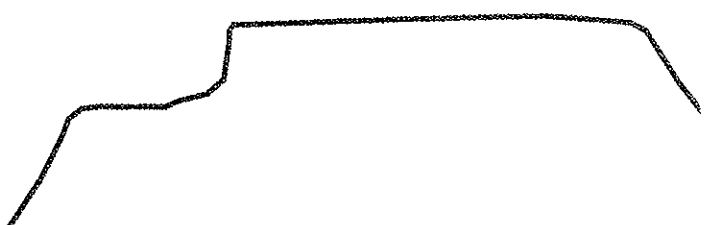
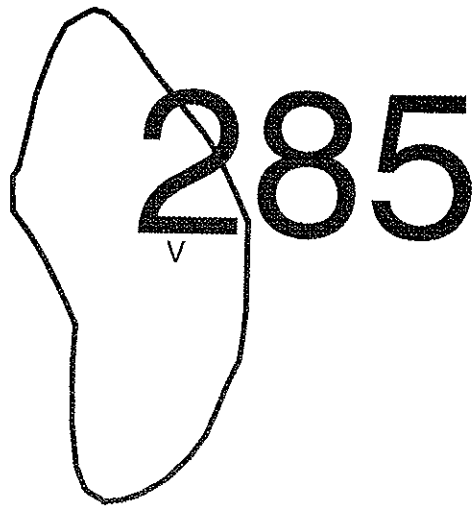
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92	93	94	95	96	97						
98	99	100	101	102							
103	104	105	106								

SCALE

0 500 1000

Metres

Produced by Project Mapping Section
Land Information Branch, Ministry for
Planning, Perth W.A. November 1998
ntw-map77/environ/bushplan/bushv2_15.dgn
Cadastral Data supplied by Department
of Land Administration, W.A.
Wetlands Data supplied by
Water and Rivers Commission
Native Vegetation Extent for Study Area
supplied by Agriculture Western Australia



BUSHPLAN SITES CORRECTED

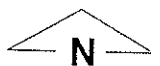


WESTERN AUSTRALIAN PLANNING COMMISSION

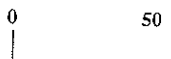


CUSTOMER FOCUS WESTERN AUSTRALIA

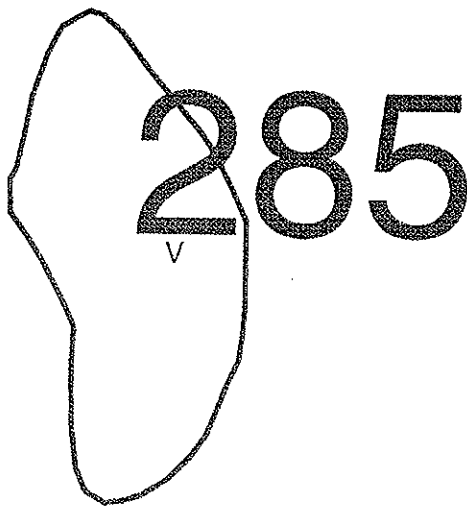
*State Forest Insert,
boundaries OK.
BKK 24/8.*



SCALE 1:2500



Metres



BUSHPLAN SITES CORRECTED



WESTERN
AUSTRALIAN
PLANNING
COMMISSION



*State Forest Insert,
boundaries OK.
BSK 24/8.*

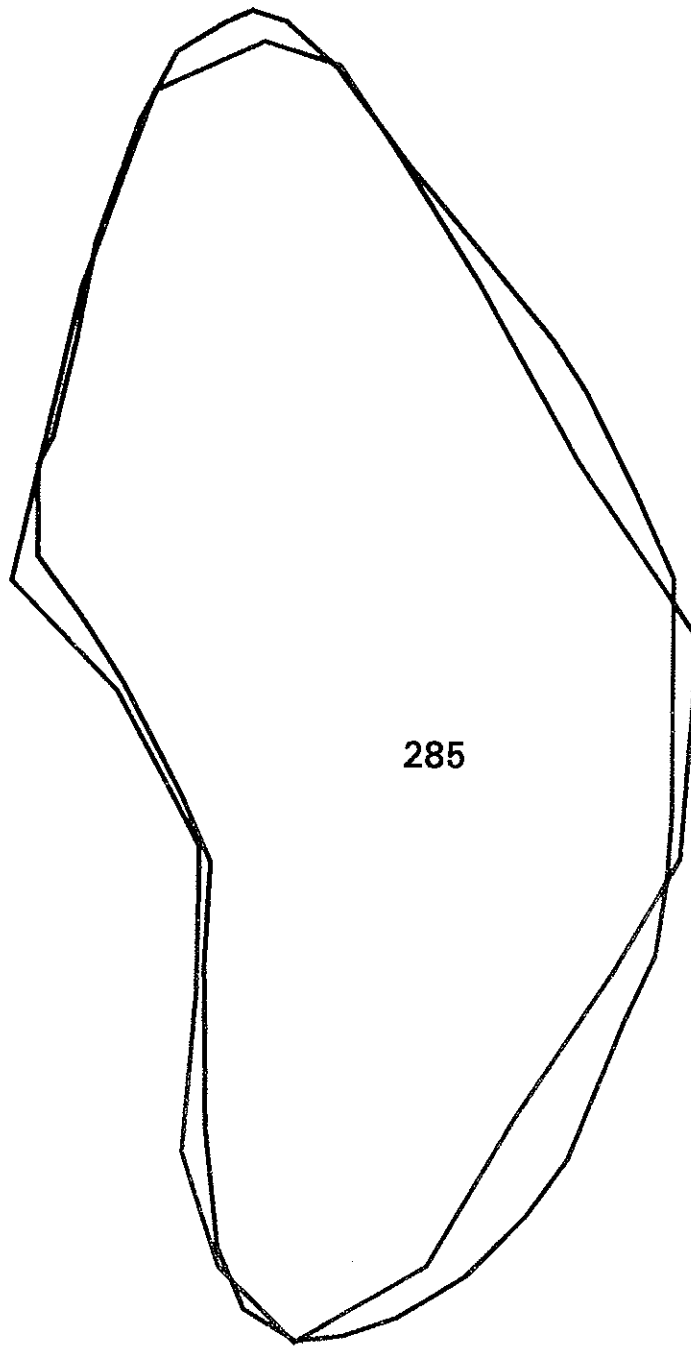


SCALE 1:2500



Metres

NO AERIALS



bp site 285

- AG VEG 1998 BOUNDARY THEME
- Cadastre
- Bushplan sites refno 1-500 SCP BOUNDARY THEME

MFP INTERNAL USE ONLY

Prepared By: Andrea Zappacosta

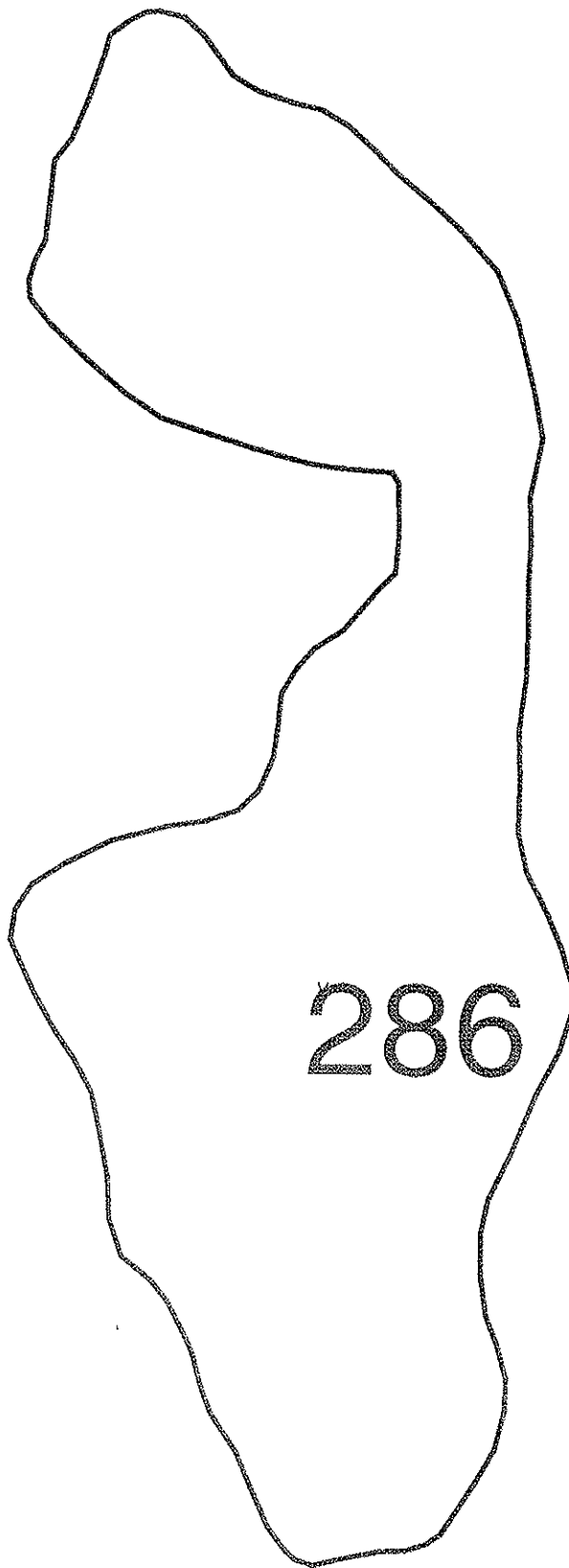
Prepared For:

Map Ident: plot980526_1

Date: 26 May 98

Scale 1:1848

MPS - Site for -
CALM - " "
Vc - cv - 47 Hous - 11/10/98



286

BUSHPLAN SITES CORRECTED



WESTERN
AUSTRALIAN
PLANNING
COMMISSION



CUSTOMER
FOCUS
WESTERN AUSTRALIA

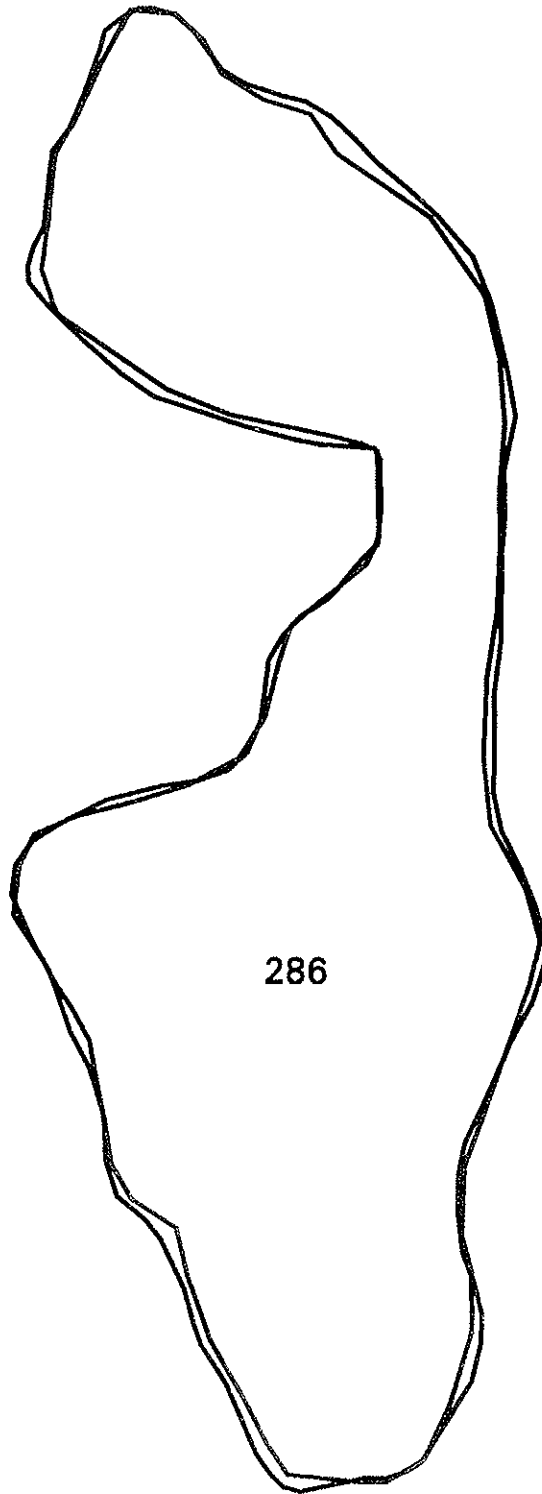
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BTK 29/8*



SCALE 1:2500



Metres



286

bp site 286



AG VEG 1998 BOUNDARY THEME



Cadastre



Bushplan sites refno 1-500 SCP BOUNDARY THEME

MFP INTERNAL USE ONLY

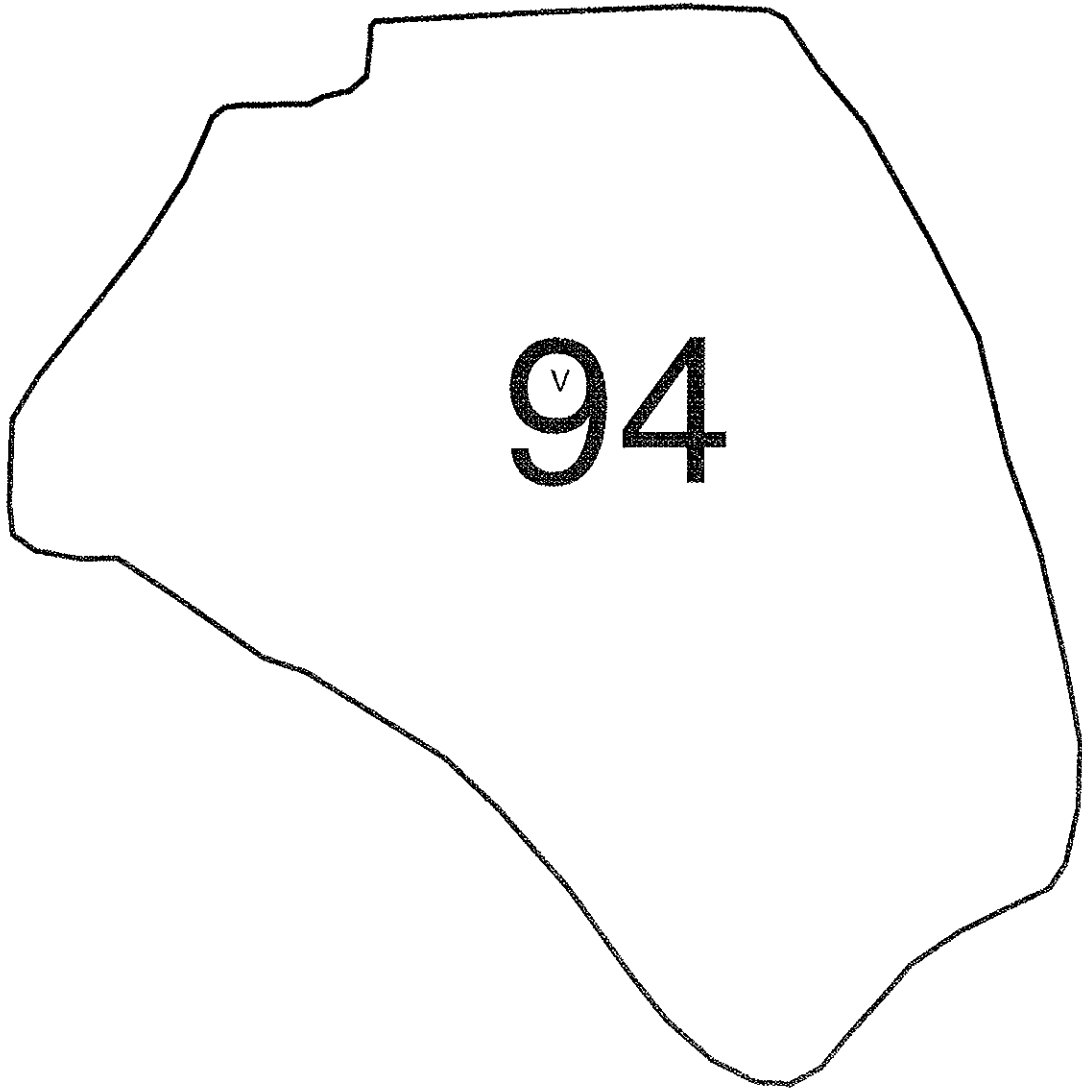
Prepared By: Andrea Zappacosta

Prepared For:

Map Ident: plot980526_1

Date: 26 May 98

Scale 1:8201



94
v

BUSHPLAN SITES CORRECTED

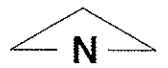


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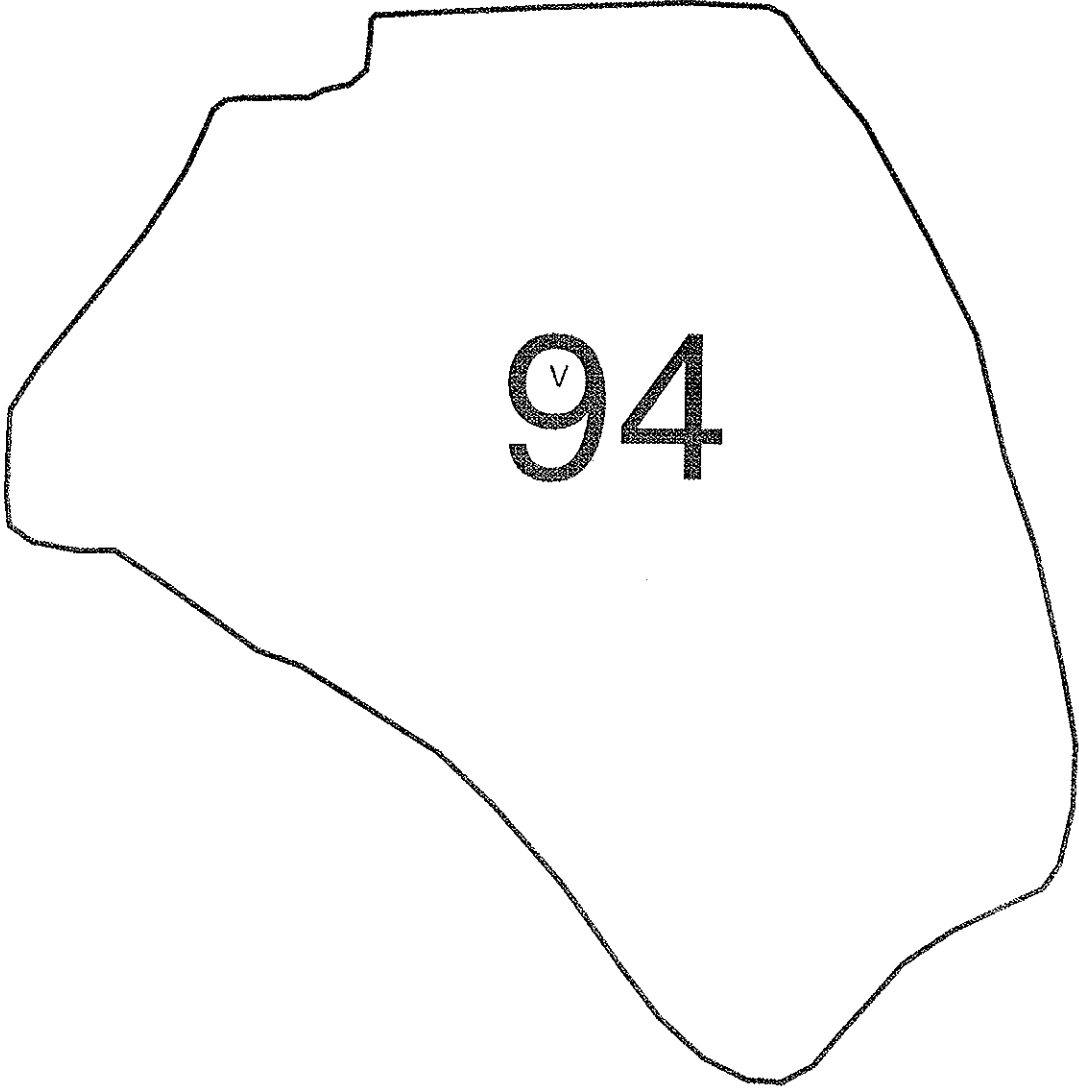
B BK/7G 21/10/96



SCALE 1:2500



Metres



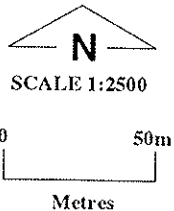
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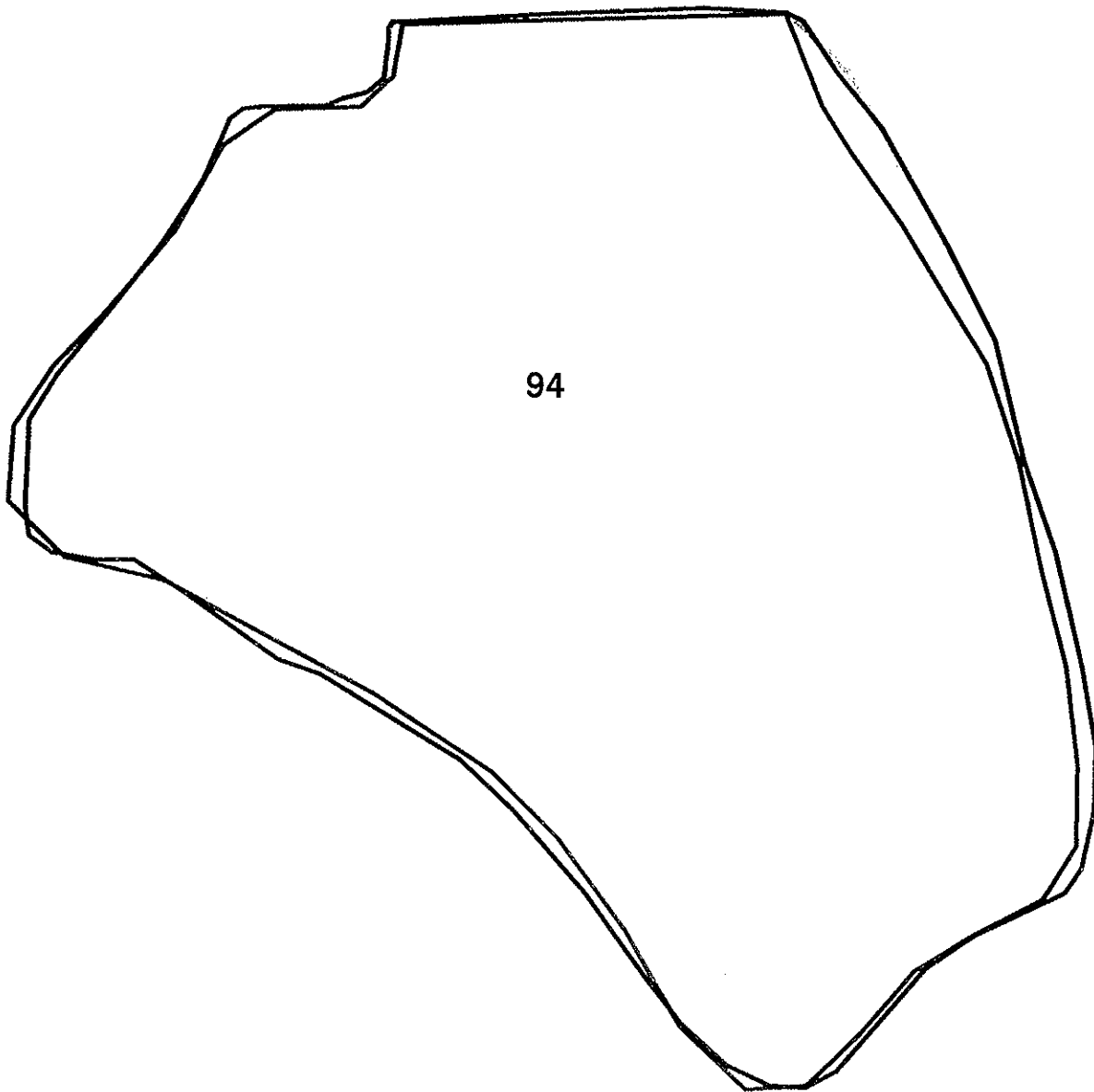


**WESTERN
AUSTRALIAN
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COMMISSION**



**CUSTOMER
FOCUS
WESTERN AUSTRALIA**





bp site 94

- AG VEG 1998 BOUNDARY THEME
- Cadastre
- Bushplan sites refno 1-500 SCP BOUNDARY THEME

BULLSBLOK.

MFP INTERNAL USE ONLY

Prepared By: Andrea Zappacosta

Prepared For:

Map Ident: plot980525_1

Date: 25 May 98

Scale 1:4617

*VAN DER WEGE
A. DE WEGE*

EPA and WAWA 1990 *Jenny Arnold's Perth Wetlands Resource Book: Chapters 1–15 (Bulletin 266)*.
Environmental Protection Authority, Perth, Western Australia.

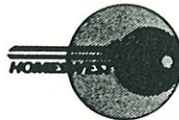
BS 295

**EAST OF JOONDALUP
URBAN DEVELOPMENT PROJECT**

NO YANNA

**PUBLIC
ENVIRONMENTAL
REVIEW**

HOMESWEST



YATALA NOMINEES PTY LTD

R&I BANK



PUBLIC ENVIRONMENTAL REVIEW

**EAST OF JOONDALUP
URBAN DEVELOPMENT PROJECT**

**Swan Location 2579 Clarkson Avenue
and Lots 1 and 2 Flynn Drive
Neerabup**

February, 1992

Prepared for:

Homeswest
Yatala Nominees Pty Ltd
R&I Bank

Prepared by:

Bowman Bishaw Gorham
2/294 Rokeby Road
SUBIACO WA 6008
Telephone: 388 1859
Fax: 381 7362

In association with:

Chapman Glendinning and Associates
Peter D Webb and Associates
Halpern Glick Maunsell Pty Ltd

- *Conostephium minus*
- *Lysinema elegans*
- *Stachysteman axillaris*
- *Tetrratheca pilifera*
- *Cartonema philydroides*
- *Lhotskya brevifolia*

Based on the recorded soil type preferences and distributions of these species, it is unlikely that *Lhotskya brevifolia* or *Lysinema elegans* would occur within the Spearwood Sand soils of this site. There is a small possibility that *Cartonema philydroides*, *Conostephium minus*, *S. axillaris* or *T. pilifera* may occur on the site, however these species were not observed during the flora survey work carried out during August 1989.

3.2.3 Fauna

The Western Australian Museum (WAM) conducted an extensive regional survey of vertebrates of the Northern Swan Coastal Plain in 1978. This survey is the most comprehensive of its kind ever carried out for the area, and included 315 man-days and 25,729 trap nights.

The areas chosen for study sampled the major geomorphic elements and representatives of the majority of vegetation formations recorded on the Plain. Reserves were preferentially chosen for sampling within the study area as they were generally large, relatively undisturbed and consequently most likely to contain fauna.

The terrestrial areas surveyed included, from north to south:

- Moore River National Park
- Gingin Proposed Reserve
- Melaleuca Park
- Twin Swamps Reserve
- Yanchep National Park, and
- Neerabup National Park/Burns Beach.

The intensive effort incorporated into the WAM survey could not be exceeded (or equalled) for the current study. Therefore, a limited fauna survey of the site, including traverses throughout the significant habitat types, was conducted to observe fauna species and to

identify and evaluate available habitats. The information gathered was subsequently correlated to results of the WAM survey, to indicate the fauna species likely to occur given the prevailing habitat types available. Although the present site was not specifically incorporated into the Museum's study, *Banksia* woodland habitat typical of the site was closely examined. Spatially, the Neerabup National Park (Reserve No. A27575), vested in the National Parks and Nature Conservation Authority, is very close to the site, and additionally contains several of the formations common on the Spearwood Dune System (WAM, 1978). During the WAM survey, trap lines were set adjacent to the site on the Reserve immediately north of Burns Beach Road. Trapping effort for this Reserve was 5008 trapnights, using Elliot, breakback, cage and pit traps.

While the vegetation complexes contained within the Park are not identical to those within the subject site they are very similar, and Neerabup National Park contains a larger extent of wet or dampland areas. Nonetheless, the resultant database is indicative of the range of vertebrates which may inhabit similar habitats within the site.

3.2.3.1 Mammals

A literature review and search of Western Australian Museum records by Kitchener *et al.* (1978) concerning the presence of native mammal species on the Northern Swan Coastal Plain concluded that 33 species had previously been recorded with certainty, and an additional four species had been recorded but were of doubtful origin. Six introduced mammal species were also recorded. During the 1978 WAM survey however, only 12 native mammal species were recorded, with 6 introduced species.

Table 2 lists the mammal species recorded from the Northern Swan Coastal Plain from historical records, museum records, and the WAM survey. The majority of species inhabit heath, shrubland or woodland habitats. Some species, such as the Southern Brown Bandicoot and Water Rat require or prefer habitat containing areas of open water.

Neerabup National Park, adjacent to the subject site, recorded two species of native mammal, the Western Grey Kangaroo (*Macropus fuliginosus*) and the Western Brush or Black-Glove Wallaby (*M. irma*). The kangaroo *M. fuliginosus* was the only mammal confirmed on-site during the present study.

The presence of the Black-Glove Wallaby adjacent to the study site by the WAM survey is significant, as the Department of Conservation and Land Management consider it may be a declining species. It is not, however, a gazetted rare or endangered animal.

Table 2

Mammal Species Recorded from the Northern Swan Coastal Plain

MAMMAL SPECIES	COMMON NAME	PREVIOUSLY RECORDED	KNOWN NSCP	1978 WAM Survey	NEERABUP N.P.	RECORDED ON-SITE
MACROPODIDAE						
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	*	1972	*	*	*
<i>Macropus irma</i>	Western Brush Wallaby	*	1974	*	*	*
<i>Macropus eugenii</i>	Tammar Wallaby	*				
<i>Petrogale lateralis</i>	Brush-tailed Rock Wallaby	?				
<i>Orychogalea lunata</i>	Wurrung	*				
<i>Bettongia penicillata</i>	Woylie	*				
<i>Bettongia lesueur</i>	Boodie	*				
<i>Sarorex brachyurus</i>	Quokka	*				
<i>Lagostrophus fasciatus</i>	Murning	?				
PHALANGERIDAE						
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	*	1907	?		
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	*				
BURRAMYIDAE						
<i>Cercartetus concinnus</i>	Western Pygmy-possum	*	1930			
TARSIPEDIDAE						
<i>Tarsipes rostratus</i>	Honey-possum	*	1988	*		
PERAMELIDAE						
<i>Isodon obesulus</i>	Southern Brown Bandicoot	*	1977	*		
THYLACOMYIDAE						
<i>Macrotis lagotis</i>	Dalgite	*				
DASYURIDAE						
<i>Dasyurus geoffroyi</i>	Western Quoll	*	1972			
<i>Antechinus apicaks</i>	Dibbler	*				
<i>Antechinus flavipes</i>	Yellow-footed Antechinus	*				
<i>Phascogale tapoata</i>	Tuan	*				
<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	*	1929			
<i>Sminthopsis griseoventer</i>	Common Dunnart	*				
<i>Sminthopsis granulipes</i>	White-tailed Dunnart	*				
MYRMECOBIIDAE						
<i>Myrmecobius fasciatus</i>	Numbat	*				
MURIDAE						
<i>Rattus fuscipes</i>	Brush Rat	*	1975	*		
<i>Rattus tunneyi</i>	Tunney's Rat	*		*		
* <i>Rattus rattus</i>	Common Rat	*		*		
<i>Hydromys chrysogaster</i>	Water Rat	*	1914	*		
<i>Pseudomys abocinereus</i>	Ash-grey Mouse	*		*		
* <i>Mus musculus</i>	House Mouse	*	1975	*	*	
MEGADERMATIDAE						
<i>Macroderma gigas</i>	Ghost Bat	?				
VESPERTILIONIDAE						
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	*		*		
<i>Eptesicus regulus</i>	Southern Little Bat	*		*		
<i>Chalinolobus gouldi</i>	Gould's Wattled Bat	*	1978	*		
<i>Chalinolobus morio</i>	Chocolate Wattled Bat	*	1924			
<i>Myotis adversus</i>	Large-footed Myotis	*				
MOLOSSIDAE						
<i>Tadarida australis</i>	White-striped Mastiff-bat	*				
<i>Mormopterus planiceps</i>	Little Mastiff-bat	*				
PTEROPODIDAE						
<i>Pteropus scapulatus</i>	Red Flying Fox	?				
CANIDAE						
<i>Canis familiaris</i>	Dingo	*	1966			
* <i>Vulpes vulpes</i>	Fox	*	1959	*	*	
MUSTELIDAE						
* <i>Mustela putorius</i>	Ferret	*		*		
FELIDAE						
* <i>Felis catus</i>	Feral Cat	*		*	*	
LEPORIDAE						
* <i>Oryctolagus cuniculus</i>	Rabbit	*		*	*	
TACHYGLOSSIDAE						
<i>Tachyglossus aculeatus</i>	Echidna	*	1985	*		

* Introduced species.
 Previously Recorded - on Northern Swan Coastal Plain (NSCP) by historic records. ? - doubt exists as to identification or occurrence.
 Known NSCP - Year recorded from the Wanneroo area as per WA Museum (WAM) mammal database (latest year recorded).
 1978 WAM Survey - Recorded during 1978 WAM Northern Swan Coastal Plain Survey.
 Neerabup NP - Recorded from Neerabup National Park adjacent to site in 1978 WAM survey.
 Recorded On-Site - Recorded during on-site surveys.

Kitchener *et al.* (1978) report that *M. irma* was frequently sighted during the 1977/78 survey: 14 in Neerabup National Park; 26 in the Mullaloo/Burns Beach area; 4 in Melaleuca Park; 3 in Yanchep National Park; 6 in Gin Gin; and 4 at Moore River. However, this species was not common in the open by day, but was most frequently observed at night in mixed *Banksia menziesii* woodlands, both burnt and unburnt.

From a conservation perspective, it is important that the presence of this species has been confirmed by scientific survey in the National Parks and Reserves in the locality, where both habitat and fauna will be preserved.

Discussions with the Department of Conservation and Land Management's Metropolitan Regional Office, to determine whether any gazetted rare fauna species are known to inhabit the site, indicated that the gazetted rare Chuditch (Western Quoll or Native Cat) *Dasyurus geoffroii* is thought to occur within the locality but has not been specifically recorded on site. The 1978 WAM survey did not record the Native Cat from the areas surveyed, and the animal was last recorded from the Northern Swan Coastal Plain in 1972.

3.2.3.2 Reptiles and Amphibians

Storr *et al.* (1978a) undertook a comprehensive survey of the herpetofauna (reptiles and amphibians) of the Northern Swan Coastal Plain as part of the overall WAM survey of 1977/78. The Plain was divided longitudinally into three zones, corresponding approximately to the Spearwood (western zone), Bassendean (central zone) and Guildford (eastern zone) Formations.

The western zone of the study area, which includes the site, contained 57 species of herpetofauna. Table 3 shows the general distribution of herpetofauna families in the western zone of the study area, compiled by Storr *et al.* (1978a).

In general, the survey indicated that the western zone supported a greater diversity of Gekkonidae (geckos) than the other zones (2 and 3 species respectively for the central and eastern zones), primarily due to the greater presence of limestone outcrops in the more coastal western zone.

In order to indicate the herpetofauna likely to inhabit or traverse the subject site, data recorded in the WAM survey was analysed for specific locality distribution either at adjacent Neerabup

Table 3
Herpetofauna Families of the Western Zone
of the Northern Swan Coastal Plain

Family	Common Name	No. Species
Leptodactylidae	Ground Frogs	5
Hylidae	Tree Frogs	2
Cheluidae	Side-Necked Turtles	1
Gekkonidae	Geckos	6
Pygopodidae	Legless Lizards	7
Agamidae	Dragon Lizards	2
Scincidae	Skink Lizards	18
Varanidae	Monitor Lizards	2
Typhlopidae	Blind Snakes	1
Boidae	Pythons	2
Elapidae	Front-Fanged Snakes	11

National Park for reasons previously discussed, or in the Wanneroo area in general. Table 4 presents the species of herpetofauna of the National Park and the northern Wanneroo districts.

It is acknowledged that this list is indicative only, and that a greater or lesser number of species may be found on or in the vicinity of the site. However, once again the trapping effort involved with the WAM survey resulted in a comprehensive data base for the area, one that could not have been replicated for the current study.

Only one species recorded from any family is included in the current (gazetted 1990) list of gazetted rare or endangered wildlife. This animal, the Western Swamp Tortoise (*Pseudemydura umbrina*), is confined to the seasonal swamps along Ellen Brook, and is therefore not present in the vicinity of the site, and will not therefore be impacted by the proposal.

Table 4

Herpetofauna of Neerabup National Park and the Wanneroo Area

Family	Species
Leptodactylidae	<i>Heleioporus eyrei</i> <i>Limnodynastes dorsalis</i> <i>Myobatrachus gouldii</i> (W) <i>Pseudophryne guentheri</i> <i>Ranidella glauerti</i>
Hylidae	<i>Litoria adelaidensis</i> <i>Litoria moorei</i> (W)
Gekkonidae	<i>Crenadactylus ocellatus ocellatus</i> <i>Diplodactylus polyophthalmus</i> <i>Phyllodactylus marmoratus</i> <i>Phyllurus millii</i> (W)
Pygopodidae	<i>Apraisia repens</i> <i>Lialis burtonis</i> (W)
Agamidae	<i>Amphibolurus minor minor</i>
Scincidae	<i>Cryptoblepharus plagiocephalus</i> <i>Ctenotus impar</i> (W) <i>Egernia napoleonis</i> <i>Hemiergus peronii quadrilineata</i> <i>Lerista praepedita</i> <i>Menetia greyii</i> <i>Omolepida branchialis</i> (W) <i>Tiliqua rugosa rugosa</i>
Varanidae	<i>Varanus gouldii</i> <i>Varanus tristis tristis</i> <i>Typhlina australis</i> (W)
Elapidae	<i>Brachyaspis curta</i> (W) <i>Denisonia coronata</i> (W) <i>Denisonia gouldii</i> <i>Notechis scutatus occidentalis</i> (W) <i>Pseudonaja affinis affinis</i> <i>Vermicella bertholdi</i> <i>Vermicella bimaculata</i> <i>Vermicella calonotos</i> (W) <i>Vermicella semifasciata semifasciata</i>

Note: Unless designated (W) for general Wanneroo distribution, species were recorded from Neerabup National Park.

3.2.3.3 Birds

The bird fauna of the Northern Swan Coastal Plain have been documented by Storr *et al.* (1978b) as part of the WAM survey of 1977/78. A total of 223 bird species were recorded, with information regarding distribution, relative abundance, faunal status, habitat preference and breeding season.

It is not proposed to systematically list the species recorded from the study, as the majority of species are relatively mobile, and for many the description of distribution is on an opportunistic basis.

In general, the clearing of the coastal vegetation, especially forests and that surrounding wetland areas, has reduced the number of bird species found in the metropolitan region. Other significant factors contributing to the decline in species numbers include the introduction of exotics, population explosions of competitive species, the use of pesticides, and natural variation.

Other native species of birds have benefited from the clearing and farming or urbanisation, however Storr *et al.* (1978b) consider that the birds of the *Banksia* dominated sand plains have been least affected by European man.

3.2.4 Local Wetlands

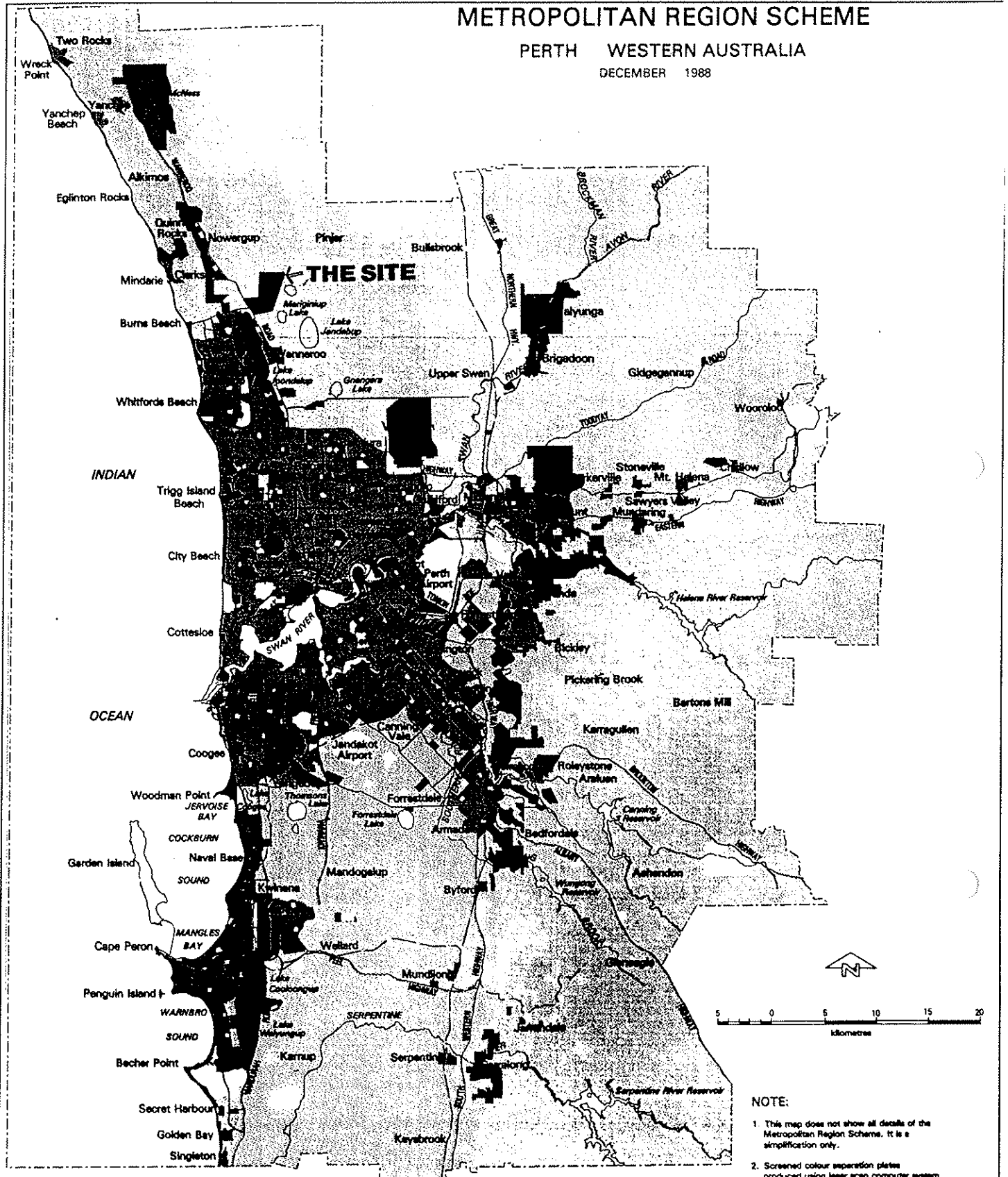
A series of wetlands are located to the east of the site which form part of the Wanneroo Wetlands - Eastern Chain. Of this series, Lake Adams is the closest large wetland to the site, located approximately 500m to the east of the eastern site boundary. Other eastern wetlands include, from the north, Little Coogee Swamp, Little Mariginiup Lake, Mariginiup Lake, Jandabup Lake and a series of unnamed swamps and winter wet depressions. These areas are included in System Six Recommendation M8 (DCE,1983).

Most of the wetlands within the M8 recommendation area have been significantly modified by agricultural and other land uses. For example, the seasonally wet low-lying land around Lake Adams has been fully cleared for livestock grazing and drier land located at its western margins has been developed as a Special Rural estate. The wetland itself has been significantly effected by water table lowering caused by a combination of silvicultural landuse within State Forest 65, groundwater abstraction by the Water Authority and the local horticultural industry. Figure 7

METROPOLITAN REGION SCHEME

PERTH WESTERN AUSTRALIA

DECEMBER 1988



NOTE:

1. This map does not show all details of the Metropolitan Region Scheme. It is a simplification only.
2. Screened colour separation plates produced using laser scan computer system.

Produced by the Cartographic Services Branch,
State Planning Commission
H. Tipping, Manager

EAST OF JOONDALUP URBAN DEVELOPMENT PROJECT REGIONAL LOCATION

Figure 1

