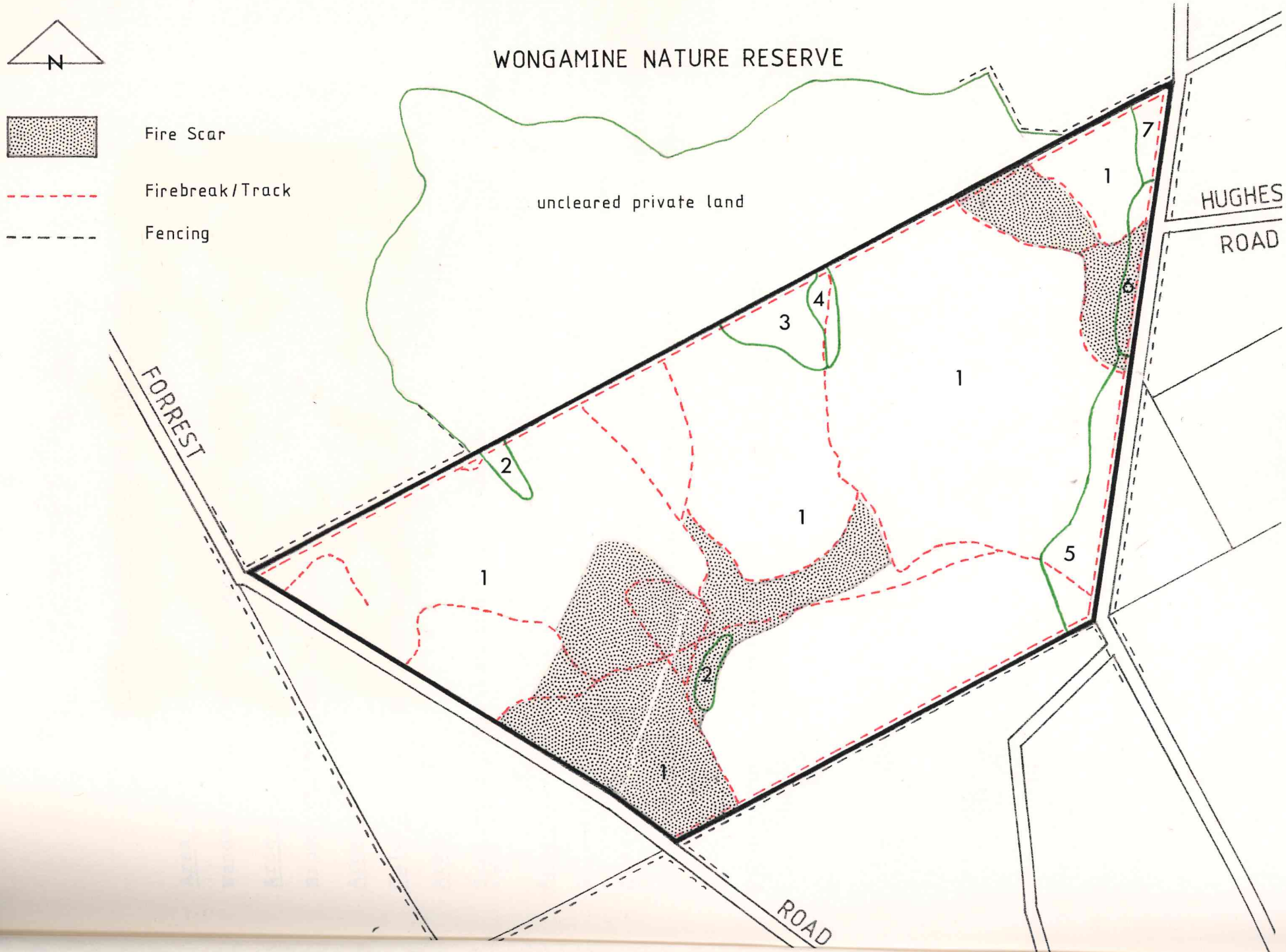
MANAGEMENT PLANNING REPORT

WONGAMINE NATURE RESERVE

Andrew A.E. Williams


N
WONGAMINE NATURE RESERVE
Fire Scar
Firebreak/Track
Fencing
uncleared private land
HUGHES
ROAD
FORREST
ROAD
1
2
3
4
5
6
7

WONGAMINE NATURE RESERVE

Vegetation Associations shown on Map

Area 1.

Wandoo 'Woodland/Open Woodland'.

Area 2.

Brown Mallet 'Low Woodland A'

Area 3.

Calothamnus 'Heath B/Low Scrub B'

Area 4.

Scattered Christmas trees and Banksias over Leptospermum 'Thicket/Scrub'.

Area 5.

Salmon Gum 'Open Woodland'.

Area 6.

York Gum/Wandoo 'Low Woodland A/Open Low Woodland A'.

Area 7.

Wandoo/Sheoak association.

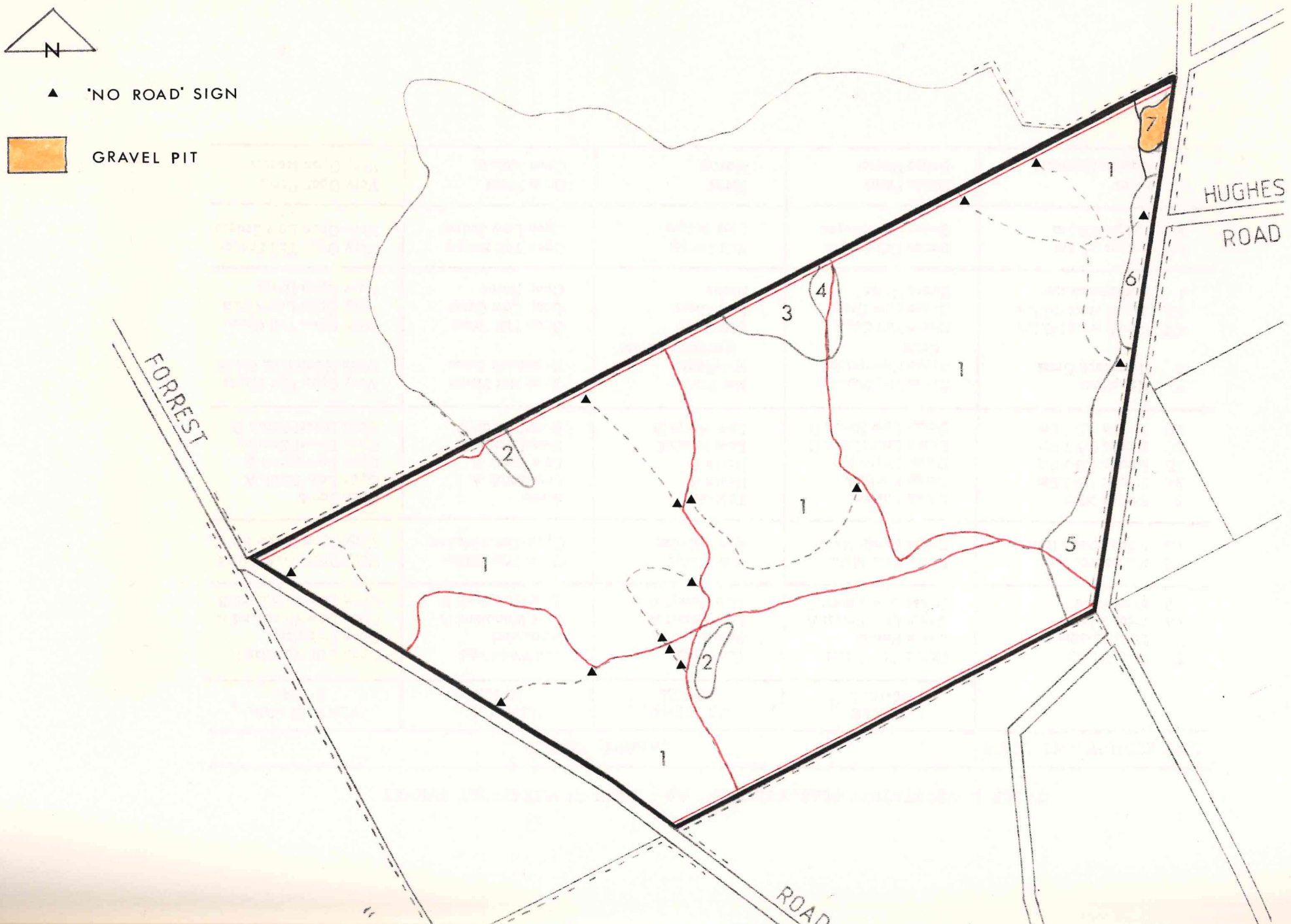

N
'NO ROAD' SIGN
GRAVEL PIT
HUGHES
ROAD
FORREST
1
2
3
4
5
6
7

TABLE 1: VEGETATION CLASSIFICATION AS USED IN WHEATBELT SURVEY

LIFE FORM/HEIGHT CLASS	CANOPY COVER			
	DENSE 70-100% d	MID-DENSE 30-70% c	SPARSE 10-30% i	VERY SPARSE 2-10% r
T Trees >30m	Dense Tall Forest	Tall Forest	Tall Woodland	Open Tall Woodland
M Trees 15-30m	Dense Forest	Forest	Woodland	Open Woodland
LA Trees 5-15m	Dense Low Forest A	Low Forest A	Low Woodland A	Open Low Woodland A
LB Trees <5m	Dense Low Forest B	Low Forest B	Low Woodland B	Open Low Woodland B
KT Mallee tree form	Dense Tree Mallee	Tree Mallee	Open Tree Mallee	Very Open Tree Mallee
KS Mallee shrub form	Dense Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
S Shrubs >2m	Dense Thicket	Thicket	Scrub	Open Scrub
SA Shrubs 1.5-2.0m	Dense Heath A	Heath A	Low Scrub A	Open Low Scrub A
SB Shrubs 1 0-1.5m	Dense Heath B	Heath B	Low Scrub B	Open Low Scrub B
SC Shrubs 0.5-1.0m	Dense Low Heath C	Low Heath C	Dwarf Scrub C	Open Dwarf Scrub C
SD Shrubs 0.0-0.5m	Dense Low Heath D	Low Heath D	Dwarf Scrub D	Open Dwarf Scrub D
P Mat plants	Dense Mat Plants	Mat Plants	Open Mat Plants	Very Open Mat Plants
H Hummock Grass	Dense Hummock Grass	Mid-Dense Hummock Grass	Hummock Grass	Open Hummock Grass
GT Bunch grass >0.5m	Dense Tall Grass	Tall Grass	Open Tall Grass	Very Open Tall Grass
GL Bunch grass <0.5m	Dense Low Grass	Low Grass	Open Low Grass	Very Open Low Grass
J Herbaceous spp.	Dense Herbs	Herbs	Open Herbs	Very Open Herbs
VT Sedges >0.5m	Dense Tall Sedges	Tall Sedges	Open Tall Sedges	Very Open Tall Sedges
VL Sedges <0.5m	Dense Low Sedges	Low Sedges	Open Low Sedges	Very Open Low Sedges
X Ferns	Dense Ferns	Ferns	Open Ferns	Very Open Ferns
Mosses, liverwort	Dense Mosses	Mosses	Open Mosses	Very Open Mosses

MANAGEMENT PLANNING REPORT

TOODYAY SHIRE

Wongamine Nature Reserve No. 33697

1. INTRODUCTION

Wongamine Nature Reserve, No. 33697 (Avon Location 28505), is situated on the eastern border of Toodyay Shire about 12 km E.N.E. of Toodyay Townsite and 13.75 km S.S.E. of Bejoording Siding. It is shown on lithograph No. 2235-111 - Jennacubbine.

The Reserve was originally set aside on 18 October 1901 for the purpose of 'Water and Stopping Place'. This was changed to 'Timber' by Government Gazette Notice of 8 August 1944. In 1974 members of the Toodyay Naturalists Club recommended that the area should become a Fauna Reserve. After consultations between the Shire Council, the Department of Lands and Surveys, the Forests Department and the Department of Fisheries and Wildlife, the portion of land west of Forrest Road was excised from the Reserve. On 31 October 1975 the purpose was then amended to Conservation of Flora and Fauna with vesting in favour of the Western Australian Wildlife authority.

2. PHYSICAL CHARACTERISTICS AND RELATIONSHIPS

The Reserve is a tetragon, with a perimeter of ca. 6.5 km and an overall area of 212.9459 hectares. It lies in undulating country which has been extensively cleared for farming. The south western boundary abuts onto Gravel Reserve No. 33802, with the remaining sides bordering on privately owned land. An uncleared area adjoins the Reserve to the north (see diagramatic map). The Reserve can be approached either along Forrest Road, which forms the south western boundary, or along Bejoording Road which runs alongside the Reserve to the east.

The altitude varies from around 260 metres on the eastern side to over 330 metres in the west. The high ground, which represents the remains of the laterite ironstone crust of the peneplain, is dissectecd by steep sided gullies and breakaways. At the lower elevations the land is more level and slopes gently towards the east.

3. SOILS AND VEGETATION

Wongamine Nature Reserve shows more affinities to 'typical' wheatbelt vegetation than do other reserves in the Shire, and this is clearly reflected in its diverse flora. The varied topography contributes to its character, and undoubtedly is the principle reason for the wide variety of plants within it. The soils vary from laterite based loams and sandy clays, which support the Wandoo dominated woodlands, to reddish loams which support the Salmon Gum and York Gum associations. Pockets of whitish and yellow sands support Banksia woodland and heath. The intermingling of these differing soil types has meant that vegetation zones have tended to overlap, with components of one association merging into the next.

AREA 1.

Wandoo 'Woodland'/'Open Woodland': (Very variable) Eucalyptus wandoo dominated Woodland, 15 to 20 metres, with Powderbark Wandoo, Eucalyptus accedens forming an important component on the ridges and breakaways. This over an extremely variable understorey, from sparse low shrub cover to 'Dense Heath A' and 'Thicket'. Common understorey species include Leptospermum erubescens, Dryandra sessilis, Dryandra carduacea, Dryandra nivea, Xanthorrhoea preissii, Gastrolobium spinosum, Hakea trifurcata, Hakea incrassata, Calothamnus sanguineus, Casuarina campestris, Melaleuca radula and Melaleuca scabra.

Note: In some parts of this association young Eucalyptus wandoo forms 'Open Low Woodland A'.

AREA 2. - (on gully slopes)
Brown Mallet 'Low Woodland A':
Slender examples of Eucalyptus astringens Low Woodland, 10 to 14 metres, over Bullock Poison, Gastrolobium trilobium 'Low Scrub B'.

AREA 3. - (on yellow sands)
Calothamnus 'Heath B'/'Low Scrub B':
Calothamnus quadrifidus Heath B/Low Scrub B over clumps of 'Low Sedges, with scattered examples of Eucalyptus drummondii emergent around periphery.
Note: Where this association extends into uncleared private land to the north of the Reserve, Eucalyptus macrocarpa is common to ca. 4 metres.

AREA 4. - (On whitish sands)
Christmas tree/Banksia association:
Scattered Nuytsia floribunda and Banksia attenuata from 4 to 5 metres, over predominantly Leptospermum erubescens 'Thicket'/'Scrub' 2 to 4 metres, over a varied and species rich heath represented by such species as Conospermum stoechadis, Calothamnus quadrifidus, Casuarina humilis, Hakea ruscifolia, Adenanthos cygnorum, Stirlingia latifolia and Verticordia sp.

AREA 5.
Salmon Gum 'Open Woodland':
Eucalyptus salmonophloia Open Woodland, 20 to 26 metres in height, over patches of regenerating Eucalyptus salmonophloia 'Open Low Woodland A' from 8 to 15 metres, with Eucalyptus wandoo and Eucalyptus loxophleba also present. This over a generally sparse understorey.

AREA 6.
York Gum/Wandoo 'Low Woodland A'/'Open Low Woodland A':
Eucalyptus loxophleba and Eucalyptus wandoo Low Woodland to 15 metres, over Jam, Acacia acuminata 4 to 6 metres, over sparse shrubs and dry 'Low Grass'.

AREA 7.

Wandoo/Sheoak association:

Eucalyptus wandoo 'Open Low Woodland A' over Sheoak, Casuarina huegeliana 'Low Woodland B'. This over sparse Dryandra sessilis and Gastrolobium spinosum.

PLANT SPECIES PREVIOUSLY RECORDED ON RESERVE

GENUS	SPECIES
Adiantum	aethiopicum
Xanthorrhoea	preissii
"	reflexa
Conostylis	breviscapa
Anigozanthos	humilis (branched spec.)
Patersonia	occidentalis
Thelymitra	crinita
Lyperanthus	nigricans
Eriochilus	dilatatus
Liptoceras	fimbriata
Caladenia	menziesii
"	patersonii
"	filamentosa
"	gemmata
"	gemmata var. ixioides
"	flava
"	saccharata
"	deformis
"	sericea
Glossodia	brunonis
"	emarginata
Diuris	longifolia
Pterostylis	recurva
"	nana
"	vittata
*Caladenia	reptans
Casuarina	huegeliana
"	campestris
Grevillea	thelemanniana
"	excelsior
"	synapheae
"	pulifera
"	spp.
Hakea	undulata
"	incrassata
"	ruscifolia
Dryandra	sclerophylla
"	nivea
Dryandra	kippistiana
"	sessilis
"	armata
"	carduacea
"	vestita
Isopogon	dubious
Petrophile	divaricata

Banksia	grandis
"	attenuata
"	prionotes
Adenanthos	sericea
Stirlingia	latifolia
Sunaphaea	polymorpha
Conospermum	amoenum
"	stoechadis
Drosera	macrantha
"	microphylla
"	crythrorrhiza
Marianthus	erubescens
"	candidus
Acacia	urophylla
"	pulchella
"	acuminata
Mirbelia	spp.
Isotropis	cunifolis
Daviesia	incrassata
Gastrolobium	spinosum
Dillynia	spp.
Hovea	pungens
"	chorizemifolia
Kennedya	prostrata
Eriostemon	spicatus
Conesperma	volubile
Stackhousia	huegelii
"	brunonis
Verticordia	spp.
Calytrix	glutinosa
"	fraseri
Leptospermum	erubescens
Kunzea	recurva var.
Melaleuca	radula
"	undulata
"	scabra
Calothamnus	sanguineus
"	quadrifidus var.
Eucalyptus	astringens
"	macrocarpa
"	drummondii
"	salmonophloia
"	wandoo
"	accedens
"	foecunda
Thomasia	spp.
Hibbertia	hypericordes
"	spp.
Pimelea	spp.
Leschenaultia	biloba
Scaevola	spp.
Dampiera	teres
"	linearis
"	lindleyi
Loudonia	aurea
Styphella	tenuiflora
Astroloma	spp.
Hemiandra	pungens

4. FAUNA

Birds - List compiled by Toodyay Naturalists Club.

Mountain Duck
Brown Goshawk
Wedge-tailed Eagle
Little Falcon
Brown Falcon
Painted Quail
Common Bronzewing Pigeon
Crested Pigeon
White-tailed Black Cockatoo
Galah
Little Corella
Purple-crowned Lorikeet
Port Lincoln Parrot
Elegant Parrot
Pallid Cuckoo
Fan-tailed Cuckoo
Rufous-tailed Bronze Cuckoo
Shining Bronze Cuckoo
Kookaburra
Bee-eater
White-backed Swallow
Tree Martin
Richards Pipit
Black-faced Cuckoo-Shrike
White-winged Triller
Southern Scrub Robin
Red-capped Robin
Western Yellow Robin
Rufous Whistler
Grey Shrike Thrush
Grey Fantail
Willie Wagtail
White-browed Babbler
Rufous Songlark
Brown Songlark
Splendid Wren
Field Wren
Weebill
Western Warbler
Broad-tailed Thornbill
Western Thornbill
Yellow-rumped Thornbill
Varied Sittella
Red Wattlebird
Yellow-throated Miner
Singing Honeyeater
Yellow-plumed Honeyeater
Brown-headed Honeyeater
White-naped Honeyeater
Brown Honeyeater
New Holland Honeyeater
White-cheeked Honeyeater
White-fronted Honeyeater
Tawny-crowned Honeyeater
Western Spinebill

White-fronted Chat
Striated Pardalote
Silvereye
Zebra Finch
Black-faced Woodswallow
Australian Magpie
Australian Raven

Mamals

2 x Grey Kangaroo	Macropus fuliginosus
1 x Euro	Macropus robustus

Exotic Species

Rabbit	Oryctolagus cuniculus - some signs
Fox	Vulpes vulpes - tracks noted on Reserve

5. PAST MANAGEMENT, USE AND FIRE HISTORY

In the past Wongamine has suffered from a variety of human pressures. Prior to becoming a Nature Reserve its gazetted purpose was 'Timber' and during this period some tree felling took place, though not enough to have a detrimental affect on the Reserve. In the 1960s and 1970s rubbish dumping became a major problem. This was largely alleviated when joint action was taken by the Shire Council and the Toodyay Naturalists Club to dig pits and bury the offending litter. In 1975 it became apparent that the Reserve was also being used by trail-bike enthusiasts - However, since the area became a Nature Reserve this problem ceased to exist.

The Reserve has also suffered from gravel removal. Excavations near the eastern corner and along Forrest Road are still very visible. There are also several well defined tracks which traverse the area, and these can be directly attributed to the easy public access along the east and western boundaries.

In 1980, two separate fires swept across the Reserve, in both cases having escaped from clearing burns on adjoining farmland. Prevailing weather conditions necessitated the use of bulldozers as well as conventional fire fighting techniques. At the time the fires caused considerable concern among the Reserve neighbours, and as a result steps

were taken by the Department of Fisheries and Wildlife to upgrade the existing system of firebreaks. This included widening the northern break to ca. 12 metres where the Reserve borders on uncleared private land. The adjoining landowners also have breaks around their paddocks and where their land abuts the Reserve their fencing is in excellent condition.

6. NATURE CONSERVATION VALUES

This area is the only block of land in the eastern part of the Shire which is reserved for Flora and Fauna, and as such is valuable from the conservation standpoint. It primarily supports Wandoo dominated woodlands, with Salmon Gums and York Gums becoming more prevalent along the eastern boundary. Pockets of yellow and white sands along its northern edge support heathland associations. Botanically the area is very rich, showing closer affinities to wheatbelt vegetation than do other reserves within the Shire. A floral survey conducted by the Toodyay Naturalists Club lists 102 plant species, 20 of these being orchids. The varying topography and soil types no doubt contribute to this diversity. The Reserve also supports a considerable avian fauna with 62 bird species so far recorded. Its isolated situation makes it an important refuge for migratory species.

In the past several research programmes have been conducted on the Reserve. Populations of Honeyeaters were studied at Wongamine for a two-year period from December 1976 by Brian G. Collins of the Western Australian Institute of Technology. Results from this work are published in the 'Western Australian Naturalist', 14(8) : 207-212. Dr Stephen Hopper of the Western Australian Wildlife Research Centre has also examined specimens of Eucalyptus macrocarpa on the Reserve in his study of the geographical variation and conservation status of this species. Currently the Reserve is acting as a valuable site for the study of the regeneration of the principally Wandoo woodland habitats after fire. Work on this project has been undertaken by members of the Toodyay Naturalists Club.

Wongamine Nature Reserve must therefore be regarded as a 'Key Site' for the above reasons.

7. MANAGEMENT OBJECTIVES

Management will be primarily directed toward maintaining the conservation values of the Reserve as a 'Key Site' representing transitional Wandoo woodland to Salmon Gum woodland and sandplain heath.

7.1. FIRE PROTECTION.

Consistent with the need to protect the assets of adjacent landholders and to conserve the natural values of the Reserve, to prevent the occurrence of wildfires on the Reserve and to suppress such wildfires as may occur.

7.2. USE OF THE RESERVE - RESEARCH.

To establish the Reserve as a site for the study of plant regeneration in Wandoo and Powderbark Wandoo woodlands after fire.

7.2.2. USE OF THE RESERVE - RESEARCH.

To encourage research of a non-destructive nature, which may increase knowledge of the Reserve, its Flora and Fauna.

7.3. USE OF THE RESERVE - RECREATION.

To allow the use of the Reserve for those passive recreational pursuits which encourage a greater awareness of the natural environment.

7.4. RUBBISH DISPOSAL.

To clean up the remaining unsightly rubbish, thereby restoring the aesthetic appeal of the Reserve.

7.5. RESTORATION OF GRAVEL PIT.

To restore the area degraded by gravel extraction to as near its original state as possible.

7.6. CONTROL OF VEHICULAR TRAFFIC.

To limit vehicular traffic to designated tracks within the Reserve in order to allow recovery of the areas damaged during fire fighting operations.

8. MANAGEMENT.

8.1. FIRE PROTECTION:

The perimeter and internal fire breaks upgraded in 1980 will be maintained and kept free of vegetation. No prescribed burning is planned as the Reserve has an elaborate firebreak system coupled with the two recent fire scars.

8.2. RUBBISH.

A rubbish clean-up operation will be undertaken to remove the remaining litter on the Reserve.

8.3. VEHICLE CONTROL.

This will involve the erection of several "No Road - Management Track Only" signs to be placed at strategic points on the Reserve. (See diagramatic Map for sign locations).

8.4. RESERVE SIGNPOSTING.

The old Nature Reserve signs will be replaced by new routed wood signs currently being produced by the Department of Fisheries and Wildlife.

8.5 GRAVEL PIT RESTORATION.

This will involve levelling out the alienated area to as near the original contours as possible, followed by systematic surface ripping to help plant regeneration.

9. MANAGEMENT - GENERAL.

During the currency of this Plan, the Department of Fisheries and Wildlife may, with the approval of the Chairman of the Western Australian Wildlife Authority, undertake or authorise such other work and research as may be seen to be necessary or desirable to properly promote the stated objectives of management of the Nature Reserve.

ACKNOWLEDGEMENTS

In this report I relied heavily on the Toodyay Naturalists Club publication "Natural History of Toodyay" first published in 1979. Bird and plant lists for the Reserve were taken from that document. Keith D. Casperson's 'Survey of Major Habitats within the Shire" also proved useful.

The vegetation descriptions follow the system devised by B.G. Muir for wheatbelt vegetation. My personal thanks are due to Graeme R. Chatfield of the Western Australian Wildlife Research Centre for useful and some not so useful suggestions in the planning stage.

Eucalyptus wandoo woodland with a low shrub understorey.
Photo taken mid way along Forrest Road.

Same association as above after fire.
Photo taken ca. 200 metres further south along Forrest Road.

Photo near western corner, taken from N.W. boundary. Mixed wandoo and powderbark woodland over a dense diverse understorey dominated by Leptospermum erubescens

Stand of slender Eucalyptus astringens growing in gully near northern boundary.

Facing east along northern boundary where uncleared private land adjoins the Reserve. The break at this point is 10-12 metres wide.
Note change in soil type from laterite to yellow sand.

Eucalyptus macrocarpa growing on private land just outside the northern boundary.

Sandplain heath growing on yellowish sand. Wandoo and Powderbark Wandoo woodland in background.

Open Salmon Gum woodland alongside Beejoording Road.

Recently burnt Eucalyptus wandoo Low woodland near the centre of the Reserve.
Note epicormic growth, testament to the severity of the fire.

Old gravel pit at north east corner of Reserve.
Note Sheoak component in surrounding vegetation.