

LOWLANDS BUSHLAND — EASTERN BLOCK, PEEL ESTATE

Boundary Definition: bushland (part taken to cadastre) boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 368

Area (ha): bushland 1034.1 (Site also includes open water.)

Map no. 72, 76, 77

Map sheet series ref. no. 2033-II NE

Other Names: Lowlands — eastern block; Lowlands

Local Authorities (Suburb): Shire of Serpentine-Jarrahdale (Mardella)

System 6 (1983): Part M105 area of bushland goes beyond System area boundaries, all bushland described

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Pinjarra Plain

Guildford Formation (Qpa: Cs, C2) (Qha: Msc1)

Bassendean Dunes

Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain

Bassendean Sands over Guildford Formation (Qpb/Qpa: S10)

Wetlands (within the Bassendean Dunes/Pinjarra Plain)

Holocene Swamp Deposits (Qhw: Spc)

VEGETATION AND FLORA

Vegetation Complexes

Pinjarra Plain

Guildford Complex

Dardanup Complex (most northern occurrence)

Bassendean Dunes

Bassendean Complex — Central and South

Combinations of Bassendean Dunes/Pinjarra Plain

Southern River Complex

Floristic Community Types

Supergroup 2: Seasonal Wetlands

4 *Melaleuca preissiana* damplands

5 Mixed shrub damplands

11 Wet forests and woodlands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

21a Central *Banksia attenuata* — *Eucalyptus marginata* woodlands

21c Low-lying *Banksia attenuata* woodlands or shrublands

23a Central *Banksia attenuata* — *B. menziesii* woodlands

WETLANDS

Wetland Types: sumpland, palusplain, creek

Natural Wetland Groups

Pinjarra Plain

Keysbrook (P.1)

Bassendean—Pinjarra transition OR Bassendean with fluvial features

Bennett Brook (B/P.4)

Swan Coastal Plain Rivers

Goegrup (R.4)

Wetland Management Objectives: Conservation (16.8ha, 1393m), Resource Enhancement, Multiple Use

Swan Coastal Plain Lakes EPP: 4.9 ha

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, creek, river, vegetated uplands

Vegetation and Flora: limited survey (Gibson *et al.* 1994 (Rowe 01–02, Low 01, 04, 6a–10b, 12a–14a)); detailed survey (Keighery, BJ, *et al.* 1995)

Structural Units: mapping (Keighery, BJ, *et al.* 1995)

Uplands: *Banksia attenuata* and *B. menziesii* Woodlands to Forest with scattered emergent *Eucalyptus marginata* and *E. calophylla* and with *Xylomelum occidentale*, *Allocasuarina fraseriana*, *Banksia grandis* and *B. ilicifolia* being sometimes co-dominants in the *Banksia* layer; *Eucalyptus gomphocephala* Open Forest; *Banksia attenuata*,

B. menziesii and *Allocasuarina fraseriana* Woodlands to Forests; *Jacksonia sternbergiana* Low Woodland; *Banksia attenuata* and *B. menziesii* Woodland over *Kunzea glabrescens* Closed Tall Scrub
Wetlands: *Melaleuca preissiana*, *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Woodland to Forest; *Melaleuca raphiophylla* Low Woodland to Tall Shrubland; *Eucalyptus rudis* Forest to Woodland; Woodlands over Sedgeland, where the dominants may be *Melaleuca preissiana*, *Eucalyptus calophylla* and *E. rudis*

Scattered Native Plants: Areas of *Banksia attenuata* and *B. menziesii*, *Eucalyptus marginata*, *E. rudis* and *E. calophylla* Forest to Woodland occur within areas that have been cleared for pasture — regionally significant vegetation recognised as being included in the area of Site in need of protection

Vegetation Condition: >80% Excellent to Very Good, <20% Good to Degraded, with areas of severe localised disturbance

Total Flora: 335 native taxa (Keighery, BJ, *et al.* 1995) (estimated >90% expected flora of Sites 372 and 368)

Significant Flora: *Caladenia huegelii* (R), *Drakaea elastica* (R); Keighery, BJ, *et al.* 1995 — *Eryngium pinnatifidum* subsp. *palustre* ms (2), *Stylidium longitubum* (3), *Dillwynia dillwynioides* (3), *Stylidium mimeticum* (3), *Conostephium minus* (4) (southernmost population); *Drosera gigantea* subsp. *geniculata*, *Stylidium utricularioides*, *Stylidium roseo-alatum*, *Boronia crenulata*, *Johnsonia pubescens* subsp. *cygnorum* (most southern location), *Evandra pauciflora*, *Eucalyptus gomphocephala* (unusual record, normally confined to coastal Quindalup and Spearwood Dunes), *Dryandra sessilis* var. *sessilis*

Fauna: multiple survey for birds (88 species) (RAOU 1996 D). Good assemblage of insectivorous birds. Significant bird species: Carnaby's Cockatoo, Golden Whistler, Yellow Robin and Yellow-plumed Honeyeater. Site for Great Egret which is protected under the JAMBA/CAMBA treaties. Significant mammal species: Quenda, Western Brush Wallaby, Brush-tailed Wambenger and Water Rat

Linkage: adjacent bushland to the south and east (Site 371, canopy); part of Greenways 65, 129 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes Farm buildings within the property are entered in the Register of the National Estate; rare example of intact riverine communities (Keighery, BJ, *et al.* 1995); large area of mature *Banksia* Woodland habitat that has not been subject to periodic logging or burning; mature examples of *Eucalyptus marginata*, *Eucalyptus rudis* and *Banksia* species in woodlands; largest privately owned bushland area in the PMR managed for conservation; contains 4820m of regionally significant river (WRC 1996a GIS)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Entered in the Register of the National Estate; location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

Recommendation: Rural Complementary Mechanism (Conservation Zone) (see Table 3, Volume 1).

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SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 368 **Map no.** 89, 95 **Map sheet series ref. no.** 2033-II NE
System 6 (1983): Part M105 area of bushland goes beyond System area boundaries, all bushland described

Other Names Lowlands — eastern block; Lowlands	Area (ha): total 1064.5 (includes open water); bushland 1034.1
Local Authorities (Suburb) Shire of Serpentine-Jarrahdale (Mardella)	Zoning MRS: Rural TPS: Rural
Ownership Categories Private	Lot/Location/Reserve numbers (Purpose), Street name 3 Mundijong Rd; 2 Roe Rd; 1 street not identified

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Wetland Management Objectives: Conservation (16.8ha, 1393m), Resource Enhancement, Multiple Use

Swan Coastal Plain Lakes EPP: 4.9 ha

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, creek, river, vegetated uplands

Vegetation and Flora: detailed survey (Keighery, BJ, *et al.* 1995); limited survey (Gibson *et al.* 1994 (Rowe 01-02, Low 01, 04, 6a-10b, 12a-14a))

Structural Units: mapping (Keighery, BJ, *et al.* 1995)

Uplands: *Banksia attenuata* and *B. menziesii* Woodlands to Forest with scattered emergent *Eucalyptus marginata* and *E. calophylla* and with *Xylomelum occidentale*, *Allocasuarina fraseriana*, *Banksia grandis* and *B. ilicifolia* being sometimes co-dominants in the *Banksia* layer; *Eucalyptus gomphocephala* Open Forest; *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Woodlands to Forests; *Jacksonia sternbergiana* Low Woodland; *Banksia attenuata* and *B. menziesii* Woodland over *Kunzea ericifolia* Closed Tall Scrub

Wetlands: *Melaleuca preissiana*, *Banksia attenuata*, *B. menziesii* and *Allocasuarina fraseriana* Woodland to Forest; *Melaleuca raphiophylla* Low Woodland to Tall Shrubland; *Eucalyptus rudis* Forest to Woodland; Woodlands over Sedgeland, where the dominants may be *Melaleuca preissiana*, *Eucalyptus calophylla* and *E. rudis*

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Vegetation Condition: >80% Excellent to Very Good, <20% Good to Degraded, with areas of severe localised disturbance

Total Flora: 335 native taxa (Keighery, BJ, *et al.* 1995) (estimated >90% expected flora of BS372 and BS368)

Significant Flora: *Caladenia huegelii* (R), *Drakaea elastica* (R); Keighery, BJ, *et al.* 1995 — *Eryngium pinnatifidum* subsp. *palustre* ms, (2), *Stylidium longitubum* (3), *Dillwynia dillwynioides* (3), *Stylidium mimeticum* (3), *Conostephium minus* (4, southernmost population); *Drosera gigantea* subsp. *geniculata* ms, *Stylidium utricularioides*, *Stylidium roseo-alatum*, *Boronia crenulata*, *Johnsonia* aff. *pubescens* (GJK 5249), *Evandra pauciflora*, *Eucalyptus gomphocephala* (unusual record, normally confined to coastal Quindalup and Spearwood Dunes).

Fauna: multiple surveys by RAOU (1996 D) for birds (88). Good assemblage of insectivorous birds. Significant bird species: Golden Whistler, Yellow Robin and Yellow-plumed Honeyeater. Significant mammal species: Quenda, Western Brush Wallaby, Brush-tailed Wambenger and Water Rat

Linkage: adjacent bushland to the south, east (BS371, canopy) and west; part of proposed Greenway 81 (Tingay, Alan & Associates 1997a); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes Farm buildings within the property are on the Register of the National Estate; rare example of intact riverine communities (Keighery, BJ, *et al.* 1995); large area of mature *Banksia* Woodland habitat that has not been subject to periodic logging or burning; mature examples of *Eucalyptus marginata*, *Eucalyptus rudis* and *Banksia* species in woodlands; largest privately owned bushland area in the PMR managed for conservation; contains 4820m of regionally significant river (WRC 1996a GIS)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Interim List of Register of the National Estate

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of conservation value, but which may be applied when evaluating areas having similar values

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP, Peel-Harvey Estuary EPP/SPP; location of Declared Rare Flora, conservation category wetlands








Constraints: Bushplan Site private land; under General Mineral Resource Area (clay)

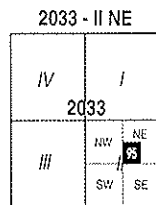
Recommendation: The private ownership and management intent of the Bushplan Site is endorsed. Appropriate mechanisms to support and reinforce existing management for conservation and provide long-term security to be applied in consultation with the land owner(s).



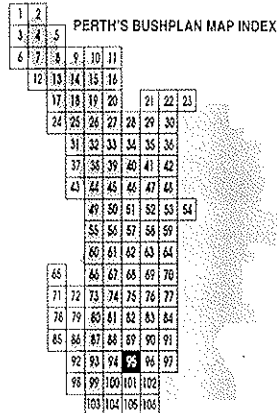


LEGEND

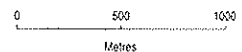
-  Bushplan Sites With Regionally Significant Bushland
-  Other Native Vegetation
-  Conservation Category Wetlands
-  Bushplan Sites With Some Existing Protection
-  Lot Number, Location Number
-  Channel Wetlands
-  Local Government Boundary



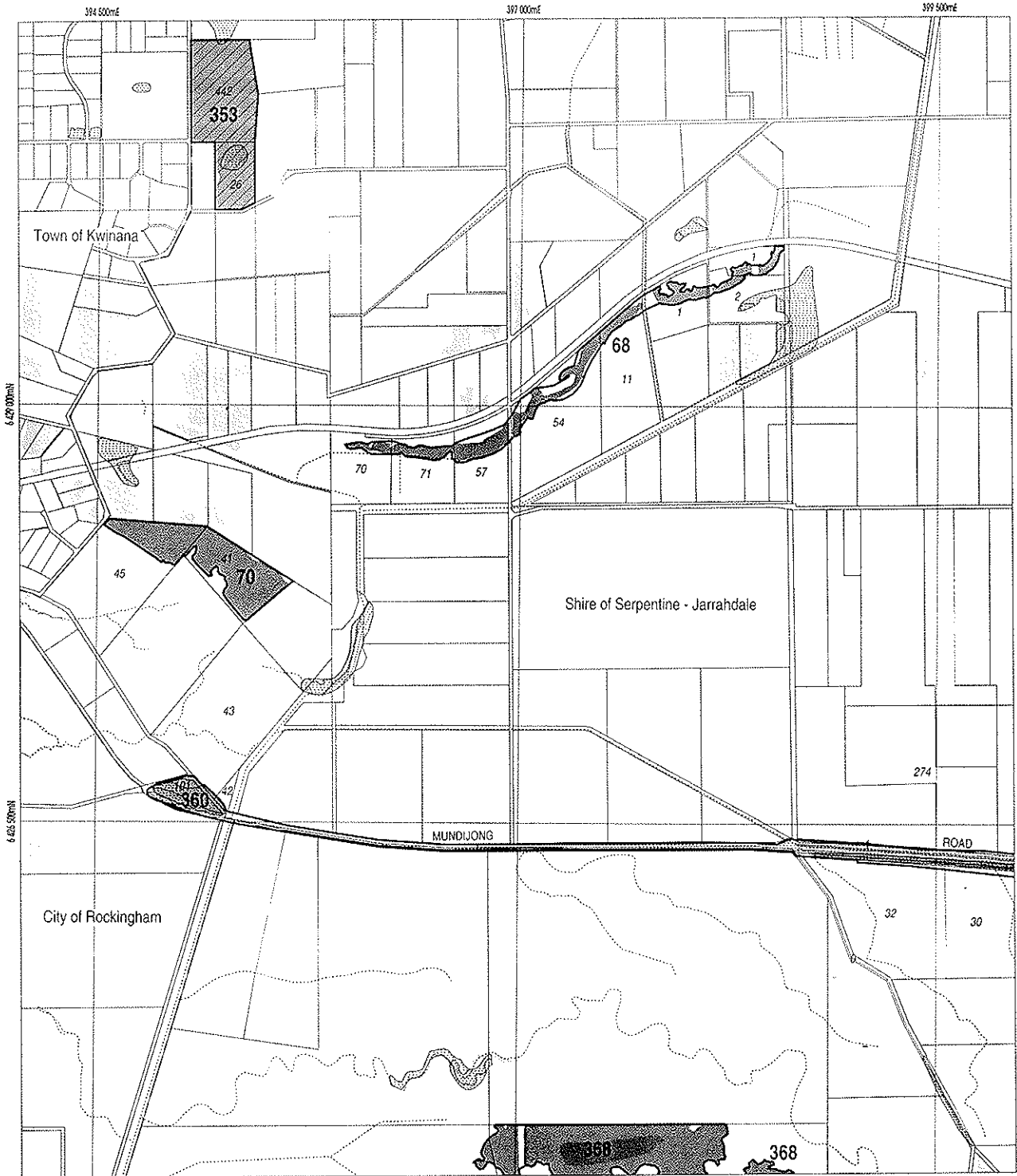
1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown



SCALE

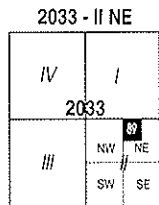


Produced by Project Mapping Section
 Land Information Branch, Ministry for
 Planning, Perth W.A. November 1998
ntw-map17/environ/bushplan/bushv2_95.dgn
 Cadastral Data supplied by Department
 of Land Administration, W.A.
 Wetlands Data supplied by
 Water and Rivers Commission
 Native Vegetation Extent for Study Area
 supplied by Agriculture Western Australia

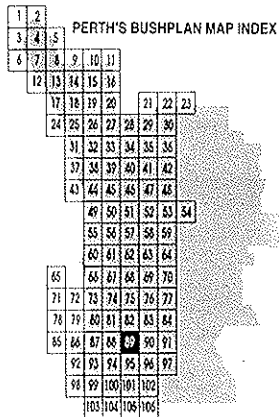


LEGEND

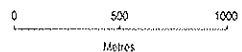
- 472 Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary



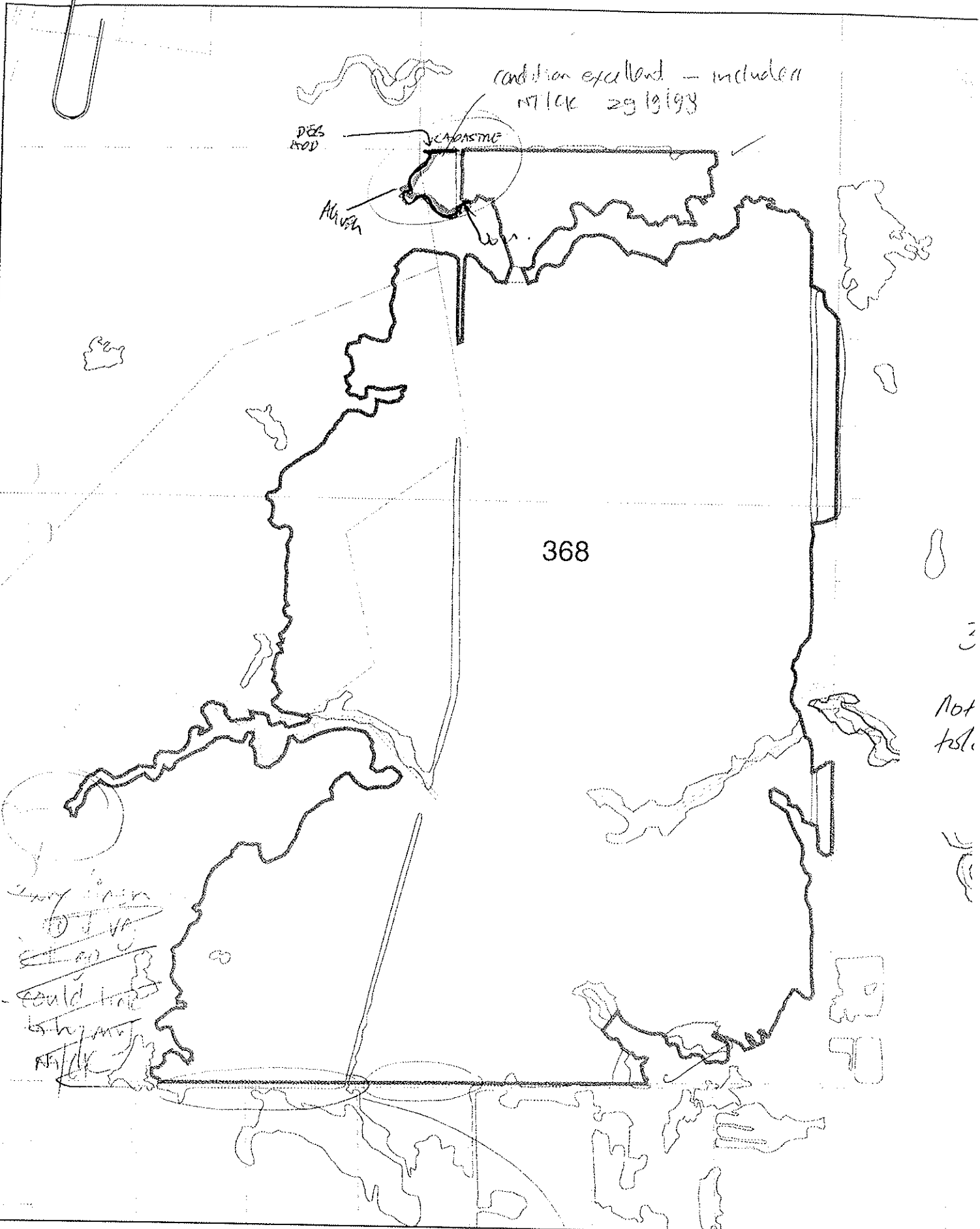
1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown



SCALE



Produced by Project Mapping Section
 Land Information Branch, Ministry for
 Planning, Perth W.A. November 1998
 nbw-map91/environ/bushplan/bushv2_89.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



condition of all land - includes
NT 10K 29/10/98

DEES
ROAD

CAPE ASTOR

ALBERTA

368

3
Not for

Long term
10/10/98
could be
by hand
NT 10K

BUSHPLAN SITES CORRECTED

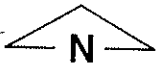


WESTERN
AUSTRALIAN
PLANNING
COMMISSION



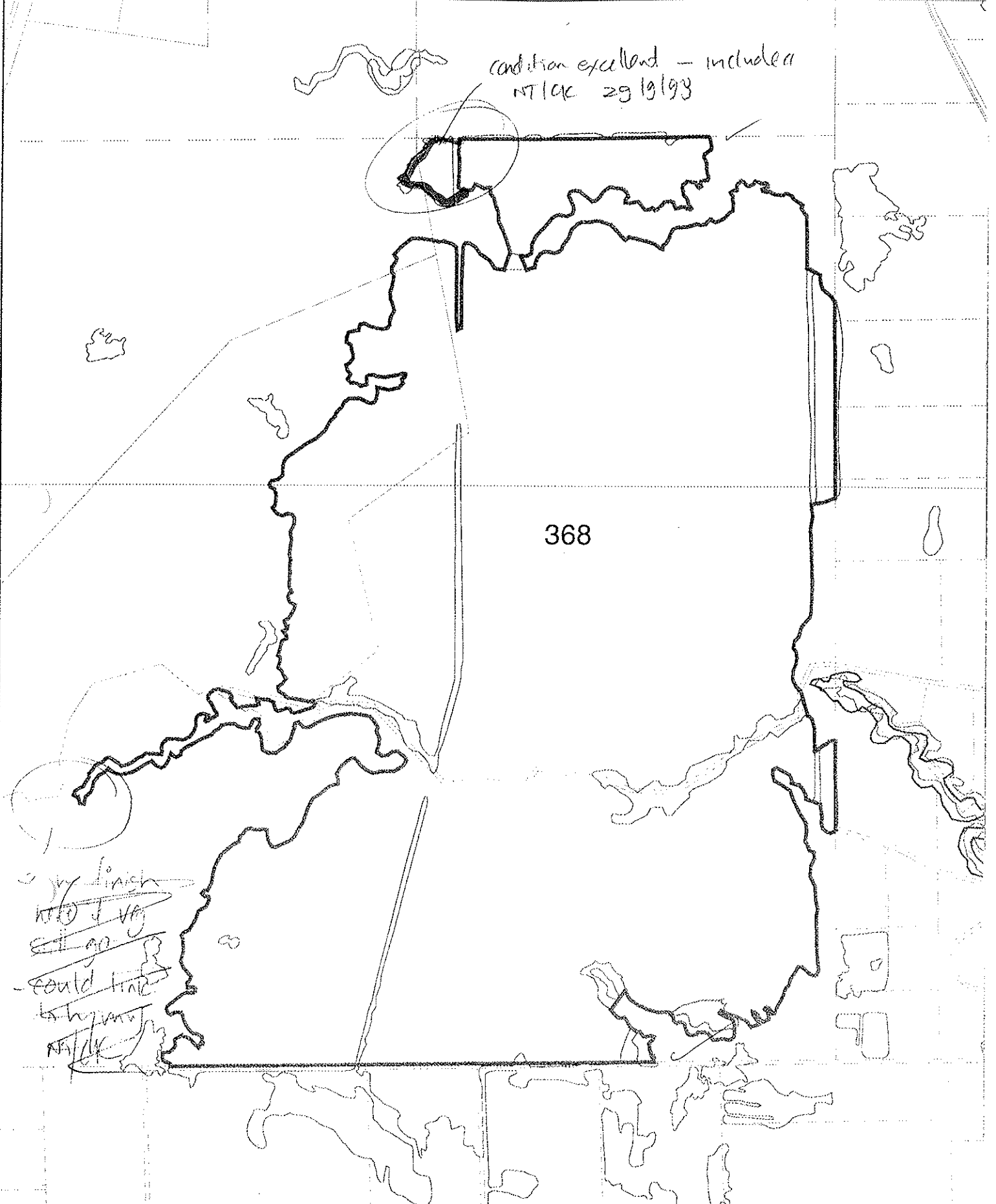
CUSTOMER
FOCUS
WESTERN AUSTRALIA

unmade
road
reserve



CR/NT
29/10/98

10/10/98



condition excellent - included
NT/CK 29/10/93

368

copy finish
NT/CK 29/10/93
could find
to highway
NT/CK

BR

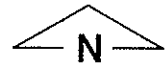
BUSHPLAN SITES CORRECTED



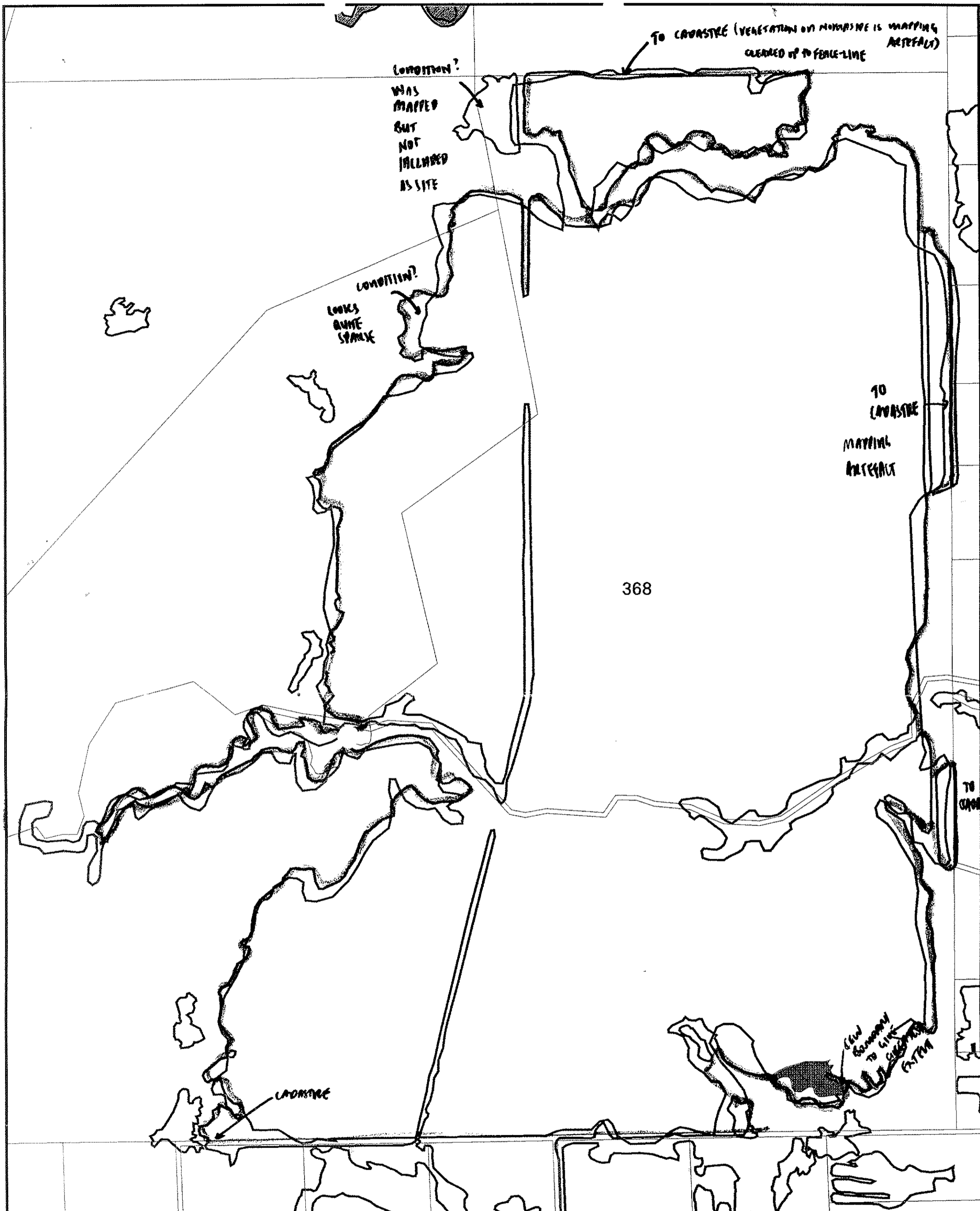
WESTERN
AUSTRALIAN
PLANNING
COMMISSION








CUSTOMER
FOCUS
WESTERN AUSTRALIA



CK/NT
29/10/93



bp sites 368
LOWLANDS

-  AG VEG 1998 BOUNDARY THEME
-  Cadastre
-  Bushplan sites refno 1-500 SCP BOUNDARY THEME
-  cons category wetlands
-  Verified CCWs

Map Ident: plot980603_1	DATE: 03 Jun 98
Prepared By: Andrea Zappacosta	Prepared For:
Scale 1:AUTO	MFP INTERNAL USE ONLY

0 ————— 500 m



M105 Lowlands Property West of Serpentine

Friends Advocate Management

Other Names:

Specific Study/studies Miscellaneous studies

Flora

Vegetation Map 1 2 3 ←

Flora list 1 2 3 4

Significant Taxa done / suitable doubtful

Fauna

Museum ? 1994

Mammals	1	2	
Birds	1	2	<u>RAOU</u>
Reptiles and Amphibia	1	2	
Invertebrates	1	2	

Vegetation Condition Map Sites Comment

Disturbance Factors Comment Management

Swan Coastal Plain Floristic Survey

AHC: National Estate Listed / Interim / Nominated / Notified NT (WA): Heritage Classification

vague principally buildings

Notes

M105 Lowlands Property West of Serpentine		
M105.1 Regional park recommendations be applied to this area.	Unresolved Issues	At this stage there is no regional park proposal for this area.
M105.2 Government to recognise the conservation value of the uncleared woodland of the Lowland property.	Unresolved Issues	
M105.3 Government in consultation with land owner, investigate ways and means of protecting the conservation value of uncleared woodlands through planning procedures.	Unresolved Issues	Discussions between the Government and the land owner have taken place but have not resulted in a satisfactory outcome.

Dieback

Please circle the appropriate response or respond in the space provided.

not at EPA
3-10-94 ✓ EPA

Area M 105 Name	<i>Hymus Swamp</i>		
Title ?	<i>SEL Line Study Hymus Swamp</i>		
Published/Unpublished	Date		
Author/s	<i>A. Westman</i>		
Location of Publication	<i>M. Richardson (Cowlands)</i>		
Purpose (why was the report prepared?)			
Government	<i>SEL</i>		
Corporate	<i>Dams and Waste</i>		
Community Group			
Management Plan			

Soils			
Units	mapped	described	referenced

Landscape			
Features	described	referenced	

Flora			
Vegetation Map			
Units	Site based (no)		
Mapped			
Veg Units	Comparable Heddle <i>et al</i>	Compared Heddle <i>et al</i>	Unit not mapped by Heddle <i>et al</i>
Flora list			
Timing	%completion		Significant Taxa
	Trees	Shrubs Herbs Sedges	Weeds DRF CALM Priority Other

Fauna			
Timing	%completion		Significant Taxa
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegetation Condition			
Site based	Mapped	Units	

Disturbance Factors			
Phytophthora	observed	Other	incidental
	tested		itemised

Notes			

- to incorporating this area in the Shire's Conservation Zone Policy Area, through the Rural Strategy Review process. (Area 33.2 ha)
- xiii. Serpentine National Park & adjacent bushland Site [redacted] Vol 2 115-116 CALM managed land. Major need for weed control in National Park and adjacent state government lands.
- xiv. Kingsbury Drive Bushland Site [redacted] Vol 2 Pg 117 Council notes the importance of this vegetation and believes that protection and management of the site's vegetation is best achieved by working directly with the affected landowners. Consideration may be given to incorporating this area in the Shire's Conservation Zone Policy Area, through the Rural Strategy Review process. (Area 40.6 ha). One-to-one consultation with landowners is required.
- xv. Myara Brook Bushland Site [redacted] Vol 2 pg 118 -119, known locally as the Myara Brook Reserve; currently undergoing vesting change to be vested with Local Authority for the purposes of protection of Indigenous Flora and Fauna. Active management by local authority and community with support of federal and state government grants. Council supports retention of reserve, with assistance from State Government to fund management.
- xvi. Anketell Road Bushland Site [redacted] 347, Vol 2 Pg 213-214; Shire supports inclusion of land within Jandakot Botanical Park, except for cleared areas which should be assessed for alternative or complementary uses. Council proposes to site the Oakford voluntary Fire Brigade and a small meeting place on a 4000 m2 lot on the Pony Way frontage. This site is surrounded by a clearing of over 20 ha. Usage of this small portion of the clearing for community uses is complementary to the protection of the remaining 558.1 ha.
- xvii. Modong Nature Reserve and adjacent bushland Site [redacted] 348 Vol 2 pg 219 - Council notes the importance of this vegetation and the inclusion of private property.
- xviii. Duckpond Bushland Site [redacted] Vol 2 pg 222. Council notes the importance of this vegetation. Council believes that protection and management of the site's vegetation is best achieved by working directly with the affected landowners. Consideration may be given to incorporating this area in the Shire's Conservation Zone Policy Area, through the Rural Strategy Review process (area: 23.5 ha). One-to-one consultation with landowners is required.
- xix. Banksia Road Nature Reserve Site [redacted] Vol 2 pg 223-224. CALM estate.
- xx. Lowlands Bushland Site [redacted] 358 & [redacted] Vol 2 pg 224-227. Council notes the inclusion of this site in Perth's Bushplan. These sites are two of three properties currently before the Ministry for Planning for rezoning to Conservation. It is important that the rezonings be finalized as a matter of priority, so that an example is set for the Perth Metropolitan Area.
- xxi. Henderson Road Bushland Site [redacted] 378 Vol 2 pg 229-230. Council notes the importance of this vegetation. Assistance needs to be given to landowners to fence off vegetation from stock. Council believes that protection and management of the site's vegetation is best achieved by working directly with the affected landowners. Consideration may be given to incorporating this area in the Shire's Conservation Zone Policy Area, through the Rural Strategy Review process. One-to-one consultation with landowners is required.
- xxii. Yangedi Swamp and adjacent Bushland, Site [redacted], pg 230-231, Council notes the importance of this vegetation. Assistance needs to be given to landowners to fence off vegetation from stock. Consideration will be given to incorporating this area in the Shire's Conservation Zone Policy Area, through the Rural Strategy Review process. One-to-one consultation with landowners is required. The site also includes one property currently before the Ministry for Planning for rezoning to Conservation. It is important that the rezoning be finalized as a matter of priority, so that an example is set for the Perth Metropolitan Area and other landowners. One-to-one consultation with landowners is required.
- xxiii. Wungong Brook Site [redacted] Vol 2 pg 402-403 Council notes the importance of this vegetation. Protection of the vegetation should be achieved through its inclusion in the proposed public reserve.

AREA INFORMATION

System 6 Area (C or M) or Update Area (Update)

M105

Conservation Area		
Nature Reserve		
Reserve No		
National Park		
Reserve No		
Local Government		
Reserve No		
Other	PRIVATE	LOWLANDS
Proposed Conservation Areas		
Local Government		
Reserve No		
Other		

Conservation Area

Nature Reserve		
Reserve No		
National Park		
Reserve No		
Local Government		
Reserve No		
Other		

TOTAL AREA

Bushland Area	1040.625 + 130.938 = 1171.563	hectares
Completely Degraded	cleared 236.897 ha	
Swampland	1.171 ha claypan 1.561 ha	→ remainder

AREA MAPPED FLORISTIC UNITS

Units	Site (Condition)	Code	A LOW	Bound	Area (ha)
21a	04 (2)	10a (3)	12a (25)	80/cbw fw, pb	4.866 BT
	12b (25)	13a (2)			
23a	13b (2)			20/cbw, pb, fw	122.170
21c	01 (2)	6a (2)	6b (2)	bw, jlw hkw	160.048
	07 (2)				
5 (mrw)	08 (25)	9a (25)	9b (25)	mrw	5.411
11	10b (3)			rf, c	35.173
4	14a (25)		A 14MMS1	50/WS	4.950
21c	03 (2)	001 (2)		0kw, da bww	82.203
11	01 (3), 02 (4), 05 (4)	06 (25)		50/WS	4.950

from veg map

also in various blocks
23a (20/b) 5.421 ha
21a (80/t) 21.683 ha

Boundaries determined by use of

aerial photograph	Melba Street Directory run to 5049, 51, 9 514
orthophoto	2033 11 NE Aug 1991 11 5047, 49
vegetation map	Kagberry, Kangaroo + Gibson March 1995 Floristics of lowlands
soil map	

5/1/91

C. ROWE

11	01 (3)	50/WS	0.624
4	02 (2)	50/WS	0.624

WITH COMPLIMENTS

ATT: BRIGIT HYOER-GRIFFITHS;

Esp. a need for standardisation, so that frameworks can be applied to any vegetated area. Please review and make comments, a mtg with Andrew may or may not be required. His contact is -

Andrew Del Marco

9525 5255

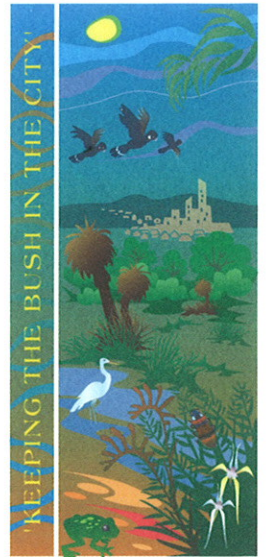
Regards

(Urgent!!)

Valerie 22/7.



Albert Facey House, 469 Wellington Street, Perth, Western Australia 6000
Tel: (08) 9264 7777 Fax: (08) 9264 7566 TTY: (08) 9264 7535 Infoline: 1800 626 477
E-mail: corporate@planning.wa.gov.au Internet: <http://www.wa.gov.au/planning>



PERTH'S BUSHPLAN

DEPARTMENT OF
ENVIRONMENTAL PROTECTION

26 JUL 1999

File No 1	_____	Name	_____
File No 2	_____	Name	_____
File No 3	_____	Name	_____

Shire of Serpentine-Jarrahdale

Town Planning Scheme No.2

Amendment No.95

TOWN PLANNING AND DEVELOPMENT ACT 1928 (AS AMENDED)
RESOLUTION DECIDING TO AMEND A TOWN PLANNING SCHEME

SHIRE OF SERPENTINE-JARRAHDAL
TOWN PLANNING SCHEME NO.2

AMENDMENT NO.95

RESOLVED that the Council, in pursuance of Section 7 of the Town Planning and Development Act 1928 (as amended), amend the above Town Planning Scheme No.2 by rezoning Portion of Lot Pt 1 and Lot Pt 2 Lowlands Road, Mardella and Portion of Lot 1 Elliott Road, Keysbrook from 'Rural' to 'Conservation' zone.

Dated this FIFTH day of APRIL 1998


.....
CHIEF EXECUTIVE OFFICER

BACKGROUND

Council introduced the Conservation Zone into the Scheme Text in 1995. The Conservation Zone was based on recommendations of the Rural Strategy. The Rural Strategy gives an overview of the Conservation Policy and makes the following comments.

Overview – Private Land Conservation (p.46 Rural Strategy)

"Areas and sites of significance for fauna, flora or habitat conservation located on private land are indicated in the Rural Strategy as "conservation – Private Land".

"The sites identified as having high conservation significance on private land include large stands of relatively intact remnant vegetation, all recognised wetlands of conservation significance and include some areas covered by Environmental Protection Authority System 6 recommendations."

"Private lands identified for conservation in the Conservation Policy Area are **not intended for acquisition** by the Council or the State Government. Rather, the general aim is in every possible way to encourage and make it easier for landowners to protect and manage the conservation values present. The lifestyle and rural production derived from these sites by owners must be respected and maintained – the sites are nearly all currently zoned as Rural under the Shire's Town Planning Scheme.

Nor is any denial of development rights intended to be universally applied. Rather, any development or land use proposal will be assessed on its compatibility with the conservation values present on the site and approved or rejected accordingly. The Council considers that the objectives of protection and management for conservation sites and those of development are not necessarily in conflict."

"A management plan for each private land conservation site would be drafted by the landowner, with input from other relevant organisations. The management plan would set the limits on land use and the criteria that any future development would have to meet, as well as forming the basis for future management decisions.

"There is no power to force any of these measures on a landowner, but there may be substantial benefits in the approach. Some landowners are predisposed to such a co-operative approach. The benefits may be in reduced rating, the access to Council's resources, machinery, or expertise and assistance, in accomplishing a management plan, in a measure of longer term protection for the site, and in land use planning that recognises the conservation values of the site may be influenced by land use and development on nearby lands."

Financial Incentives for Conservation

"In principle, the council supports the idea of financial and other incentives for landowners whose land falls in the Conservation Policy Area."

"Land taxes and ratings should recognise the Conservation Policy Areas as non residential and performing a positive community role in controlling drainage and retaining vegetation for habitat purposes."

The provisions of the Conservation Zone are as follows –

5.14 CONSERVATION ZONE

this could be much expanded to cover aesthetic landscape, biodiversity etc

- 5.14.1 The purpose and intent of the Conservation Zone is described within the Council's Rural Strategy as amended and adopted by Council and the State Planning Commission dated April 1994.
- 5.14.2 A Conservation Zone is intended to identify land that has a high conservation significance which includes private land with large stands of relatively intact remnant vegetation, all recognised wetlands of significance and some areas covered by ~~the Department of Environmental Protection~~ System 6 recommendations (*Dep. Cons. and Environ 1983*).
- 5.14.3 The private lands identified for conservation in the Rural Strategy are not intended for acquisition by the Council or State Government Agencies. Rather the general aim is to encourage and make it easier for landowners to protect and manage the conservation values present.
- 5.14.4 Before including land within the Conservation Zone Council will require the owners of the land to prepare a submission in support of its inclusion and any submission shall include those matters set down in sub-clause 5.9.3 of this Scheme.
- 5.14.5 A description of the land included in the Conservation Zone together with the uses permitted and any special provisions relating to the land are set out in Appendix 4D. Such uses will generally be in accordance with the Rural Zone uses but will depend upon site survey and reference to land capability and other planning data.

Land uses selected will be on the basis that they will not conflict with, or they will contribute to the significance of conservation values present.

- 5.14.6 In addition to the provisions contained in Appendix 4D and other such provisions of the Scheme as may affect it any land which is included in the Conservation Zone shall be subject to the following conditions:
- a) The relevant guidelines contained within the Council's Planning Guidelines for Nutrient Management dated May 1994 (as amended) shall apply to the use and development of land.
 - b) A management plan for each Conservation Zone shall be drafted to Council's satisfaction by the landowner with input from other relevant organisations and the land owners consultant where necessary.
 - c) The management plan shall establish the limits for land use and the criteria that any development will have to satisfy. The plan will form the basis for site management and future management decisions.
 - d) The management plan shall, as appropriate, identify setbacks, buffer zones, and the required conservation management practices and other measures as deemed necessary to achieve a satisfactory standard of protection relative to the significance of conservation values present.
- 5.14.7 The implementation of a management plan by the landowner is a means of longer-term protection for the site and will be accompanied by a reduced Council rating on the land.

The incentives for these conservation measures will be a reduction in the general rural rate, which shall be set at 50% unless otherwise amended by Council.

PROPOSAL

In July 1996, Council wrote to 11 of the landowners with lands identified within Council's Conservation Policy Area (Rural Strategy 1994) inviting interested landowners to voluntarily rezone lands into Conservation, under Town Planning Scheme No.2. Two proposals have come forward.

1. Portion of Lot Pt. 1 and Lot Pt.2 Lowlands Road, Mardella

The owners of Pt Lot 2 Lowlands Rd MARDELLA (Ms M Richardson) and Pt Lot 1 Lowlands Rd MARDELLA (Mr W Richardson) responded positively and have developed a management plan, with assistance from the Environmental Officer. Two separate Conservation areas are identified on Pt Lot 2, and one on Pt Lot 1, as per Shire's Rural Strategy. One vegetation corridor is included within the amendment area, linking the two main conservation areas.

A key part of the rezoning is the preparation of a management plan to the satisfaction of Council. The draft Management Plan is attached. A covering report is also being prepared by staff to support the proposed amendment.

The conservation values of "Lowlands" and "Riverlea" are well recognised by State Government and have been documented in the management plan.

The landowners have already taken positive steps to protect the conservation values through fencing, weed control and studies to identify the plants and animals on the sites.

The Environmental Officer is satisfied that the landowners, through implementation of the management plan and other planned conservation works will maintain the conservation values on the properties. The impact of the amendment on the subject land and the surrounding lots will be negligible, as the proposed area has been managed for conservation for many decades. The zoning is essentially formalising the current land management practices on the lots to maintain the remnant vegetation and fauna habitat. The boundaries of the proposed rezoning are as per the Shire's Rural Strategy, with the addition of a vegetated 40m wide corridor which fulfils vital ecological functions.

The landowners believe the inclusion of the corridor is important in improving the sustainability of the conservation areas, and therefore request that this relatively small area be included in the proposed rezoning. A copy of the Management Plan is included in Appendix A.

Council resolved in August 1998 –

1. That Council endorses the draft management plan and proposed Conservation Zone area.
2. That Council resolves in pursuance of Section 7 of the Town Planning and Development Act 1928 (as amended) to amend the Shire of Serpentine-Jarrahdale Town Planning Scheme No.2 by rezoning Portion of Lot Pt.1 and Lot Pt.2 Lowlands Road, Mardella from "Rural" to "Conservation" zone.
3. That the Rural Strategy Review accommodate the changes with respect to the Corridor.

2. Lot 1 Elliott Road, Keysbrook

Lot 1 Elliott Road, Keysbrook is a 128ha, Rural zoned property. A large portion of the property (70ha) supports remnant vegetation in very good condition and another 15ha supports native vegetation in moderate condition.

This portion is 70ha and is fenced from grazing, and has been since 1985. Previously, the area was only lightly grazed from the mid-1960's to 1985. A Management Plan has been prepared as required for entry into the zone.

The remnant vegetation on Lot 1 and other surrounding lots in (West) Keysbrook was not included within the Conservation Zone Policy Area in the 1994 Rural Strategy. It did however form part of the Conservation Overlay produced as part of the Strategy, which included all significant remnant vegetation in the Shire.

Information on the site's conservation values is included within the Management Plan. The site has been surveyed by botanists from the Department of Environmental Protection who have assessed the site's vegetation and habitat as being of regional significance. It is estimated that the site supports over 150 native plant species (correspondence from DEP, appendix to Plan). A full site flora survey is being conducted by the Wildflower Society of WA ~~and~~ consultant botanist Malcolm Trudgeon ~~from the DEP.~~

Preliminary results from a site fauna survey have confirmed four (4) native mammal species, over forty (40) bird species, twenty-two (22) reptiles and amphibians after only the first survey. The fauna survey is being conducted by Ninnox Wildlife Consultants.

The landowner has proposed that areas currently being grazed be excluded from the amendment area. This includes 43ha of cleared wetland with regrowth vegetation and 15ha of grazed upland vegetation (Banksia woodland).

The Management Plan is included in Appendix B.

The limits to (any) proposed development are included in Section 4 of the Management Plan. The landowner wishes to have the potential to allow the establishment of chalets or similar, low-key tourist facilities on the property in the future. These would constitute a complementary use as required under Conservation Zoning. Ideally, any development on the lot should occur on the cleared portions of the lot which would remain zoned Rural.

** DEP has not been on this property.*

The West Kingia Conservation Area

Management Plan

This area does not
match the Bushy Park Site,
a much greater area of
Lot 1 is in the CS. This
lot has NOT been
surveyed by DEP.

The West Kingia Conservation Area Management Plan

Compiled by Andrew Del Marco, October 1998

CONTENTS

1. Introduction
2. The Conservation Zone Area
3. Management Issues and Strategies
4. Land Use and Development Guidelines

FIGURES

1. Location Map
2. Cadastral map
3. Current Zoning
4. Proposed zonings

APPENDICES

1. Vegetation values, Correspondence from Department of Environmental Protection
2. Confirmed faunal species, Spring survey.

1 INTRODUCTION

1.1 *Background*

This plan has been prepared to assist management of the conservation values of the 'West Kingia property' and support rezoning to part of the lot to Conservation under the Shire of Serpentine-Jarrahdale's Town Planning Scheme. The "West Kingia" property is 128 ha, Lot 1 999 Elliott Road, Keysbrook, Western Australia. Seventy (70) hectares is remnant Banksia/Jarrah/Sheoak woodland and proposed for rezoning to Conservation.

The property is located 60 km south of Perth on the Swan Coastal Plain (Figure 1). It is zoned Rural under the Shire of Serpentine-Jarrahdale Town Planning Scheme No. 2 and Rural Strategy and the Metropolitan Region Scheme (Figures 2 & 3).

The property's conservation values have been recognized and actively protected by the current landowners since 1923. Flora and fauna surveys commissioned in 1997-98 have demonstrated that the property is a significant conservation asset within the context of the Shire of Serpentine-Jarrahdale, and is considered regionally significant.

The landowners have requested that the property be rezoned to Conservation to support their long-term land use and conservation objectives. It is appropriate that the remnant vegetation on the property be rezoned to Conservation as this has been how it has been actively managed for the last three decades.

1.2 *Regional Setting and Adjacent Land Uses*

The proposed Conservation area is located within the northern Peel Region and forms ~~and~~ the Drummond Natural Region (Beard 1990).

Soils and landforms over the property are characteristic of the Bassendean Sandplain Unit, one of a number of landform units within the coastal plain. The Bassendean sands occur as low lying dunes and sandplain laid down over the Pinjarra Plain (Seddon 1972). Despite the proposed Conservation area being dryland, most of the surrounding land is seasonally waterlogged or inundated and has been mapped as wetland by the Water and Rivers Commission (Hill et al 1996)

The prevailing climate is Mediterranean, with an average annual rainfall of 860mm.

Land uses surrounding "West Kingia" include beef grazing, market gardening, dairying, hay production and a number of rural homesteads. The proposed Conservation area abuts other areas of remnant vegetation to the north and south on nearby properties.

2 THE CONSERVATION ZONE AREA

2.1 *Site Description*

The amendment area consists of 70 ha of remnant Banksia/Jarrah/Sheoak woodland on the 128 hectare property, as shown on Figure 4. Two portions of the lot are excluded from the proposed amendment due to past clearing, and continued use for grazing. The area is defined by perimeter fencing.

The soils over the property are sandy, part of the Bassendean Sandplain Unit and have been mapped into three units by van Gool 1990. The proposed Conservation zone area is a low dune rise, high enough to support dryland vegetation (Banksia/Jarrah/Sheoak) rather than the wetland paperbark vegetation surrounding the property. The soils on the remainder of the property are poorly drained shallow depressions or flats, and more productive for grazing.

2.2 *Past and Present Land Use and Management*

Lot 1 has been held by the present owner's family since 1923. There is no evidence of clearing within the Conservation area. Any disturbance to the area since European settlement has been kept to a minimum. Some selective logging of jarrah trees may have occurred in some parts of the property in the late 1800's

and early 1900's, as was common throughout the Swan Coastal Plain. The property was lightly stocked between the mid 1960's and mid 1980's and has not carried stock since 1985. The Conservation Zone area has not been burnt over the last 30 years.

Lot 1 is currently used as the landowner's residence and to stock twenty head of beef cattle on the two cleared, wetter portions of the property. A north-south power-line easement occurs within the amendment area on the eastern side of the property.

2.3 *Vegetation*

A study of the site's flora and vegetation is being conducted by the Wildflower Society of Western Australia including botanists Malcolm Trudgeon and Bronwyn Keighery. Initial surveys have already been completed.

- The proposed Conservation Zone supports a number of plant communities related to the elevated Bassendean Sands. These communities include:
 - Banksia woodland or low forest over various understoreys;
 - Jarrah high open woodland over Banksia woodland; and
 - Sheoak (*Allocasuarina fraseriana*) high open woodland over Banksia woodland.

There are no visible signs of dieback on the property, and weed invasion is limited to the very periphery (within 5 metres) of the bushland.

Staff of the Department of Environmental Protection estimate that the block would have in the order of 150 native species of flowering plants, as well as mosses, lichens, liverworts and fungi (See Appendix 1).

From the preliminary surveys, the site's special vegetation features are:

- Example of long-unburnt Southern River vegetation complex;
- Population of *Actinostrobos arenarius*, a native pine species poorly protected in conservation reserves;

CP suggests

2.4 *Fauna and Habitat*

A comprehensive fauna survey program for the site commenced in November 1997 by Ninnox Wildlife Consulting, and a team of volunteers. The site will be surveyed for one week in each of the four seasons.

Results of the spring survey are included in Appendix 2. Forty-six (46) native bird species and twenty two (22) species of reptiles and amphibians were confirmed from the spring, autumn and winter surveys. Four native mammal species have been confirmed: Southern Brown Bandicoot, Honey Possum, Western Brush Wallaby and Western Grey Kangaroo.

Given the above preliminary results, the site provides habitat for many species which are locally extinct within the Shire's rural lands and have disappeared from

a large part of the Perth and Peel regions. Further surveys are expected to expand the number of species from all faunal groups.

3 MANAGEMENT ISSUES AND STRATEGIES

The main management issues to protect and maintain the site's conservation values are:

- ◆ Access control (illegal entry and utilities) (5,6)
- ◆ Vegetation management (weeds, dieback)
- ◆ Fire management
- ◆ Fauna management (feral animal control)
- ◆ Research

The overall goal of management is to maintain West Kingia's Conservation Zone for its intrinsic conservation values, the passive enjoyment of the landowner, and possible future short-term stay visitors.

Access control (illegal entry and utilities) (5,6)

The immediate needs of the bushland are to restrict access to legitimate users. Trail-bike riders are gaining access to the property, usually via Yangeti South Road. Replacement of this fence is a priority for the landowners. Access to the power line easement is restricted to Western Power who are responsible for dieback hygiene management and vegetation pruning.

Vegetation management (weeds, dieback)

As the Conservation area is fenced off from stock, there has been little weed invasion into the remnant vegetation. South African Lovegrass, one of the most problematic environmental weeds in the district is not within the Conservation area, but does occur on adjacent road reserves.

No evidence of dieback (*Phytophthora* spp.) within the site has been observed. Current use of dieback hygiene precautions will be continued. This includes minimizing risk of importing the fungus onto the property via soil, organic matter, or plant material, and preventing the movement of soil over the property.

Fire

It is recommended that the current fire management strategy continue. This includes maintenance of the perimeter firebreak, reduction of fuel loads on cleared areas through grazing and maintenance of the 10 metre strategic firebreak between the homestead area and the greater Conservation area.

Fauna management (feral animal control)

Maintaining existing native fauna populations will be achieved by maintaining fauna habitat and managing feral animals. The significance of the impact of foxes on the property's fauna is not known. The landowners and four of the neighboring properties are part of the district's fox baiting program (eggs laced with 1080 poison).

Para notes

Research

The current flora and fauna surveys will prove invaluable in setting a benchmark for management of the area. Further research into the movement of fauna into adjacent properties may be helpful in the future. The landowners have already demonstrated that they are keen to have external bodies and volunteers work on the property to improve understanding and management of the site's conservation values. Volunteer groups include the Keysbrook Environmental Group, Serpentine Bushland Group and the Wildflower Society of Western Australia.

4. LAND USE AND DEVELOPMENT GUIDELINES

The amendment area is already managed for the primary purpose of Conservation. This will continue with rezoning of the land, and will mean the following shall apply to the Conservation Area:

- **No stock shall be kept within the zone;**
- **Continuation of a no burning policy within the zone;**
- **No clearing of vegetation within the zone, unless approved by Council.**

The following criteria shall apply to any development proposed within the amendment area:

- 1) Proponents must demonstrate how proposed developments will impact on the site's conservation values, including direct loss of vegetation and impact of development on faunal habitat, to the satisfaction of Council and the Department of Environmental Protection.
- 2) Proposals within the Zone must complement, and should be related to the site's conservation values.
- 3) Development proposals must not require clearing of vegetation which would compromise fauna habitat integrity, disrupt movement of native fauna, or otherwise fragment the remnant vegetation.
- 4) A range of lot sizes may be supported within the zone, down to a 40 ha minimum.
- 5) The development of tourist accommodation or tourist facilities shall be permitted within or preferably adjacent to the amendment area, subject to the above provisions.

All development proposals for the remainder of the lot (zoned Rural) shall be assessed for potential impact on the Conservation Zone area. Existing land uses and land use rights shall be maintained for the portion of the property remaining Rural.



PHYSIC METRO REGIONAL AREA PLAN 10 (S&T 5223) 1:20000 04 JAN 95 930400

Figure 4 Proposed Amendment Area, Part Lot 1 Elliot Rd.
Approx. scale 1:20,000.
Proposed Zoning

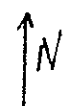
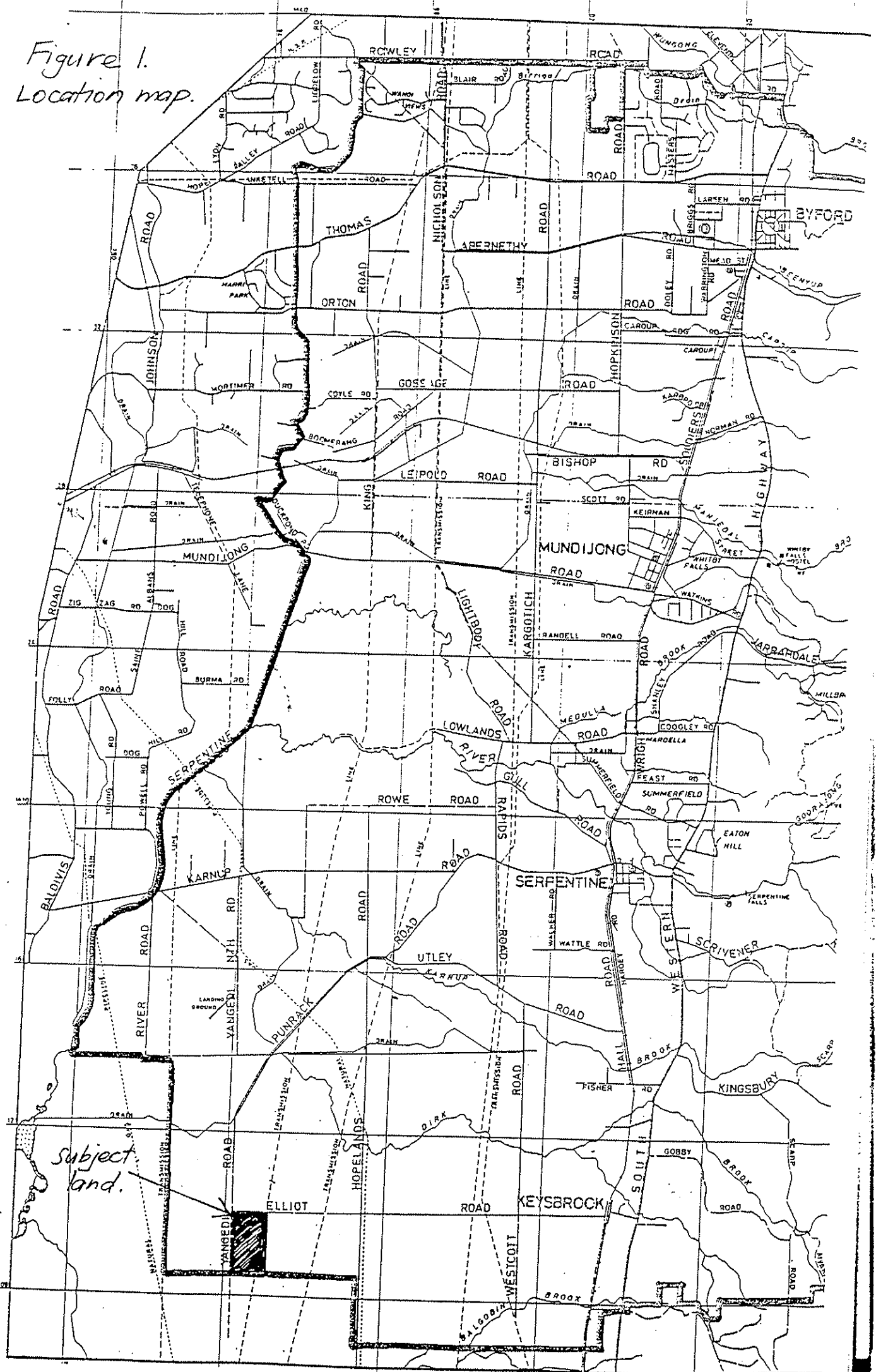
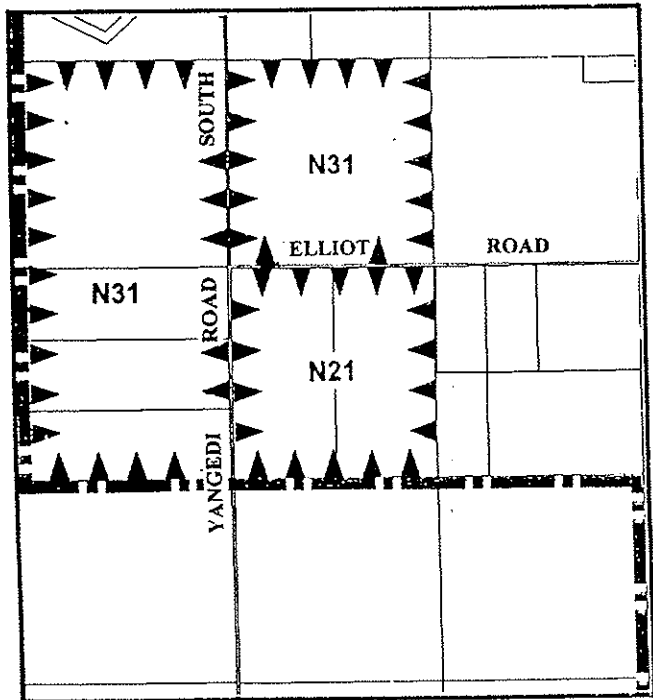


Figure 1.
Location map.



TOWN PLANNING SCHEME NO. 2
 AMENDMENT No. 95



EXISTING ZONING

NOT TO SCALE

ZONES



RURAL



CONSERVATION ZONE

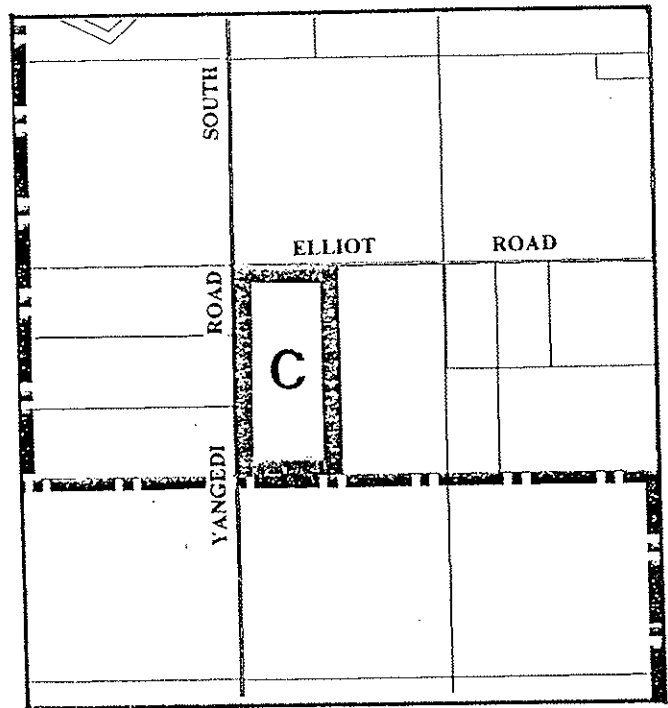
OTHER



AREA OF NATURAL BEAUTY
 (SEE SCHEME TEXT)



SCHEME BOUNDARY

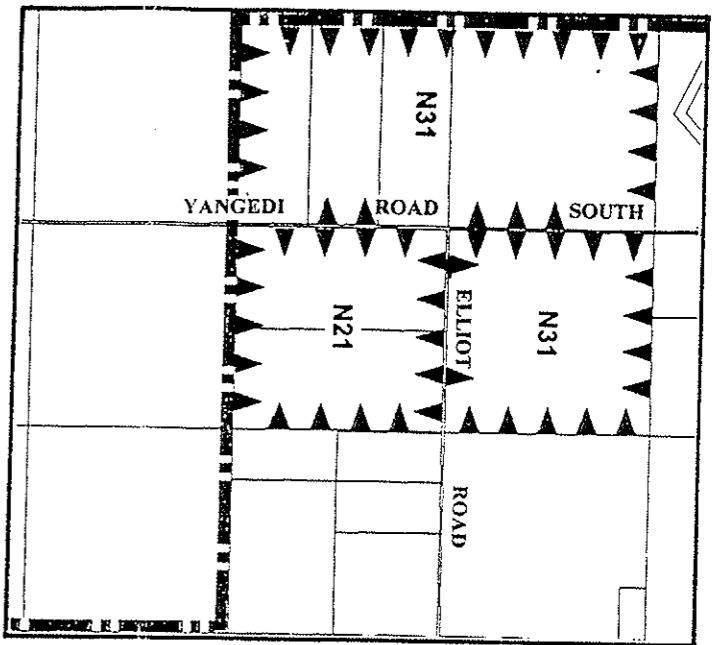


PROPOSED ZONING

NOT TO SCALE

SHIRE OF SERPENT TOWN PLANNING AMENDMENT

TOWN PLANNING SCHEME No 2 AMENDMENT No. 95



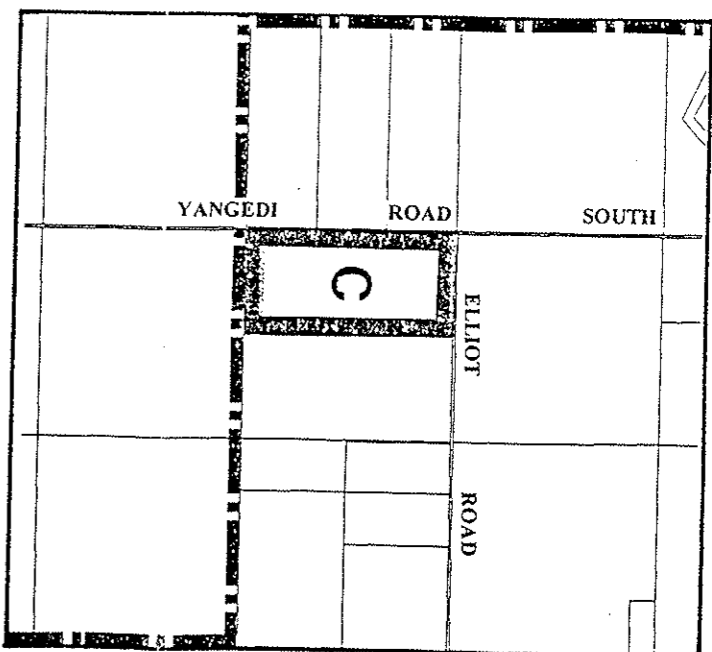
EXISTING ZONING
NOT TO SCALE

ZONES

- RURAL
- CONSERVATION ZONE

OTHER

- AREA OF NATURAL BEAUTY
(SEE SCHEME TEXT)
- SCHEME BOUNDARY



PROPOSED ZONING
NOT TO SCALE



EXISTING ZONING

NOT TO SCALE

ZONES

- RURAL
- CONSERVATION ZONE

OTHER

- AREA OF NATURAL BEAUTY
(SEE SCHEME TEXT)
- SCHEME BOUNDARY

The Lowlands/Riverlea Conservation Area

Management Plan

- Document does not consistently refer to Riverlea/Lowlands
- Reference should be made to the corridor as a Management Strategy
- Substantial management is already occurring this is broadly mentioned but the underachieves the level of this management.



SHIRE OF SERPENTINE-JARRAHDALÉ

The Lowlands Conservation Estate Management Plan

Contents

Summary

- 1 Introduction
 - 1.1 General description of the estate, location, size
 - 1.2 Maps
 - 1.3 Landowner intent
 - 1.4 Regional setting and adjacent landuses
- 2 The Conservation Zone Areas (CHARACTERISTICS)
 - 2.1 Site description
 - 2.2 Past and present land uses
 - 2.3 Floristics and plant communities
 - 2.4 Fauna and habitat
- 3 Recognition of Values and Special Features (EVALUATION)
- 4 Natural and human processes and their management (NATURAL PROCESSES AND MANAGEMENT ISSUES)
- 5 Management Issues and Strategies
 - 5.1 Management goal and objectives, including weed control, erosion control, knowledge gaps, education and awareness raising, access.
- 6 Land Use Guidelines and Management Framework
 - 6.1 Land use guidelines
 - 6.2 Management framework
- 7 Implementation
 - 7.1 Funding
 - 7.2 Tasks (works programme, responsibilities)
 - 7.3 Monitoring and evaluation
 - 7.4 Review

Fig 1 Location map
Fig 2 Lowlands property

Fig 3 Detail of conservation zone areas
Fig 4 Vegetation mapping

1 INTRODUCTION

1.1 *Background*

This plan has been prepared to assist management of the conservation values of the Lowlands property. The property is some 1657 hectares of which 1310 hectares are to be zoned "conservation".

Lowlands is located 40 km south of Perth on the Swan Coastal Plain (*Fig 1 – Location Map*). The Lowlands Conservation Zone is made up of two areas linked by the Serpentine River (*Fig 2*). The larger eastern block is 1190 hectares and includes a 3 kilometre stretch of the Serpentine River. The western block, known as the White Gum Block, covers 120 hectares. 520 ha of heavier soils, cleared at the time of settlement, is used for grazing and occurs between the two.

The property is widely recognised for the historic Peel homestead located on the Serpentine on the western edge of the grazing land. The homestead includes buildings constructed in the 1840s by Thomas Peel, to whom the original land grant was made at the time of settlement.

The property is undoubtedly the most significant private conservation estate in the Shire of Serpentine-Jarrahdale. In terms of the natural assets it protects, the environmental services it provides, and the experience offered to visitors, Lowlands parallels some of Perth's other great conservation areas. *and in the Perth Metropolitan Region*

It is the clear intent of the landowner that the Lowland's bushland is to be managed in perpetuity as a private nature conservation reserve. Zoning the land "conservation" is seen as one step towards this goal. The landowners are also investigating mechanisms whereby the conservation and heritage values of the property can be formally protected in perpetuity.

Private ownership has meant that Lowlands has not been treated with standard governmental approaches to managing natural resources over the last 40 years, rather, the property has been managed to protect the bushland. This has meant that the river has been left in a natural state and not de-snagged, and the bush has been fenced from stock and not cleared. Additionally, given the pre-1899 title over the land, the owners have the right to prevent mining on the property. If the land were to become vested in a government agency then this total protection from mining would no longer apply.

Lowlands is an important natural and cultural asset of the Peel and Perth regions. To date, the bushland's conservation values have been recognised formally by the Western Australian Heritage Council and the Department of Environmental Protection, and are being assessed by the Australian Heritage Commission for inclusion in the register of the National Estate.

Lowlands is formally described as Lot 2, Plan 4632/1 Lowlands Road, Lowland, and held by M F L and L L Richardson.

1.2 *Regional Setting and Adjacent Land Uses*

The Lowlands Conservation Zone covers two major landform units: Bassendean sandplain and Pinjarra plains unit. The Bassendean sands occur as low lying dunes and sandplain laid down over the Pinjarra Plain (Gozzard 1983; van Gool 1990). Pinjarra Plain soils are exposed in two corridors within the Eastern Block: i) along the Serpentine River, and ii) within the cleared runway in the north of the Block.

Most of the Eastern Block is underlain by Bassendean sands that support dryland Banksia woodland.

The Bassendean sands of the western block are generally wetter and have been mapped as palusplain and dampland by the Water & Rivers Commission (seasonally waterlogged areas).

Soil units for the Lowlands Conservation Zone have been mapped as six Bassendean sand types and seven Pinjarra Plain soil types (van Gool, 1997).

The climate of Lowlands is Mediterranean, with an average annual rainfall of 860 mm.

The Lowlands bushland blocks are surrounded by established farmland used predominantly for the grazing of cattle. It is estimated that surrounding lands within 5 kilometres of the Eastern Conservation Zone are covered by less than 5% remnant vegetation.

Land uses adjacent to the Eastern block conservation zone include grazing of cattle, hay production, intensive sheep feedlot and protection of remnant vegetation. Grazing, with the Serpentine River Diversion buffering the western boundary generally surrounds the White Gum Block.

Future surrounding land uses may include mineral sands mining as large areas bordering Lowlands are currently held under mining leases.

2 THE CONSERVATION ZONE AREAS

2.1 *Site Description*

The Conservation Zone areas are shown in *Fig 3*. The Western Conservation block is all that portion of the lot north of the Serpentine River plus that portion of the lot south of the river west to boundary of the remnant vegetation area which is fenced off from the central grazed portion of the property. The Conservation area includes the heritage homestead precinct. The White Gum Block is bounded by the Serpentine River Diversion, the lot boundary to the south, and the internal fence separating remnant vegetation from the central grazing block.

These conservation zone boundaries have been accurately defined using the Department of Environmental Protection's GIS. The areas are slightly smaller than the Conservation Zone areas defined in the Shire of Serpentine-Jarrahdale Rural Strategy (Mortlock, 1994).

2.2 *Past and Present Land Use and Management*

As described above a large central portion of Lowlands has been cleared and is used to this day for grazing and hay production (this area is excluded from the Conservation Zone).

In the past grazing also occurred in cleared patches on the periphery of the bushland and cleared portions of the wetter Pinjarra Plain soils. The largest of these cleared areas feature i) as a meandering strip of wetter Pinjarra Plain soils near the northern lot boundary, ii) in the south eastern corner (near Rowe Road), and iii) around the entry to the property on Lowlands Road. Bushland near these clearings was lightly grazed, except along the routes used by the stock to move from one clearing to another.

These corridor or peripheral clearings form part of the Conservation Zone and are managed for conservation, and buffer the remnant vegetation from surrounding land uses and clearing. Since 1990, no part of the Conservation Zone areas, including clearings, have been grazed by stock.

The Serpentine River Banks within Lowlands were never cleared. The vegetation along the river was retained for its aesthetic value as well as in the belief that the presence of vegetation along the river was significant in flood mitigation (M Richardson pers comm).

Since the establishment of the farm, timber required for farm use such as buildings, fencing and shingles, was obtained from the bushland areas. Timber requirements were relatively low and this usage virtually ceased about 30 years ago (M Richardson, pers comm).

As the bushland has a history of only infrequent fires, and physical disturbances have been minimal, weed invasion of the bushland areas is relatively low. Nevertheless, the owners have undertaken weed control on parts of the river and revegetation in parts of the clearings. Both Conservation Zone areas have been fenced off from the active grazing area.

Lowlands Bushland has also been used as a thoroughfare for numerous service utilities. Four high tensile (330kv) powerlines (1954, 1957, 1979, 1997) and a natural gas pipeline (1982) cross the property. These corridors have resulted in the clearing of four x 60 metre wide strips through the bushland. The increased management resulting from these cleared corridors is discussed in Sections 6 and 7.

2.3 *Vegetation*

The floristics of Lowlands have been documented and mapped by Keighery et al 1995, and are only briefly described herein.

Nine vegetation associations were mapped over the property, six of which form the Banksia Woodland Unit and cover an estimated 90% of the property.

The general characteristics of each of the broad vegetation units (vegetation communities and floristics) have been provided below. Map 4 shows the distribution of the various vegetation communities on Lowlands (Keighery et al 1995).

2.3.1 *Banksia Woodlands*

Keighery et al (1995) comment that all Lowlands' Banksia woodlands are characterised by two distinctive features:

- The maturity of the canopy trees (*Banksia attenuata*, *B. menziesii*, *B. grandis*, *B. ilicifolia*). These woodlands represent the most extensive area of mature trees of these species observed on the Swan Coastal Plain;
- The openness of the understorey.

Banksia woodlands were further classified as one of six vegetation associations (refer to Map X). These associations vary from Banksia dominated communities to Tuart (*Eucalyptus gomphocephala*) to *Jacksonia stembergiana* Low Woodland. Areas of Banksia woodland in poor condition were mapped as a separate group.

A feature of the Banksia woodland communities was the high proportion of herbaceous species with 145 of the 214 species being herbaceous.

2.3.2 *Wetlands and Watercourses*

Relative to the ^{area} of Banksia Woodlands, wetlands make a small proportion of the Lowlands bushland.

At the level of mapping, two basic wetland vegetation associations have been shown:

- Freshwater paperbark woodland to shrubland
- Woodlands over sedgeland

Within these associations, there are areas where the herbland, sedgeland or shrubland is not accompanied by the tree overstorey. The result is a mosaic of vegetation assemblages which are characteristic of clay based ephemeral wetlands.

Wetlands over the property have been mapped as palusplain, dampland and floodplain using the geomorphic classification system (Semeniuk (1987).

Keighery et al (1995) have provided descriptions of vegetation conditions and weed invasion which will be used to establish priorities for management.

2.4 *Fauna and Habitat*

Lowlands provides valuable habitat for native species in the southern metropolitan area which will become even more valuable as further clearing occurs for Perth's southern suburbs. For example, seventeen (17) of the bird species recorded at Lowlands are observed to have suffered a marked decline in abundance and/or local extinction in the metropolitan area (Anon 1996).

Eighty-five (85) native and three introduced bird species have been recorded in the riverine, bushland and farmland habitats on the property since 1970. These include three species which are now scarce on the Swan Coastal Plain: Golden Whistler (*pachycephala pectoralis*), Western Yellow Robin (*eopsaltria griseogularis*) and Yellow Plumed Honeyeater (*lichenostomus ornatus*), the Greater Egret (*egretta alba*) which is listed on the JAMBA and CAMBA conventions, and the rare Carnaby's Black Cockatoo (*calyptrorhynchus latirostris*) – schedule one in need of special protection.

Many species have been observed breeding and some of these include the Little Pied Cormorant (*phalacrocorax melanoleucos*), Pacific Black Duck (*anas superciliosa*), Grey Teal (*anas gibberifrons*) Maned Duck (*chenonetta jubata*), Sacred Kingfisher (*halcyon sancta*), Rufous Whistler (*pachycephala rufiventris*), Grey Fantail (*Rhipidura fuliginosa*), Western Gerygone (*acanthiza inornata*), Striated Pardalote (*Pardalotus striatus*) and Grey Butcherbird (*cracticus torquatus*).

Surveys by the WA Museum are in progress to investigate mammal and reptile populations and diversity at Lowlands. To date, seven native and three introduced mammals and six species of frogs have been recorded. Large populations of Western Grey Kangaroos (*macropus fuliginosus*) reside at Lowlands. Rare and restricted fauna include the Southern Brown Bandicoot (*quenda – isodon obesulus* – Schedule 1) and Western Brush Wallaby (*macropus irma* – Priority 4).

A site on the Serpentine River in Lowlands is part of the national Monitoring River Health Initiative (MRHI) and is being sampled by CALM and Murdoch University. Twenty-four macro invertebrates have been recorded. This is considered a rich fauna composition for rivers in the south west of WA. (Anon, 1996).

3 RECOGNITION OF VALUES AND SPECIAL FEATURES

The Lowlands bushland is a special asset of the Southern Swan Coastal Plain which has received recognition at both the regional and national level for its botanical and habitat values. It is likely to become the single largest intact remnant of Banksia woodland between Perth and Mandurah, as Perth continues to grow southwards.

Lowlands is significant regionally, as the combination of floristic community types present is not known to occur elsewhere (Gibson et al, 1994). The report by Keighery et al 1995, highlights a number of important attributes of the Lowlands Conservation area. The major features are summarised below. *Keighery et al. 1995*

The Eastern Block is the largest area of mature, long unburnt Banksia woodlands typical of the Bassendean vegetation complex remaining on the southern Swan Coastal Plain. It supports one of the few remaining examples on the SCP of intact riverine vegetation of Flooded Gum woodland with native understorey species such as maidenhair fern, rock fern and lowlands creeper. The seasonally waterlogged wetlands of Lowlands contain significant populations of Dillywynia dillywynioides, Eryngium pinnatifidum subsp. Palustre (Priority 1), Stylidium longitubum (Priority 1) and stylidium mimeticum (Priority 1) (Keighery et al 1995).

Rare and threatened plant species on Lowlands include two orchids - the grand spider orchid and the glossy-leaved hammer orchid, six priority listed species and one undescribed taxon. The bushland is also of biogeographical significance as *Conostephium minus* reaches the southern limit of its range, Tuart (*Eucalyptus gomphocephala*) is at its inland range and some species common to the Ridge Hill shelf are found at the eastern extent of their range.

The bushland at Lowlands provides significant fauna habitat. The Golden Whistler, Western Yellow Robin and Yellow Plumed Honeyeater, which are now scarce on the Swan Coastal Plain, have been recorded here. Carnaby's Black Cockatoo and the Southern Brown Bandicoot which are both rare in Western Australia, and the Western Brush Wallaby, a Priority 4 species, have also been recorded at Lowlands. The Serpentine River in Lowlands supports a rich macro invertebrate fauna with 24 families recorded.

Lowlands is an important reference site for past, current and ongoing scientific studies. There are permanent monitoring sites for floristic and macro invertebrate studies and a reference site for the Australia-wide Monitoring River Health Initiative has been established. The long-unburnt status of the vegetation means that Lowlands is a valuable reference for fire ecology studies.

Should use botanical names

4 NATURAL PROCESSES AND MANAGEMENT ISSUES

This is only a brief discussion of a selected natural process operating in and around Lowlands as they pertain to management. This section has been included to assist management and to give an indication of ecosystem complexity. Many of these natural processes have been significantly altered over the past two hundred years.

The processes to be discussed are those associated with vegetation (indigenous and introduced) and fire. There are many others (eg food webs, water movement), but these are considered the main factors relevant to management of Lowlands over the next five years.

4.1 *Natural* Vegetation Processes

The composition and condition of vegetation is influenced by numerous natural processes. The key natural processes which seem to be impacting upon native vegetation on Lowlands today are competition between species, spread of disease, and recruitment of juveniles.

Completion between indigenous and introduced species is an ongoing battle. This is occurring:

- Around the periphery of the bushland areas – weeds are moving into the bushland, and bushland species are regenerating in the once cleared areas.
- The impact of past cattle grazing ~~is~~ against present grazing by kangaroos needs to be monitored.
- Along utility corridors: there is a definite association between the pattern of distribution of some weeds (eg *Gladiolus caryophyllaceus*) and dieback, and the utility corridors (Keighery et al 1995)
- Along the Serpentine River the river flow provides a source for weeds. Castor oil, cottonbush, bridal creeper and arum lily include some of the problem species

Plant disease spread

Several patches of Banksia Woodland in poor condition have been mapped by Keighery et al 1995. In some of these areas, the poor condition can be directly attributed to dieback (of the western service corridor). Careful mapping for dieback in Lowlands is required to determine the boundaries of infection.

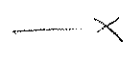
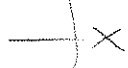
Regeneration

There is good regeneration of the major species (Banksia, jarrah) within the intact bushland areas and in the transition zone around the bushland areas (Keighery et al 1995).

Faunal competition

Lowlands acts as a refuge for many native species which have become locally extinct. Until thorough surveys can be carried out, the full diversity of a macrofauna cannot be known. The large population of Western Grey kangaroo are an asset of Lowlands whose impact on vegetation and regeneration should

These two processes need to be monitored



be monitored. Whilst ferals are currently at low numbers (verified through trapping) their populations should also be monitored, especially where smaller mammals are found.

Sustaining management

Protecting Lowlands for the long term is a challenge being addressed by the landowners.

4.2 *Fire*

Fire has the potential to degrade bushland. Where fires are too frequent for plant seed setting and reproduction, weeds are able to establish and replace native plants.

The impact of fire on Swan Coastal Plain remnant vegetation is poorly understood. However, it is becoming apparent that most vegetation remnants in the Perth Metropolitan Area are being burnt too frequently, resulting in degraded bushland and severe weed invasion.

Most parts of the Lowlands bushland are long unburnt, and provide important references for studying the impact of fire on Swan Coastal Plain ecosystems. Some trial burning occurred within Lowlands in the summer of 1995/96 on a small portion in the West Block, south of the Serpentine River.

5 MANAGEMENT ISSUES AND STRATEGIES

*Use consistent names -
? White Can Block,*

The main management issues identified are:

- ◆ Weed invasion (1)
- ◆ Fire (1)
- ◆ Access control (utilities) (5,6)
- ◆ Dieback management (1)
- ◆ Education and awareness raising (3,4)
- ◆ Gaps in knowledge (2)
- ◆ Funding/resources (8)

The overall goal of management is to maintain the Lowlands bushland and river environment intact in perpetuity as a nature conservation reserve.

The following objectives have been set:

- 1 Management of the conservation zone is to be carried out in a way that protects the biodiversity of flora and fauna and the ecosystems that sustain them.
- 2 To encourage research into aspects which will improve flora and fauna management

- 3 To raise awareness of the bushland's values amongst adjacent landowners and the wider community.
- 4 To liaise with relevant landowners, managers and government authorities to ensure that management of surrounding lands gives due recognition to the conservation values of the Lowlands property.
- 5 To prevent further service corridors being planned through or adjacent to the Lowlands property.
- 6 To ensure that management of the existing services corridors has regard to the property's conservation values.
- 7 To maintain current levels of passive recreational use.

8 Protection of biodiversity and natural ecosystems

5.1 Weed Invasion Strategy

- Prioritise areas where weeds pose a threat to natural diversity or are particularly invasive into bushland, or are easily eradicated. • Continue weed control efforts, based on ^{current (Bradley method)} plan and mapping by Keighery et al (Bradley method). • Minimise exposed ground following weed removal, eg place nearby slashed vegetation on earth.

5.2 Fire Management

- Maintain firebreaks and ensure volunteer fire brigades are aware of all tracks, access points and water supplies.
- Monitor regeneration in areas burnt.
- Develop a Lowlands Fire Management Plan.

5.3 Feral animal control

- Continue regular baiting with 1080 for feral mammals.

5.4 Dieback Management

- Map all infected areas.
- Seek assistance from service utilities
- Conduct phosphoric acid trials
- Monitor diversity and abundance in dieback areas.

5.5 Encourage research

- Produce a plan of research needs for Lowlands.
- Publicise this to research institutions

5.6 Education and awareness raising

- *Continue to* Liaise with relevant landowners, managers and government authorities to ensure that management of surrounding lands gives due recognition to conservation values.
- Provide information to neighbours and invite them to discuss the Lowlands Conservation estate, every year
- Continue interaction with Council and Serpentine-Jarrahdale LCDC
- Invite Serpentine-Jarrahdale Herbarium collector to help identify species.

5.7 Service Corridors – management

- Place onus on service utilities to operate in accordance with agreed procedures. This will ensure
 - dieback is not introduced/spread
 - dieback control
 - weed control
 - vegetation material is used to help restore other parts of Lowlands
- Ensure all major service providers are aware of Conservation Zone; oppose all new proposals .

6 LAND USE GUIDELINES AND MANAGEMENT FRAMEWORK

6.1 *Land Use Guidelines*

As stated above, it is the clear intent of the landowner that the Lowland's bushland is to be managed in perpetuity as a private nature conservation reserve.

In a nutshell, use and development of the land will be limited to activities which complement, and will be generally reliant upon, the conservation values of Lowlands. Rural uses will generally not be permitted within the conservation Zone unless it can be demonstrated that the use will not degrade the conservation values of the Zone. (An example of a complementary Rural Use might be beekeeping).

There are two major mechanisms which could impact upon the area's conservation values: clearing and people pressure.

Generally, proposed uses and developments will be limited to the cleared portions of the property or on the periphery of remnant vegetation areas.

All proposed buildings shall be located no closer than 100 m from watercourses.

It should be noted that where a proposed use may require some clearing, strict controls are already in place under the Shire's Town Planning Scheme and the restrictions on clearing on the Swan Coastal Plain portion of the Peel-Harvey catchment.

Proposals for use and development will also have to address the impact on the conservation values of any people pressure generated. This will include, and not be limited to, the potential to increase physical disturbance to bushland, spread weeds and increase fire risk.

No subdivision of the remnant vegetation portions of the Conservation Zone will be permitted under this management plan.

No grazing livestock will be permitted unless it is for the purpose of weed control, and stock are fenced from native vegetation.

6.2 *Management Framework*

Management of a private nature reserve carries with it all the challenges faced by public land managers, and more. However, retention of the conservation area in private ownership is an important ingredient in maintaining the conservation values, character and quality of management on Lowlands. The Lowlands bushland and Serpentine River would not be what it is today if the land had been in public ownership.

Rezoning of the land to Conservation is seen as the first step towards building up a means of protecting and managing Lowlands for the long term. Mechanisms linked to title to the land are also being investigated by the landowner.

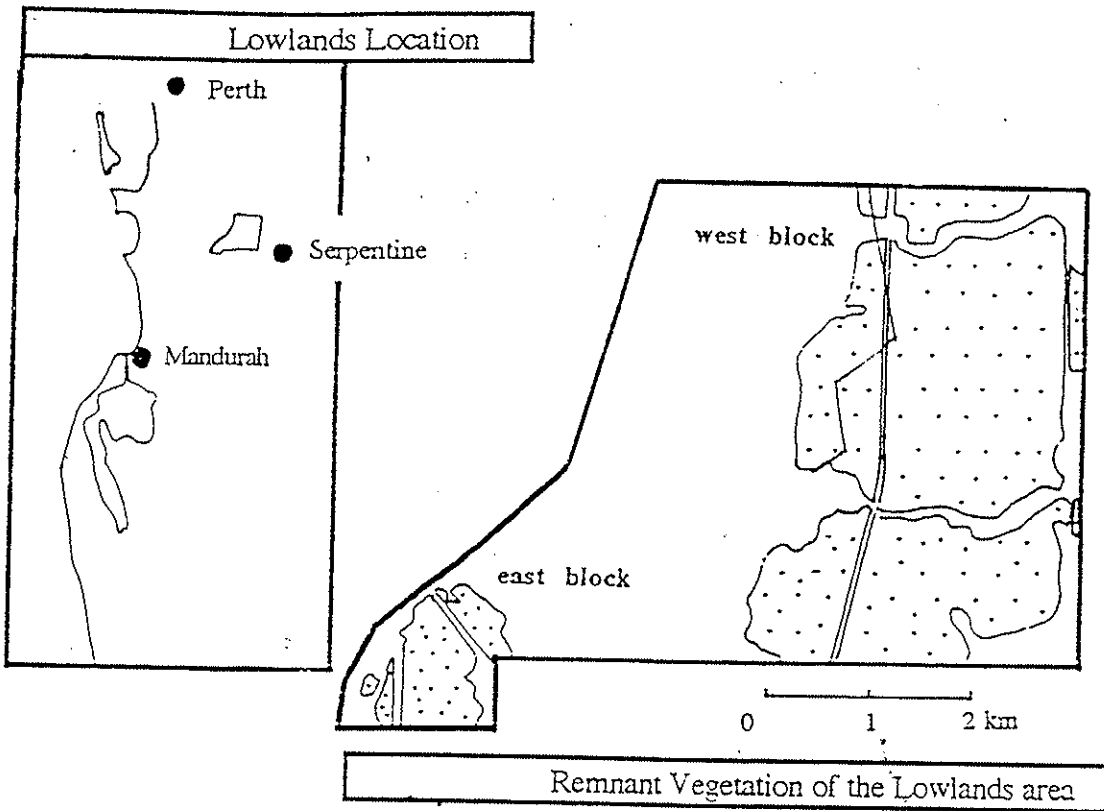
Lowlands bushland will need the support of the community and the government to be maintained in the long term. Lowlands is already linked to the community through the Serpentine-Jarrahdale Land Conservation District Committee and through researchers carrying out investigations on the property. However, there is a need for greater awareness of Lowlands by the community and government agencies, and especially surrounding landowners.

It is proposed that means of increasing the awareness and appreciation of the Lowlands bushland amongst the local community and government agencies will be developed.

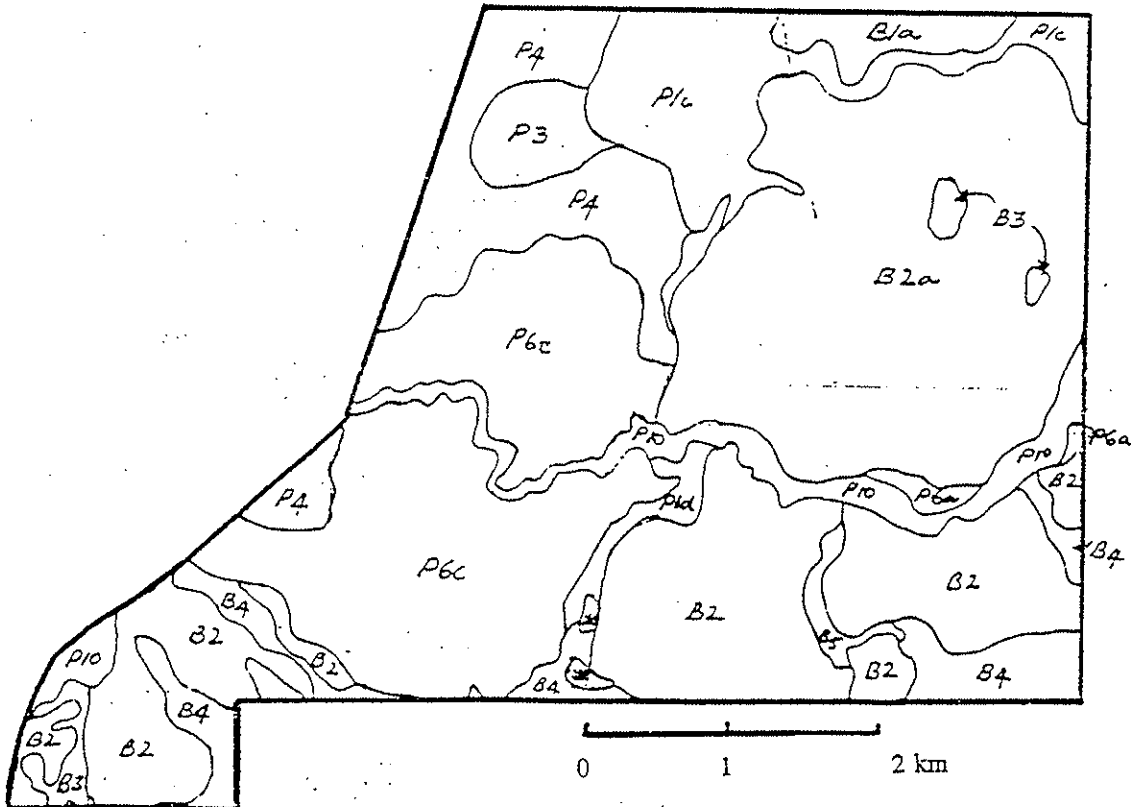
References

Figure 1.- Location map.

Lowlands Location and Soils



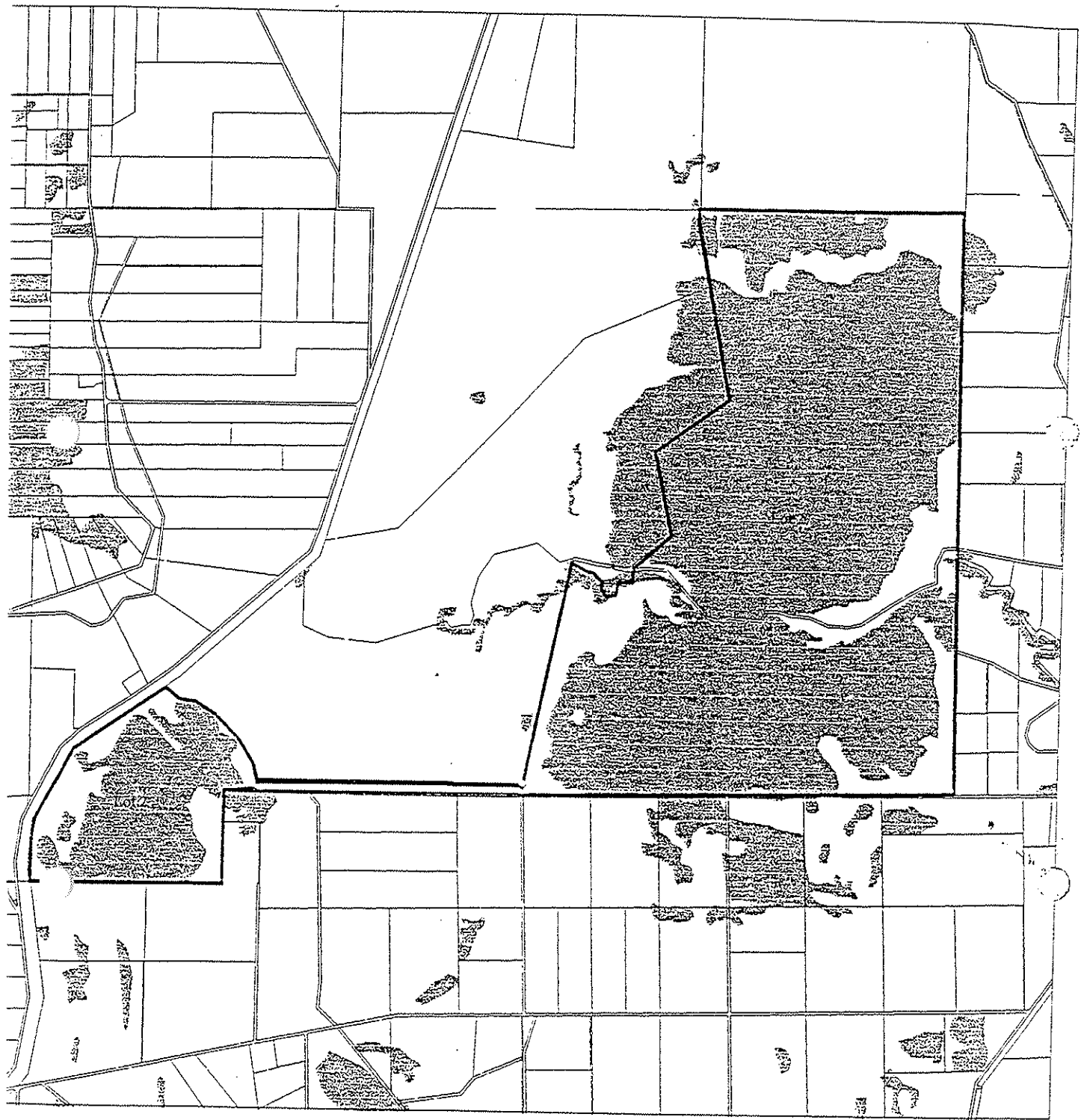
Soils of the Lowlands area (Van Gool 1990)



see page 5 for a key to symbols




Figure 3a

Proposed Conservation Zone, Lot 2 Lowlands Rd Mardella



0.5 0 0.5 1 1.5 Kilometres



- KEY
-  Cadastral Boundaries
 -  Remnant Vegetation, Perth (Ministry for Planning 1996)
 -  Conservation Zone

1:44000



Figure 2
 Cadastral boundaries
 Pt Lot 1 & Pt Lot 2
 Lowlands Rd
 MARDELLA.

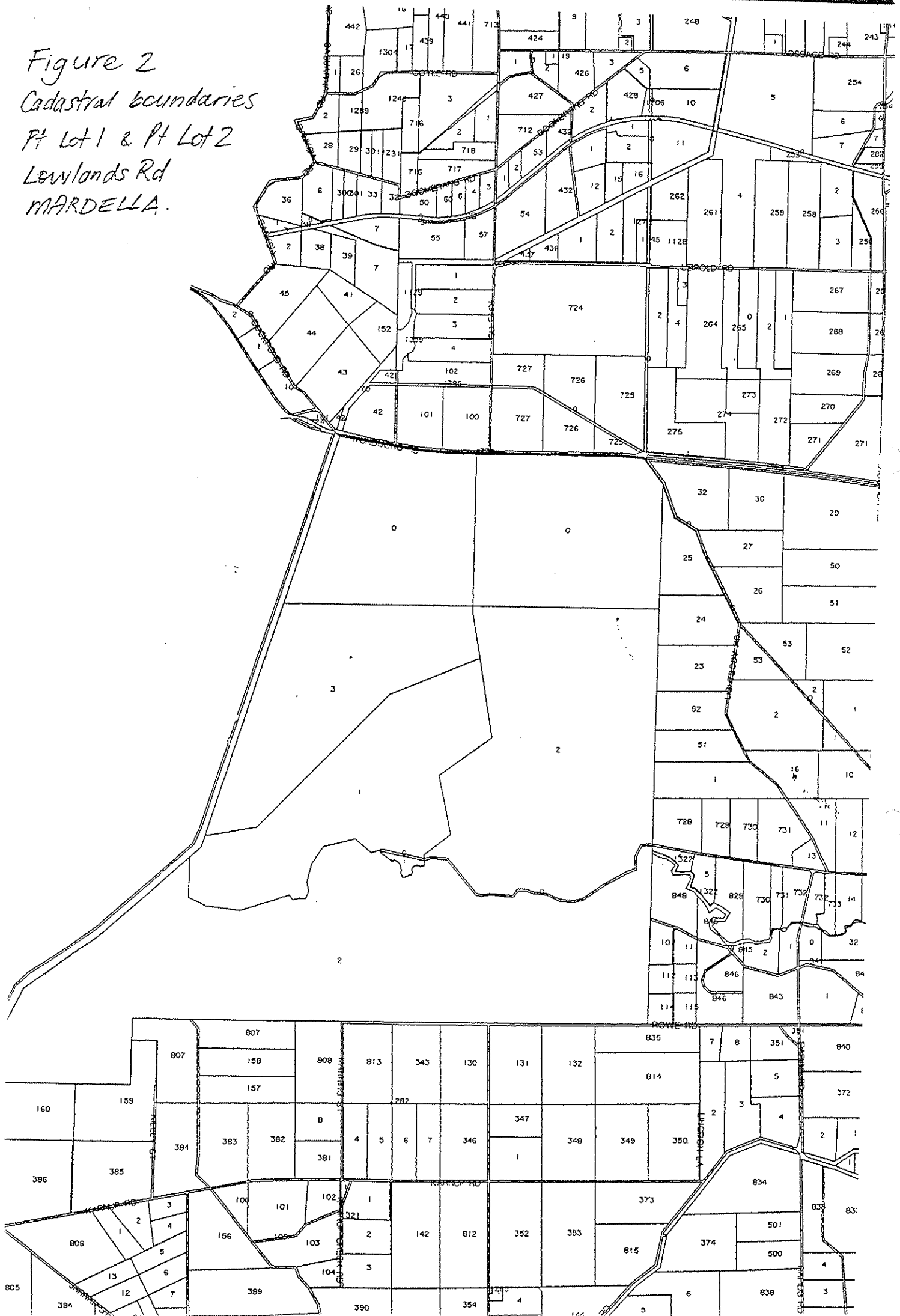
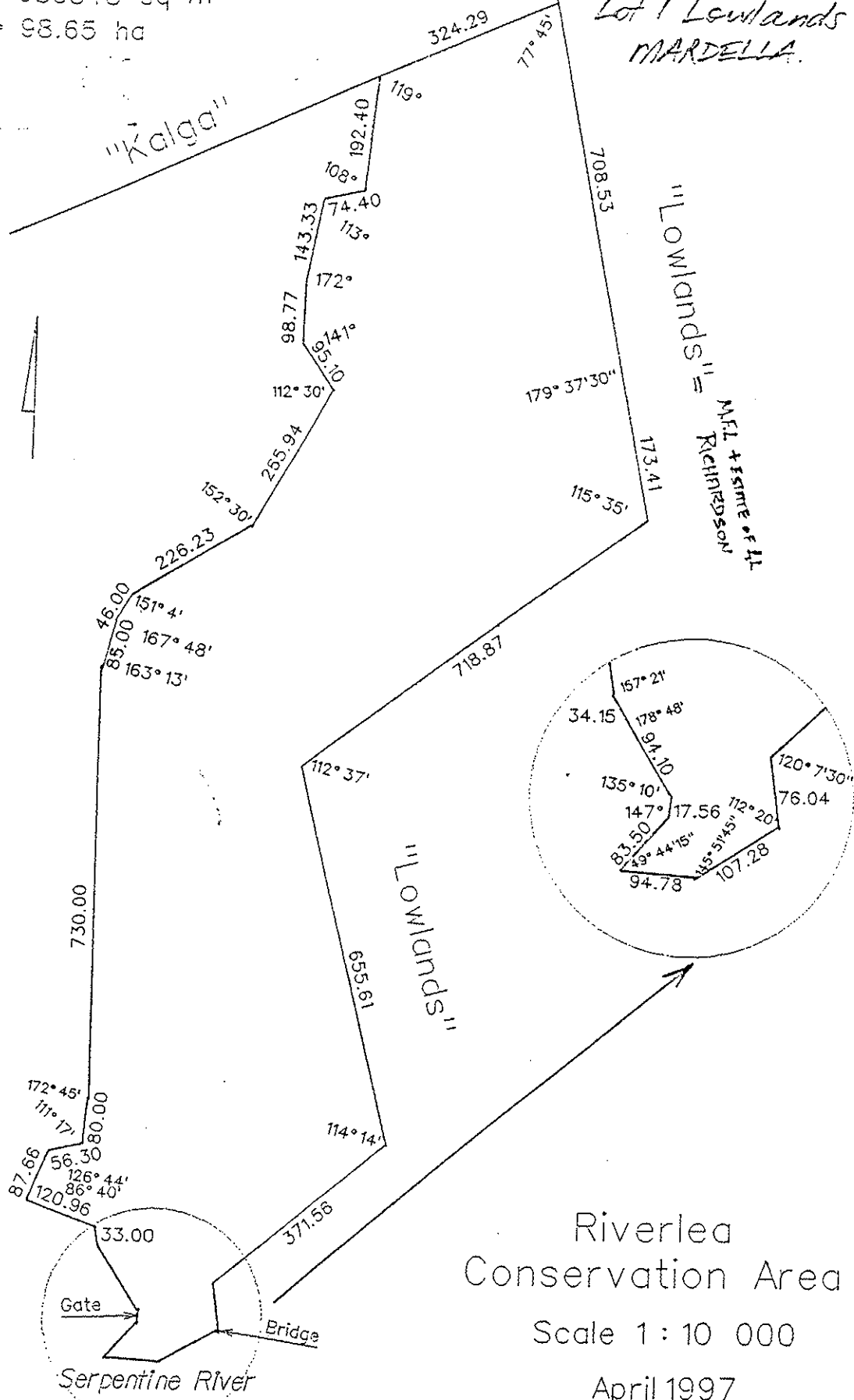


Figure 3b Proposed Conservation Zone,

Area = 988548 sq m
 = 98.65 ha

Lot 1 Lowlands Rd
 MARDELLA.



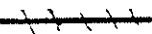








Riverlea
 Conservation Area
 Scale 1 : 10 000
 April 1997

from Floristics of Lowlands (Keighery et al, 1995)

Figure 4: Vegetation Associations
Lowlands - Riverlea
Proposed Conservation Zone.

Key

	Boundary between pasture and bushland (condition grades gradually from poor to very good and excellent) and between bushland in poor and better than poor condition
	Boundary between vegetation associations (approximate)
	Boundary of service corridor and bushland
	Vegetation Sites (Appendix 1)
	Claypans
	Sumplands, No 1 - 5.
	Scattered Tuarts in pasture
	Pasture
	Track

Vegetation Associations

Banksia Woodlands

ebW	<i>Banksia</i> Woodlands to Forests with scattered emergent Eucalypts
baW	<i>Banksia</i> , <i>Allocasuarina fraseriana</i> , and/or <i>Melaleuca preissiana</i> Woodlands to Forests
bmW	<i>Banksia</i> and <i>Melaleuca preissiana</i> Woodland
tW	Tuart Woodland
jLW	<i>Jacksonia sternbergiana</i> Low Woodland
bkW	<i>Banksia</i> Woodland over <i>Kunzea ericifolia</i> Closed Tail Scrub
pb	<i>Banksia</i> Woodland in poor condition

Ephemeral Wetlands

mrW	<i>Melaleuca raphiophylla</i> Woodland to Shrubland
WS	Woodlands over Sedgeland

River - Creepline

rF	<i>Eucalyptus rudis</i> Forest to Woodland
c	Scattered <i>Eucalyptus rudis</i> and <i>Melaleuca preissiana</i> Low Woodland to Open Low Woodland

Figure 5: Wetlands at Lots 1 and 2 Lowlands Road



- KEY**
- ∕ Cadastral Boundaries
 - ∕ Seminiuk's Channel Wetland Type
 - ∕ ARTIFICIAL CHANNELS
 - ∕ CREEKS
 - ∕ OTHER
 - ∕ RIVERS
 - Seminiuk's Basin Wetlands
 - Sumpland
 - Dampland
 - Palausplain
 - Conservation Zone

0.5 0 0.5 1 1.5 Kilometres

1:44000



Vegetation Associations, west block

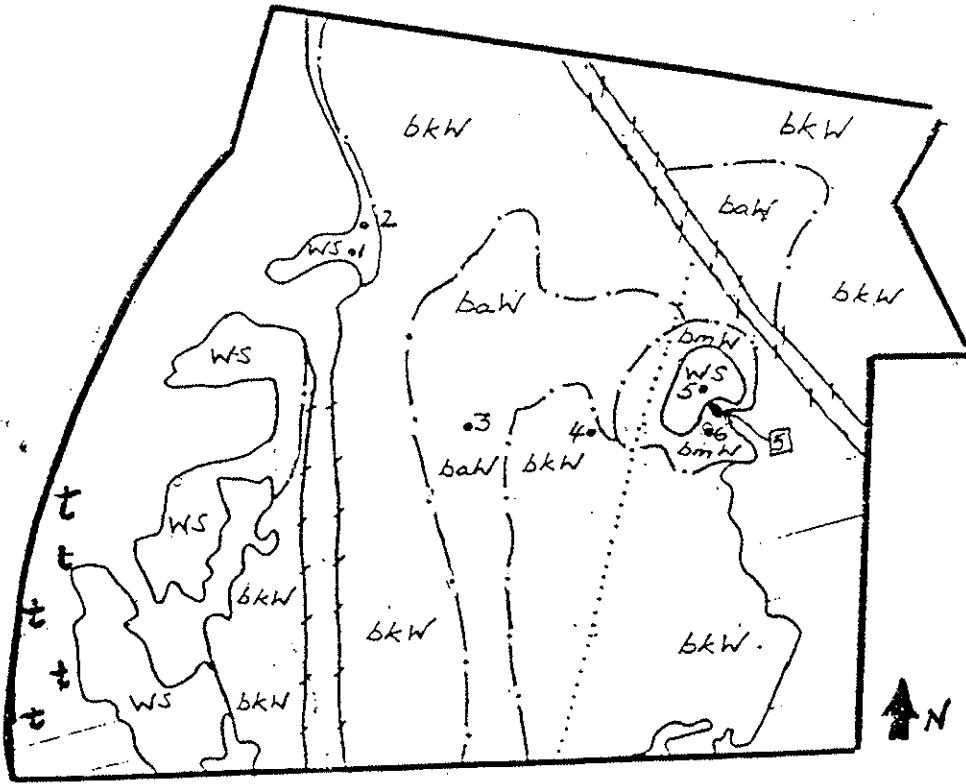
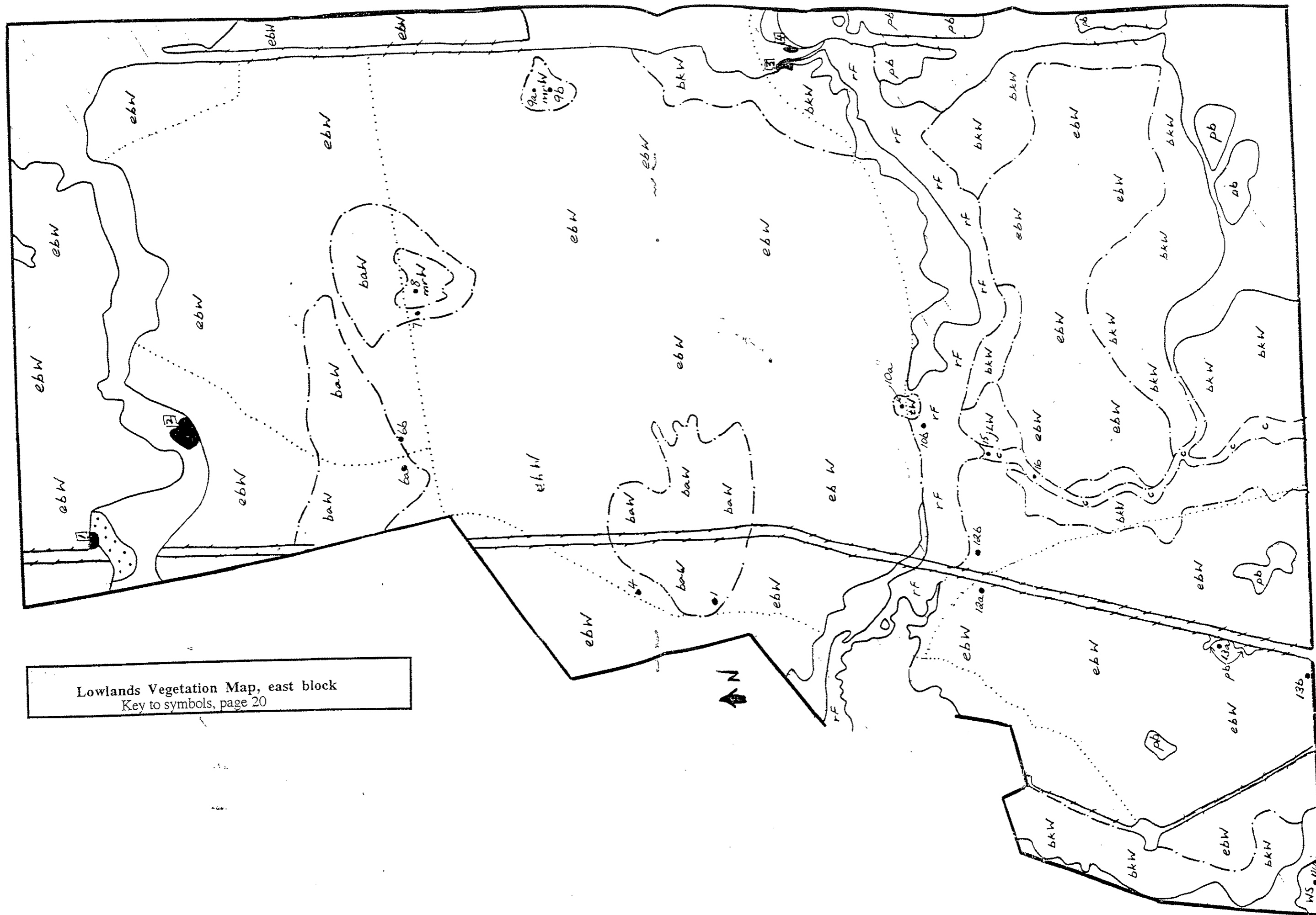


Figure 4 (cont.)



Lowlands Vegetation Map, east block
Key to symbols, page 20



**Full document
available
on request**

FLORISTICS of LOWLANDS

by Bronwen Keighery, Gregory Keighery and Neil Gibson.

Reg
3.30

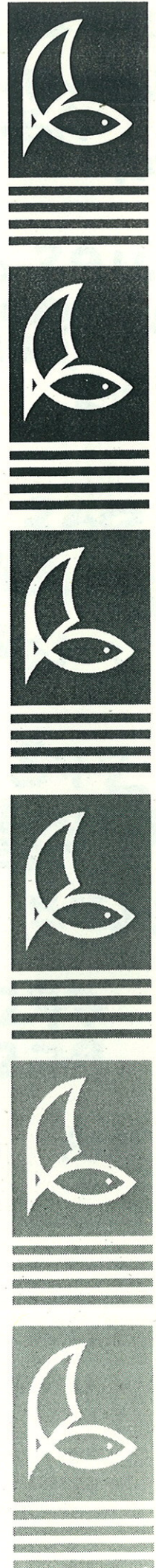
PEEL INLET MANAGEMENT AUTHORITY

Fringing vegetation of the Serpentine River in the Shire of Serpentine- Jarrahdale and City of Rockingham



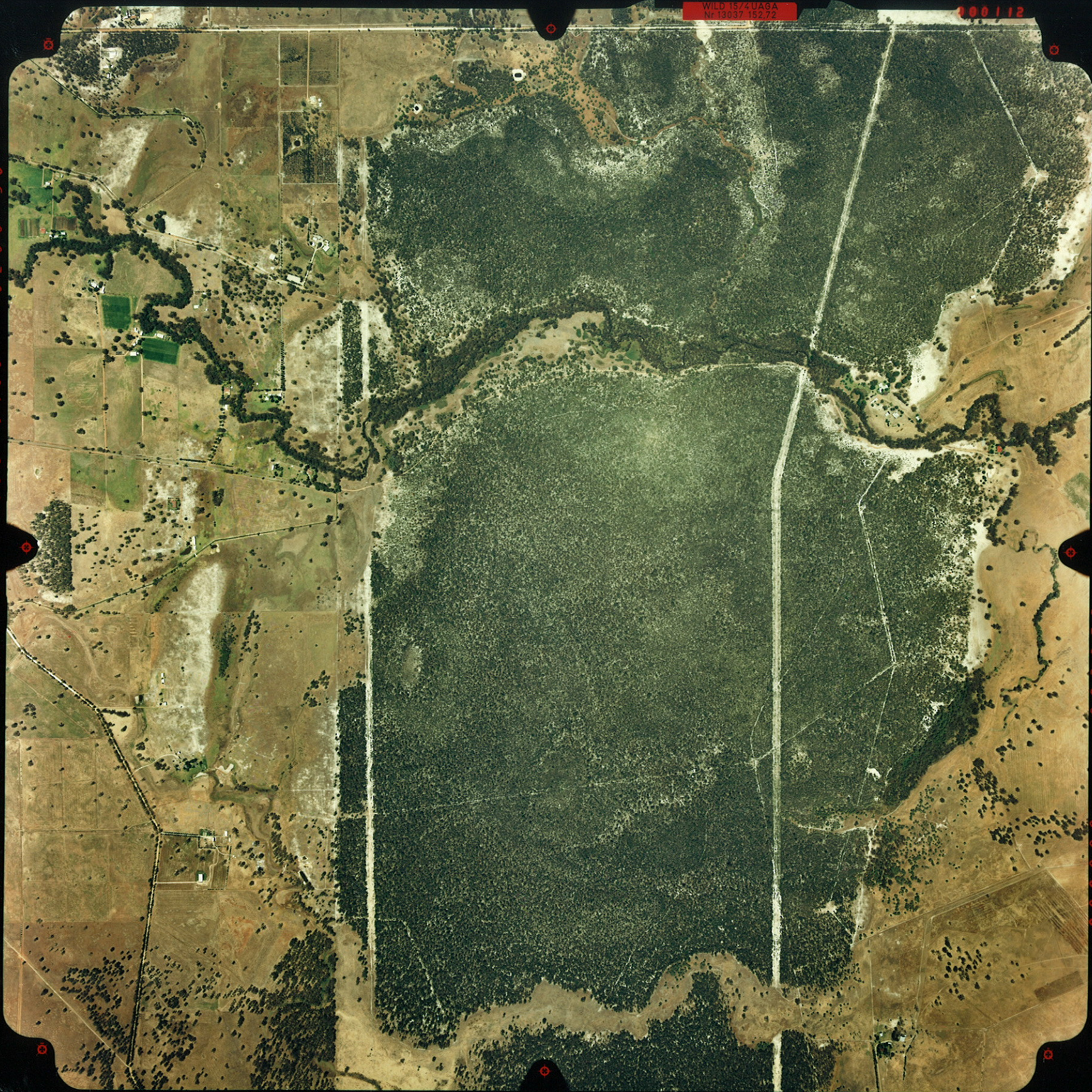
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on request**

Waterways Commission
Report No. 38
1993



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