DENIS DE YOUNG RESERVE AND GIBBS ROAD SWAMP BUSHLAND, BANJUP/FORRESTDALE

Boundary Definition: protected area/bushland (part taken to cadastre) boundary (Areas of bushland within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 344 **Area (ha):** bushland 289.8 (Site also includes open water.)
Map no. 59, 60, 65, 66 **Map sheet series ref. no.** 2033–I SE
Other Names: Part Submission Area 13, part of Jandakot Regional Park, part of Gibbs Road Wetland System
Local Authorities (Suburb): City of Cockburn (Banjup), City of Armadale (Forrestdale)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
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 (Qrw: Sp1, Sp2)
VEGETATION AND FLORA
Bassendean Dunes
Bassendean Complex — Central and South
Combinations of Bassendean Dunes/Pinjarra Plain/Spearwood Dunes
Southern River Complex
Floristic Community Types: *not sampled, types inferred
Supergroup 2: Seasonal Wetlands
*4 *Melaleuca preissiana* damplands
*11 Wet forests and woodlands
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
21c Low–lying *Banksia attenuata* woodlands or shrublands (Denis De Young Reserve)
22 *Banksia ilicifolia* woodlands (Denis De Young Reserve)
WETLANDS
Wetland Types: sumpland, dampland, artificial channel
Natural Wetland Groups
Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Bassendean Dunes
Jandakot (B.3)
Wetland Management Objectives: Conservation (195.4ha), Resource Enhancement, Multiple Use
Swan Coastal Plain Lakes EPP: 7.7ha + 16.2ha + 0.2ha = 24.1ha (total)
THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands
Vegetation and Flora: detailed survey (part Site (Denis De Young Reserve) — Keighery, GJ, 1992b); limited survey (Gibson *et al.* 1994 (Dejong 01–02), part Site — Keighery, GJ, 1994)
Structural Units: mapping (Keighery, GJ, 1992b, 1994)
Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana*
Wetlands: *Melaleuca preissiana* Low Woodland to Forest sometimes over *Baumea juncea* Sedgeland; *Melaleuca rhaphiophylla* Low Open Forest; *Pericalymma ellipticum*, *Astartea* aff. *fascicularis*, *Aotus intermedia* and *Calothamnus lateralis* Closed Heath; *Pericalymma ellipticum* Closed Heath; *Baumea juncea* and *B. articulata* Sedgelands
Scattered Native Plants: not assessed
Vegetation Condition: >60% Excellent to Very Good, <40% Good to Degraded, with areas of severe localised disturbance
Total Flora: 158 native taxa (part Site — Keighery, GJ, 1992b) (estimated >60% expected flora)

DENIS DE YOUNG RESERVE AND GIBBS ROAD SWAMP BUSHLAND, BANJUP/FORRESTDALE

Boundary Definition: protected area/bushland (part taken to cadastre) boundary (Areas of bushland within the boundaries of the Bushplan Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland.)

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 344 **Map no.** 75

Map sheet series ref. no. 2033–I SE

Other Names
Part Submission Area 13

Local Authorities (Suburb)
City of Cockburn (Banjup), City of Armadale (Forrestdale)

Ownership Categories
Private (including commercial organisation), State Government, Local Government

Area (ha): total 472.8 (includes open water); bushland 289.8

Zoning
MRS: Parks and Recreation, Rural, Rural-Water Protection, Important Regional Roads
TPS: General Rural, Landscape, Public Purposes

Lot/Location/Reserve numbers (Purpose), Street name
27950 Armadale Rd; 27, 30, 36, 38, 39, 428, 429, 430 Taylor Rd; 34, 461, 27950, Forrest Rd; 452 Bartram Rd; 3, 4, 9, 33 Nicholson Rd; 414, 425, 431, 531 Oxley Rd; 424 Liddelow Rd; 1, 33, 426, 427, 466, 534 Gibbs Rd; 303, 600 street not identified
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

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 (Qrw: Sp1, Sp2)

VEGETATION AND FLORA

Bassendean Dunes
Bassendean Complex — Central and South

Combinations of Bassendean Dunes/Pinjarra Plain/Spearwood Dunes
Southern River Complex

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands
*4 *Melaleuca preissiana* damplands
*11 Wet forests and woodlands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
21c Low lying *Banksia attenuata* woodlands or shrublands (Denis De Young Reserve)
22 *Banksia ilicifolia* woodlands (Denis De Young Reserve)

WETLANDS

Wetland Types: sumpland, dampland, artificial channel

Natural Wetland Groups

Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)

Bassendean Dunes
Jandakot (B.3)

Wetland Management Objectives: Conservation (190ha), Resource Enhancement, Multiple Use

Swan Coastal Plain Lakes EPP: 7.7ha + 16.2ha + 0.2ha = 24.1ha (total)

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands

Vegetation and Flora: detailed survey (part Bushplan Site (Denis De Young Reserve — Keighery, GJ, 1992b); limited survey (Gibson *et al.* 1994 (Dejong 01–02), part Bushplan Site — Keighery, GJ, 1994)

Structural Units: mapping (Keighery, GJ, 1992b and 1994)
Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana*

Wetlands: *Melaleuca preissiana* Low Woodland to Forest sometimes over *Baumea juncea* Sedgeland; *Melaleuca rhaphiophylla* Low Open Forest; *Pericalymma ellipticum, Astartea* aff. *fascicularis, Aotus intermedia* and *Calothamnus lateralis* Closed Heath; *Pericalymma ellipticum* Closed Heath; *Baumea juncea* and *B. articulata* Sedgelands

Scattered Native Plants: not assessed

Vegetation Condition: >60% Excellent to Very Good, <40% Good to Degraded, with areas of severe localised disturbance

Total Flora: 158 native taxa (part Bushplan Site — Keighery, GJ, 1992b) (estimated >60% expected flora)

Significant Flora: Keighery, GJ, 1992b — *Phyllota gracilis* (3), *Verticordia lindleyi* subsp. *lindleyi* (4); *Macarthuria apetala*

Fauna: limited survey (Submission no. 168g) for birds (34), native mammals (2), reptiles (7) and amphibians (1). Important breeding area for Freckled and Pink-eared ducks, Black Swan, Little Pied Cormorant, Eurasian Coot and Dusky Moorhen. Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north (BS390), south, east and west; part of proposed Greenways 105, 96, 110 (Tingay, Alan & Associates 1997a); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: majority included in Jandakot Botanic Park Proposal (MfP 1995); 'wetland of special note' (Payne 1993a); part Bushplan Site Category One Area Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Directory of Important Wetlands in Australia; Not Listed; Indicative Place of the Register of the National Estate

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

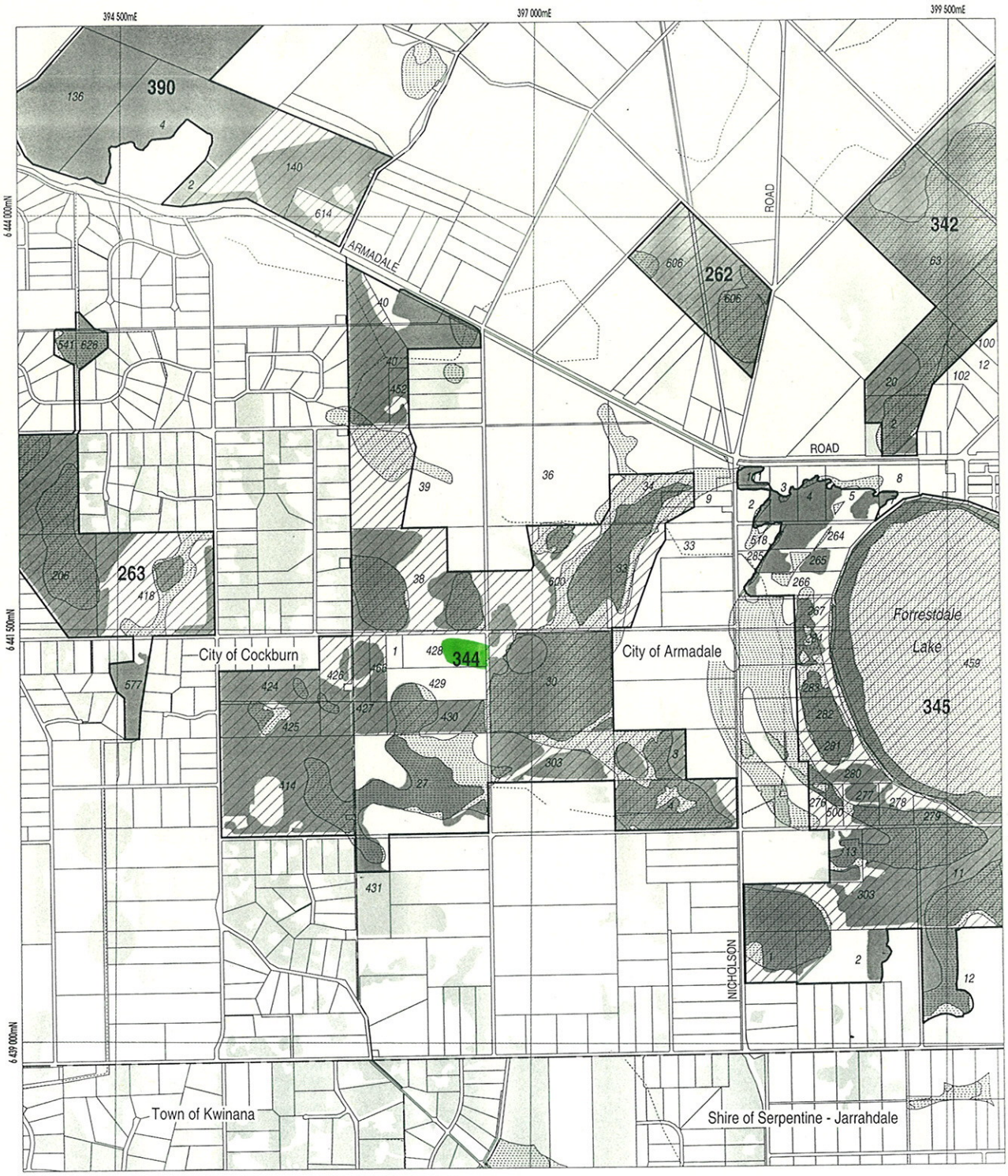
Criteria: Representation of ecological communities, Diversity, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP, Peel-Harvey Estuary EPP/SPP, Swan and Canning Rivers EPP; location of conservation category wetlands; MRS Parks and Recreation Reservation and TPS Landscape Zoning, Crown Reserve

Constraints: private land; under MRD regional road requirements, General Mineral Resource Area (sand)

Recommendation: The care, control and management of parts of this Bushplan Site for conservation purposes within Jandakot Regional Park is endorsed. The most appropriate mechanism for the protection of the remainder of this Bushplan Site be considered through the public comment period in consultation with the land owner(s).



LEGEND

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

2033 - I SE

IV	NW / SW	NE / SE (75)
III	2033	II

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

PERTH'S BUSHPLAN MAP INDEX

1	2							
3	4	5						
6	7	8	9	10	11			
	12	13	14	15	16			
		17	18	19	20	21	22	23
		24	25	26	27	28	29	30
			31	32	33	34	35	36
			37	38	39	40	41	42
			43	44	45	46	47	48
				49	50	51	52	53	54
				55	56	57	58	59	
				60	61	62	63	64	
65				66	67	68	69	70	
71	72	73	74	75	76	77			
78	79	80	81	82	83	84			
85	86	87	88	89	90	91			
		92	93	94	95	96	97		
		98	99	100	101	102			
			103	104	105	106			

N

SCALE

0 — 500 — 1000 Metres

Produced by Project Mapping Section
Land Information Branch, Ministry for Planning, Perth W.A. November 1998

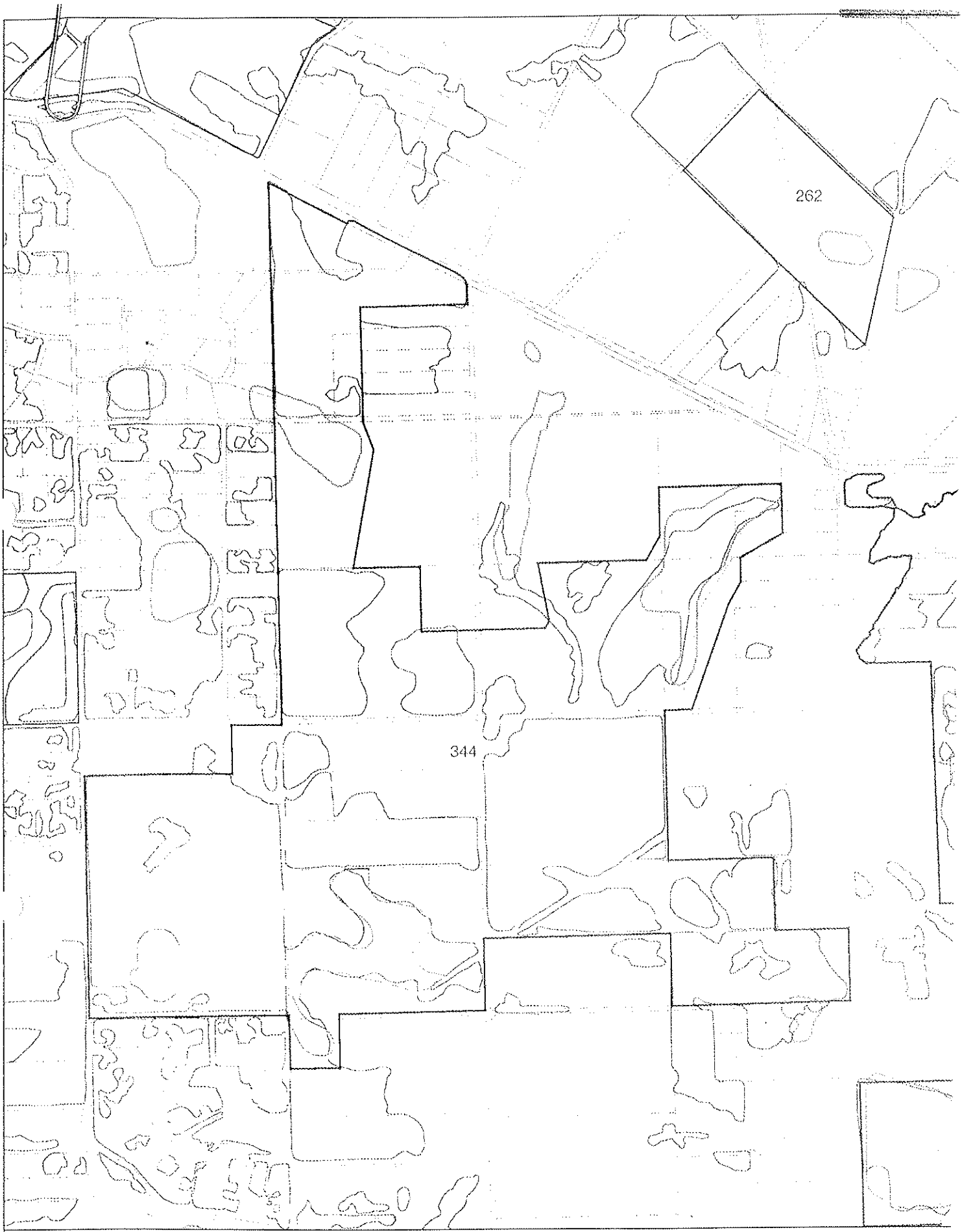
ntw-map9//environ/bushplan//bushv2_75.dgn

Cadastral Data supplied by Department of Land Administration, W.A.

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map

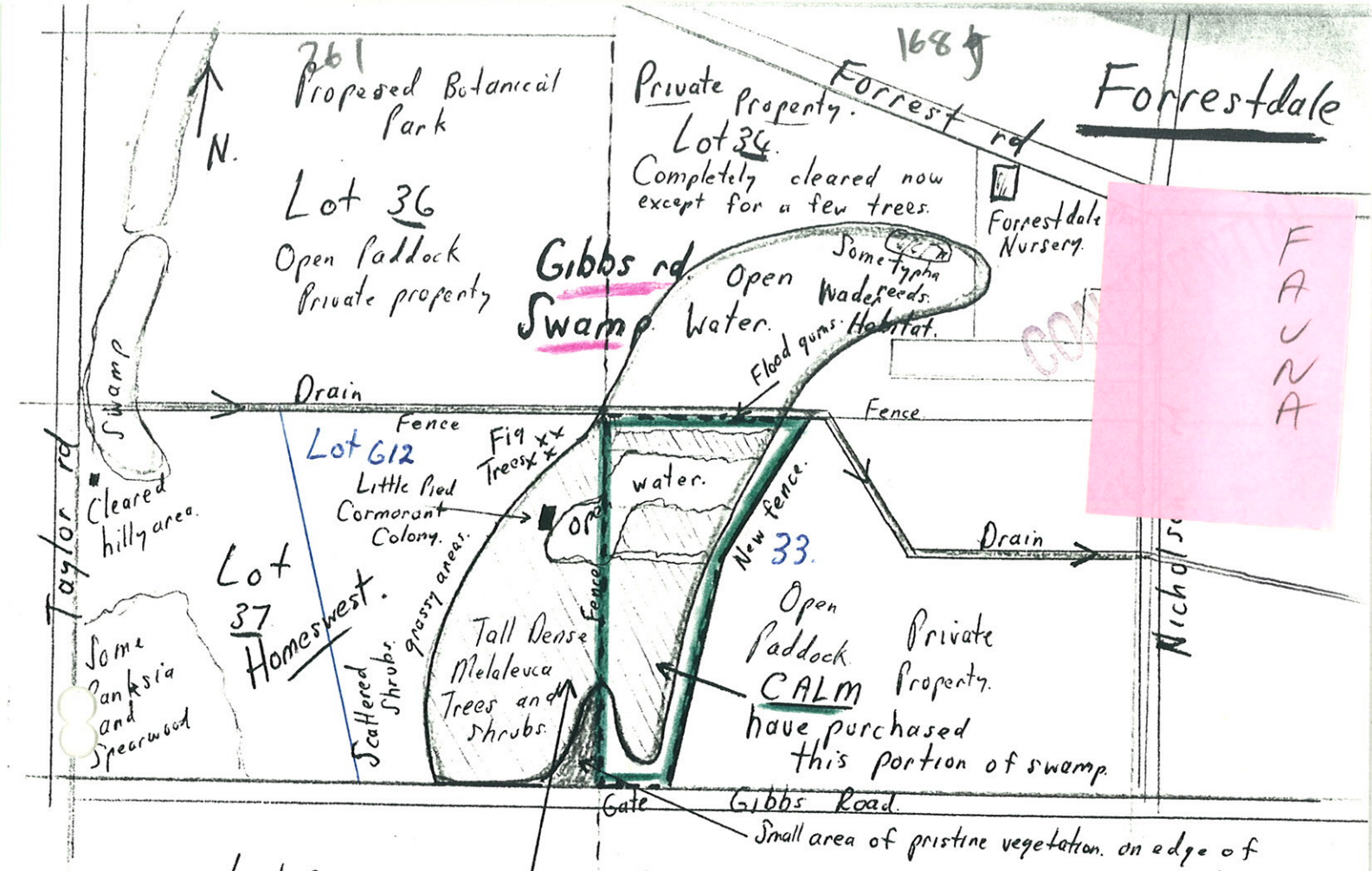


BUSHPLAN SITES CORRECTED

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

N



Lot 30.

FROM D F JAMES
284 COMMERCIAL RD
FORRESTDALE 6112

August 93.

Freckled Ducks – (Max seen was 7, 6th Sept 1986.)
They nest in base of Melaleuca trees (& " shrubs) each year.

Lots 36 - 37 - 34. - 30. are all proposed for inclusion in the Landcbd Botanical Park – (not finalised yet) (This complete wetland is covered by the EPA Swan coastal plain Lakes Policy 18-12.92

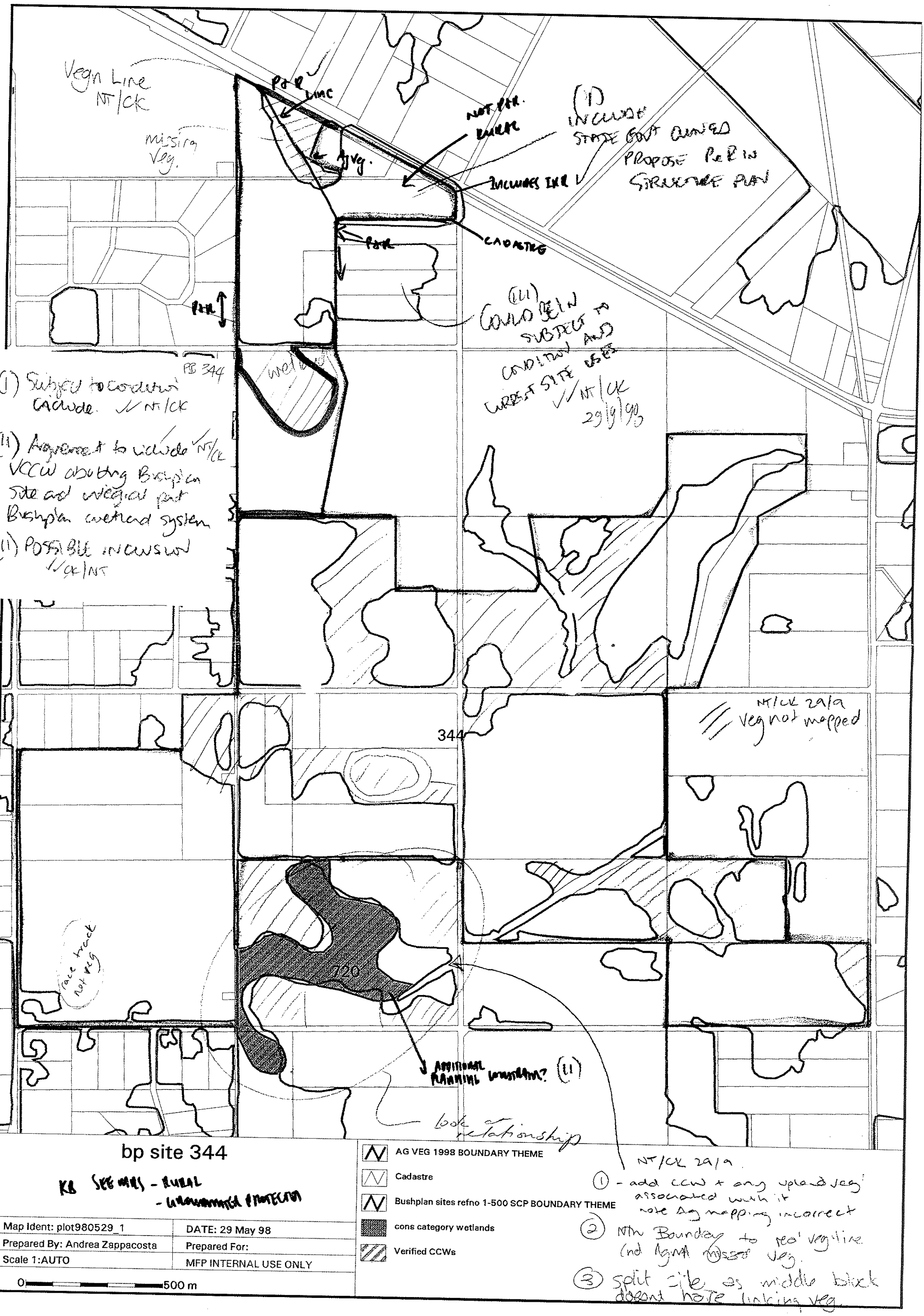
(South of the Drain.
Important breeding swamp for:)

Freckled Duck
Pink-eared Duck
Black Swan.
Little Pied Cormorant.
Eurasian Coot.
Dusky Moorhen.

Dominant vegetation in Swamp
(Freshwater Paperbarks.
Melaleuca rhaphiophylla)
M. hamulosa. – thicket with canopy.
Flood gums (Euc rudis) along drain

Lot 34. Northern ½ of swamp is important for waders in summer such as:-
BF. Plovers, B.W. Stilts.

Please refer to RAOU Data Bank for waterbird information on these wetlands. – and from CALM



(I) Subject to condition CADwide. ✓ NT/CK

(II) Agreement to include ✓ NT/CK VCCW abutting Bushplan Site and integral part Bushplan wetland system

(III) POSSIBLE INCLUSION ✓ CK/NT

bp site 344

KB SEE NOTES - RURAL
- UNDERSTANDING & PROTECTION

Map Ident: plot980529_1	DATE: 29 May 98
Prepared By: Andrea Zappacosta	Prepared For:
Scale 1:AUTO	MFP INTERNAL USE ONLY

0 500 m

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

NT/CK 29/9

(1) - add CCW + any upland veg associated with it
note Ag mapping incorrect

(2) Nth Boundary to real veg line (not Agric veg).

(3) split site as middle block doesn't have linking veg.

Lot 40
Armadale Rd
Forrestdale
Aerial 2000

Cadastre with Lot Numbers Blue - Overlay Imag

Bushplan Sites Draft (Boundaries)

Bush Forever Sites - Boundaries

Map Ident: plot010124_1

Prepared By: Sean Collingwood

Prepared For: SPC

Date: 24 Jan 2001

Scale 1:3000

0 50 m

MFP INTERNAL USE ONLY

Sotw 261

9

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

If you wish to submit more than one area for consideration in the System 6 update, please use a separate form for each area.

Please fill in each section giving as much information as possible.

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location

Please give as accurate and detailed a description as possible of the site location

Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: Gibbs road

b) Nearest Corner: Forrest – Nicholson rds.

c) Lot Number: 612. Part Lot 34. Street Number: .....

d) Town/Suburb/Location: Forrestdale

e) Local Council: Armadale

f) Site Name (if any): Gibbs rd Swamp.

g) Approximate size of the area (ha): 35 ha ?

h) Please locate the area on a map and give us map references if possible:

Map attached.

i) Map: ..... (Streetsmart) / UBD/Other: .....

j) Map no.: 114

k) Grid Ref: 32-33 x 4-5.

l) Please give any other information that may help us to find the location:

.....

m) Are you aware of any development proposals that are likely to affect the area?

No.

.....

NOTE: Areas that have already been given development APPROVAL should not be nominated

Please fill out those questions that you can answer

2. **Who owns the area?** (If owned by the person/s making the nomination please indicate) ..... Private Nth end Lot 34 ..... CALM. SE Section / Homeswest SW Section.

3. **If you own the area, and may be interested in participating in conservation on private land initiatives please indicate** (and leave your name and address at the end of this submission form) .....

4 .What is the area zoned? (please indicate whether zoning is Town Planning Scheme or Metropolitan Region Scheme) .....

CAN YOU TELL US A LITTLE ABOUT THE PHYSICAL CHARACTERISTICS OF THE AREA

5. **Why do you consider this area important?** (Refer to Guiding Issues paper) ..... A major breeding swamp for water fowl, ... especially Freckled ducks. an endangered species. .....

6. **What is/are the soil type/s and colours ?** .....

Type: Sand / Clay / Gravel / Loam / Silt
Colour: White / Grey / Brown / Orange / Yellow / Red / Black

7. **Does the area have any special features such as unusual landforms / landscapes that still retain their natural vegetation?** Yes/No

If yes, what are they? .....

.....

.....

8. **Is the area a wetland or does it include a wetland?** ..... yes .....

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp

e) estuary

f) seasonally wet

g) other

9. What percentage of the wetland is open water in summer? .....

CAN YOU TELL US A LITTLE ABOUT THE VEGETATION /FAUNA ON THE NOMINATED AREA.

10. What percentage of the area is indigenous vegetation? ..... 60 / ?

11. If the area includes regions cleared of native bushland please indicate reasons for the inclusion. ..... To allow an over management Plan for the Swamp. Open areas provide feeding habitat for waterbirds

12. Has any previous flora or fauna survey work been done on the area?

..... yes. – for waterfowl.

If yes, please give details of the work ..... 1989-92 Scopewest Surveys for the RAOU. + many other visits from ornithologists

13. How would you rate the condition of the native bushland? (see attached table)

a) pristine
(b) excellent South end.
(c) very good all central melaleuca area of swamp.
d) good
(e) degraded N. end Lot 34.
f) completely degraded
g) don't know

14. Please indicate the disturbances affecting the area and where appropriate the percentage of the area disturbed.

(a) Partial clearing
(b) fragmentation
c) Selective removal of species: timber cutting, wildflower picking, mowing dieback and other plant diseases
(d) Fire regime, including intensity, season and frequency Completely burnt out last summer
e) 'Enrichment plantings' that is plantings of species not found in that community
(f) Weed invasion
g) Animal impact: horses, foxes, rabbits, cats, dogs, camels, goats etc
h) Soil movement, both removal and dumping
i) Changes in water regimes; flooding, drainage and watering
j) Salinity
k) Fertiliser drift and along waterways nutrient influx
l) Mining, including that for road works

m) Grazing: stock, overgrazing by feral or native mammals

(n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

p) Use as service corridors by the SEC, Main Roads, Water Authority.

(Source: B Keighery. Bushland Plant Survey, September 1994) A drain passes through centre of swamp.

15. Does the area contain any plant species of special interest that you know of? (eg. declared rare flora, priority taxa, outlier populations) .....

Do you know what they are? .....
A botanical survey needs to be done, especially South end area.

16. Do you know of any native animals that use the area? .....

Can you list those you know of? (birds, mammals, reptiles, amphibians etc)
RAOU - CALM can provide waterbird lists from surveys done

17. Is the area used by any native animals of special interest? (eg. endangered species, large/important populations).....

If yes, please name them and indicate source of information
A few Grey Kangaroos seen regularly

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

18. Are there any bushland areas (including wetlands) near to this area?
.....yes.....

If yes, how close are they ? .....almost adjoining W + E sides and all Lot 30 S side

.....

Are they already conservation reserves? Lot 30 (Bot Park) 40ha

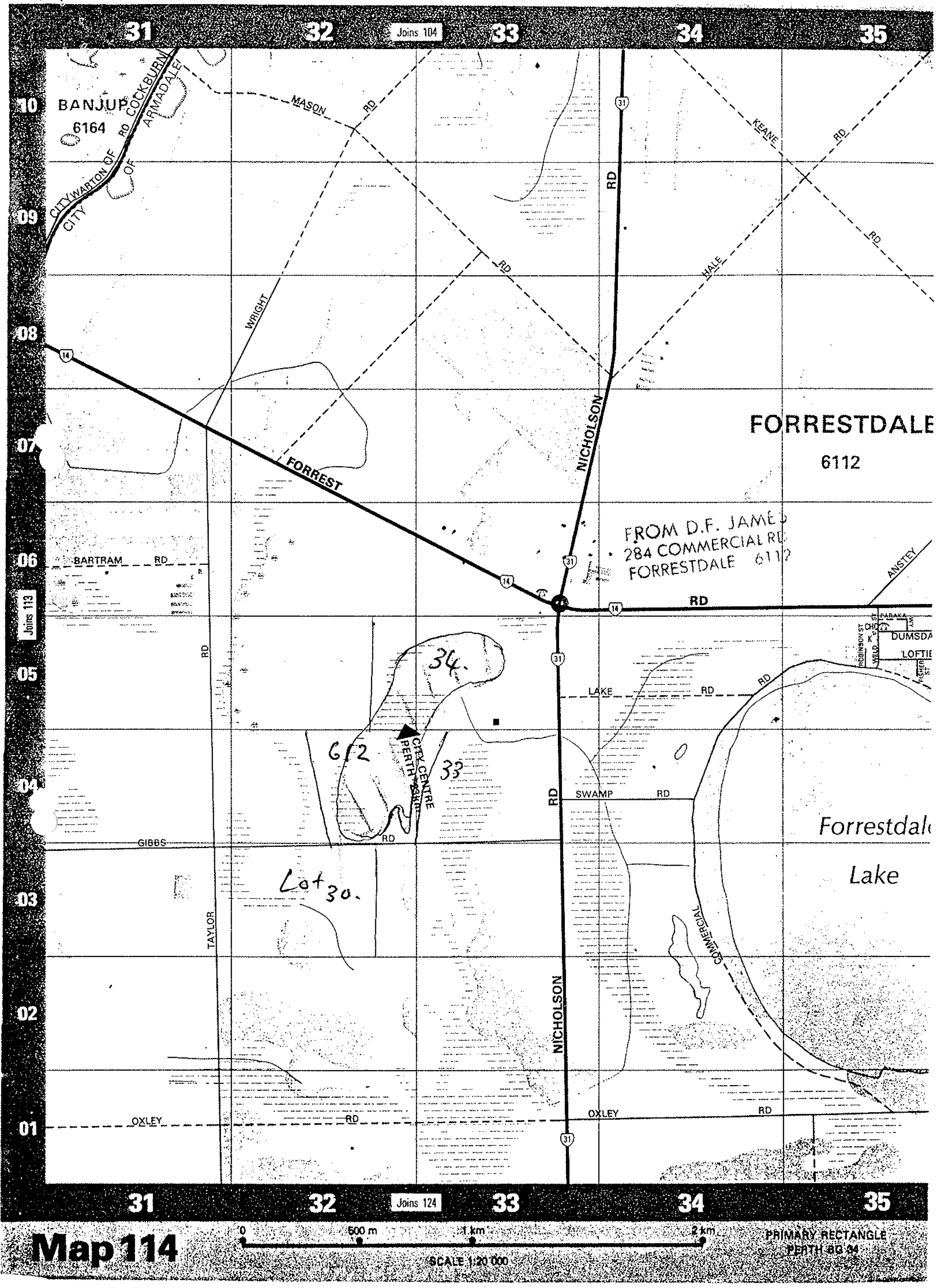
What is their approximate size? .....

19. Does the submitted area link other bushland areas? .....yes..... From the south through to Taylor rd - Lots 38.

.....

Please attach any additional information about the area which may be of use when assessing it.

Please refer to Jandakot Botanical Park information - just released



31
32
Joins 104
33
34
35
10
09
08
07
06
05
04
03
02
01
Joins 113
BANJUP
6164
CITY OF COCKBURN
CITY OF ARMADALE
WARTON RD
MASON RD
RD
KEANE
RD
RD
HALE
RD
WRIGHT
NICHOLSON RD
FORREST RD
FORRESTDALE
6112
FROM D.F. JAMES
284 COMMERCIAL RD
FORRESTDALE 6112
BARTRAM RD
ANSTEY
RD
DUMSDA
LOFTIE
ROBINSON ST
WELD ST
TAYLOR RD
LAKE RD
34
6/2
33
CITY CENTRE PERTH
SWAMP RD
GIBBS RD
Lot 30.
Forrestdale Lake
COMMERCIAL
NICHOLSON RD
OXLEY RD
OXLEY RD
31
32
Joins 124
33
34
35
Map 114
0
500 m
1 km
2 km
SCALE 1:20 000
PRIMARY RECTANGLE
PERTH BG 34

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

If you wish to submit more than one area for consideration in the System 6 update, please use a separate form for each area.

Please fill in each section giving as much information as possible.

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location Reserve 33002 Oxley Rd + Nicholson Rd.

Please give as accurate and detailed a description as possible of the site location

Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: .....

b) Nearest Corner: .....

c) Lot Number: ..... Street Number: .....

d) Town/Suburb/Location: Forrestdale

e) Local Council: Armadale

f) Site Name (if any): .....

g) Approximate size of the area (ha): .....

h) Please locate the area on a map and give us map references if possible:

.....

i) Map: ..... Streetsmart /UBD/Other: .....

j) Map no.: .....

k) Grid Ref: .....

l) Please give any other information that may help us to find the location:

.....

m) Are you aware of any development proposals that are likely to affect the area?

.....

.....

NOTE: Areas that have already been given development APPROVAL should not be nominated

Please fill out those questions that you can answer

2. Who owns the area? (If owned by the person/s making the nomination please indicate) .....

.....

3. If you own the area, and may be interested in participating in conservation on private land initiatives please indicate (and leave your name and address at the end of this submission form) .....

4 .What is the area zoned? (please indicate whether zoning is Town Planning Scheme or Metropolitan Region Scheme) .....

CAN YOU TELL US A LITTLE ABOUT THE PHYSICAL CHARACTERISTICS OF THE AREA

5. Why do you consider this area important? (Refer to Guiding Issues paper)
Wetland values high- breeding site,
Freckled Duck.

6. What is/are the soil type/s and colours ? .....

Type: Sand/Clay/Gravel/Loam/Silt
Colour: White/Grey/Brown/Orange/Yellow/Red/Black

7. Does the area have any special features such as unusual landforms / landscapes that still retain their natural vegetation? Yes/No

If yes, what are they? .....

.....

.....

8. Is the area a wetland or does it include a wetland? .....

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp

e) estuary

f) seasonally wet

g) other

9. What percentage of the wetland is open water in summer? .....

CAN YOU TELL US A LITTLE ABOUT THE VEGETATION /FAUNA ON THE NOMINATED AREA.

10. What percentage of the area is indigenous vegetation? .....

11. If the area includes regions cleared of native bushland please indicate reasons for the inclusion. .....

.....

12. Has any previous flora or fauna survey work been done on the area?
.....

If yes, please give details of the work .....

.....

.....

13. How would you rate the condition of the native bushland? (see attached table)

a) pristine
b) excellent
c) very good
d) good
e) degraded
f) completely degraded
g) don't know

14. Please indicate the disturbances affecting the area and where appropriate the percentage of the area disturbed.

a) Partial clearing
b) fragmentation
c) Selective removal of species: timber cutting, wildflower picking, mowing dieback and other plant diseases
d) Fire regime, including intensity, season and frequency
e) 'Enrichment plantings' that is plantings of species not found in that community
f) Weed invasion
g) Animal impact: horses, foxes, rabbits, cats, dogs, camels, goats etc
h) Soil movement, both removal and dumping
i) Changes in water regimes; flooding, drainage and watering
j) Salinity
k) Fertiliser drift and along waterways nutrient influx
l) Mining, including that for road works

m) Grazing: stock, overgrazing by feral or native mammals

n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

p) Use as service corridors by the SEC, Main Roads, Water Authority.

(Source: B Keighery. Bushland Plant Survey, September 1994)

15. Does the area contain any plant species of special interest that you know of? (eg. declared rare flora, priority taxa, outlier populations) .....

Do you know what they are? .....

.....

16. Do you know of any native animals that use the area? .....

Can you list those you know of? (birds, mammals, reptiles, amphibians etc)

.....

17. Is the area used by any native animals of special interest? (eg. endangered species, large/important populations).....

If yes, please name them and indicate source of information

.....

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

18. Are there any bushland areas (including wetlands) near to this area?

.....

If yes, how close are they ? .....

.....

.....

Are they already conservation reserves? .....

What is their approximate size? .....

19. Does the submitted area link other bushland areas? .....

.....

.....

Please attach any additional information about the area which may be of use when assessing it.

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

If you wish to submit more than one area for consideration in the System 6 update, please use a separate form for each area.

Please fill in each section giving as much information as possible.

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location Denis De Young Reserves

Please give as accurate and detailed a description as possible of the site location

Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: Hidalelow / Eyles / Oxley Road

b) Nearest Corner: Reserves 31653 + 33002

c) Lot Number: ..... Street Number: .....

d) Town/Suburb/Location: Banjup

e) Local Council: City of Cockburn

f) Site Name (if any): See above

g) Approximate size of the area (ha): .....

h) Please locate the area on a map and give us map references if possible:

See Street Directory under above name

i) Map: ..... Streetsmart /UBD/Other: ..... (East of Banjup Lake)

j) Map no.: .....

k) Grid Ref: .....

l) Please give any other information that may help us to find the location:

.....

m) Are you aware of any development proposals that are likely to affect the area?

Recreation - equestrian activities

.....

NOTE: Areas that have already been given development APPROVAL should not be nominated

Please fill out those questions that you can answer

2. Who owns the area? (If owned by the person/s making the nomination please indicate) .....Crown ? Vested in Council.....

.....

3. If you own the area, and may be interested in participating in conservation on private land initiatives please indicate (and leave your name and address at the end of this submission form) .....

4 .What is the area zoned? (please indicate whether zoning is Town Planning Scheme or Metropolitan Region Scheme) ....P.+R.....

CAN YOU TELL US A LITTLE ABOUT THE PHYSICAL CHARACTERISTICS OF THE AREA

5. Why do you consider this area important? (Refer to Guiding Issues paper) .....Botanical value.....

.....

6. What is/are the soil type/s and colours ? .....

Type: Sand/Clay/Gravel/Loam/Silt
Colour: White/Grey/Brown/Orange/Yellow/Red/Black

7. Does the area have any special features such as unusual landforms / landscapes that still retain their natural vegetation? Yes/No

If yes, what are they? .....

.....

.....

8. Is the area a wetland or does it include a wetland? .....

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp

e) estuary

f) seasonally wet

g) other

9. **What percentage of the wetland is open water in summer?** ....

CAN YOU TELL US A LITTLE ABOUT THE VEGETATION /FAUNA ON THE NOMINATED AREA.

10. **What percentage of the area is indigenous vegetation?** ....

11. **If the area includes regions cleared of native bushland please indicate reasons for the inclusion.** ....

....

12. **Has any previous flora or fauna survey work been done on the area?**
See Kleighery Report - June 1992.

If yes, please give details of the work Also PEP Jandakot Botanic Pk Studies, Semeniuk.

....

13. **How would you rate the condition of the native bushland?** (see attached table)

a) pristine
b) excellent
c) very good
d) good
e) degraded
f) completely degraded
g) don't know

14. **Please indicate the disturbances affecting the area and where appropriate the percentage of the area disturbed.**

a) Partial clearing
b) fragmentation
c) Selective removal of species: timber cutting, wildflower picking, mowing dieback and other plant diseases
d) Fire regime, including intensity, season and frequency
e) 'Enrichment plantings' that is plantings of species not found in that community
f) Weed invasion
g) Animal impact: horses, foxes, rabbits, cats, dogs, camels, goats etc
h) Soil movement, both removal and dumping
i) Changes in water regimes; flooding, drainage and watering
j) Salinity
k) Fertiliser drift and along waterways nutrient influx
l) Mining, including that for road works

m) Grazing: stock, overgrazing by feral or native mammals

n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

p) Use as service corridors by the SEC, Main Roads, Water Authority.

(Source: B Keighery. Bushland Plant Survey, September 1994)

15. Does the area contain any plant species of special interest that you know of? (eg. declared rare flora, priority taxa, outlier populations) .....

Do you know what they are? .....

.....

16. Do you know of any native animals that use the area? .....

Can you list those you know of? (birds, mammals, reptiles, amphibians etc)

.....

17. Is the area used by any native animals of special interest? (eg. endangered species, large/important populations).....

If yes, please name them and indicate source of information

.....

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

18. Are there any bushland areas (including wetlands) near to this area?
.....

If yes, how close are they ? .....

.....

.....

Are they already conservation reserves? .....

What is their approximate size? .....

19. Does the submitted area link other bushland areas? .....

.....

.....

Please attach any additional information about the area which may be of use when assessing it.

BS 344 PB155

271

Alan Tingay & Associates

environmental scientists

31 March 1999 99037_002_ad

Perth's Bushplan
Ministry for Planning
Albert Facey House
469 Wellington Street
PERTH WA 6000

ATTENTION: BUSHPLAN COORDINATOR

Dear Sir

RE: LOT 34 FORREST ROAD, FORRESTDALE

On behalf of the landowner, Alan Tingay and Associates has investigated the draft Perth's Bushplan site on Lot 34 Forrest Road, Forrestdale.

Approximately 40% of Lot 34 is included in Bushplan site 344. The landowner is concerned that the above area has been incorrectly mapped in Bushplan. According to Bushplan, approximately 20% of Lot 34 is mapped as supporting regionally significant native vegetation (map 75).

Examination of aerial photography shows the cleared nature of the site, an aerial photograph is shown in Attachment 1 (taken 4/1/1994). A site assessment of the lot confirmed that the lot does not support any native vegetation, photographs showing the cross section of the draft Bushplan site on Lot 34 Forrest Road are included in Attachment 2.

The southern part of Lot 34 represents the most northern extent of site 344. The lot does not form part of a corridor or linkage. The lot is predominantly surrounded by cleared agricultural areas as shown in the aerial photograph in Attachment 1.

The landowners are aware the southern section of Lot 34 is part of the Jandakot Botanical Park and is zoned as Parks and Recreation in the MRS. They are also aware there is a Conservation Category sumpland and an EPP wetland in the southern part of the lot. However, the landowners are concerned that including this section in Bushplan could impose further restrictions on their use of the area.

SUBMISSION NO 421

MINISTRY FOR PLANNING
1 APR 1999
805-2-1-32 pt 1 2
FILE

21 Howard Street, Perth 6000 Western Australia
Tel: (08) 9481 3434 Fax: (08) 9481 3435
E-mail: tingay@wantree.com.au

On behalf of the landowners, Alan Tingay & Associates requests that the Bushplan mapping be changed to reflect the fact that;

- Lot 34 is devoid of native vegetation; and
- the lot is not part of a significant linkage.

On the basis of the above information we request that Lot 34 Forrest Road be deleted from Bushplan site 344.

If you have any queries regarding this submission please do not hesitate to contact the undersigned on 9481-3434.

Yours sincerely

ASTRID D'ESPEISSIS
Environmental Scientist

Attachments

1. Aerial photograph of the lot showing the lot is cleared (taken 4/1/1994)
2. Photographs of the site showing the area mapped as supporting 'Regionally Significant Vegetation' in the draft Perth's Bushplan.

269

DRAWN: AD 30-3-99

CHECKED: PVDM 31-3-99

99037

Alan Tingay & Associates

environmental scientists

BUSHPLAN SUBMISSION, LOT 34 FORREST ROAD

AERIAL PHOTOGRAPH

ATTACHMENT 1

1. View across bushplan site from east to west

Photographs show the section of Lot 34 Forrest Road that is shown to support regionally significant vegetation in the draft Perth's Bushplan

2. View across bushplan site from west to east

DRAWN: AD 30-3-99 CHECKED: PVDM 31-3-99

99037

Alan Tingay & Associates
environmental scientists

BUSHPLAN SUBMISSION, LOT 34 FORREST ROAD

PHOTOGRAPHS

ATTACHMENT 2

Subm 225 BS 344

93

PB155

Bushplan Site [redacted]:

I recommend extension of this site to include Part Lot 21 and Part Lot 60 on the Norman Road Bushland.

Bushplan Site [redacted]:

Wetland type bushland on the adjoining Lot 4 is threatened and should be included in that site.

Bushplan Site [redacted]:

This site includes the Modong Nature Reserve at Oakford and I recommend that it be extended to include good quality bush on Lots 22 and 23.

Bushplan Site [redacted]:

This site includes Sandy Lake and Bushland at Anketell. I particularly suggest inclusion of Lots 5, 12, 13 & 14 adjacent to this site (good quality Banksia Woodland).

Bushplan Site [redacted]:

I recommend the inclusion of the vegetated north east corner of part lot 40 Taylor Road, Forrestdale (near the corner of Armadale and Taylor Roads).

I thank you for the opportunity to comment on the Bushplan strategy.

Yours faithfully

JEFF A SPENCER.

Hart, Simpson & Associates Pty Ltd (1999)
Lot 27 Taylor Rd, Forrestdale. Vegetation & Flora.
Prepared for Bowman, Bishaw & Gorham, April 1999

& Letter dated 30 April 1999 from Bowman Bishaw Gorham to Ministry for Planning (Perth's Bushplan)
Ref. M99168

Lot 27 = 49 ha
↳ 19 ha in Bushplan as reg sign ~~vegn~~ bushland
Believe should be ~12 ha

Better quality vegn in central wetland area – mapped as CCW

NE corner mapped as CCW but elevated sand dune

Hart, Simpson & Assoc (1999) [using Keighery (1994) scale] found core wetland area good to very good condition. Wetland ~~Remainder~~ surrounds poor-quality regrowth, remainder cleared & degraded.

No DRF, 2spp P3 [Jack ser, Meeb thys] taxa & possibly several others missed due to timing of survey. All sign spp will be protected in core wetland area that is CCW

Limited attention given to weeds.

Survey ~~in~~ / autumn under dry conditions, limited flowering / ~~#~~ find h'c ??

DRF
Diu purd
Diu micr
Drak elast
Cal hueg

P spp (P1)
Tripan
Phygrac (P3)
Ant cord (P3)
Ant jun (P4)
Jer(?) lind (P4)

Lot 40 Field Notes BJK.

25/1/01

1. Bott, B menz, Bilic <20% 2m to Scott Euc todd, All fras Hugt 20% - 10% 1m <1m over scattered natives Jack fence. Tk pil Shr lit, Schol inuol, Astro proc 2-10%
Herbs - Podolepis / *Carpo
Grass - Erh. caly ≈ 55%
Condition I - G

2. Wetland
Mel preiss <10m 30-70%
Ast. att. fascic >2m >70%
Hyp exsul 10-30%
Cond: Excellent
Soil Humus with Sand

Edge - Kun. eric thicket

3 Edge
Condition - H_2O drawdown Xant / Adm still healthy (only one death); Banksia deaths, All. fras.
VG - Ex. with potential localised dist due to draw down.
Bank att, Bank ill, All fras 30-70%
Xanth prei 1.5-1.0 m 30-70%
Dasy / Phleb cil 30-70% + >70%.
Hyp. exsulca.
Scattered Reg. cil & Kunze eric thickets
Adm. cyg.

Bank men, Bank att 30-75%
Acc yg ?'zan 30-70%
Ac pul, Sp ict Scadr 10-30%
Am Ubb racm, Leu consslop Schot mol 10-30%
Stylid rep, pul loc 2-15%
Amphi funb 2°-10%
Cond - Excellent
Scattered P.veldtt, Glat.

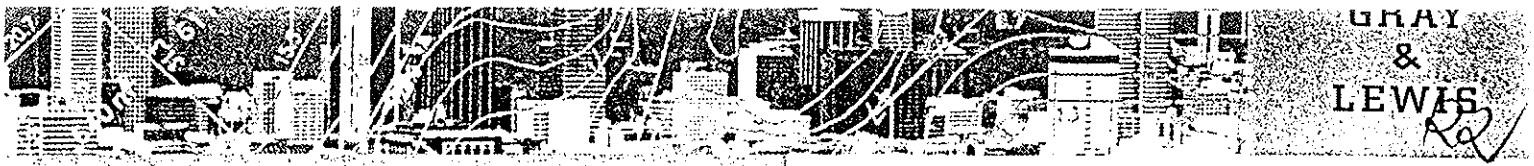
Proposed Building envelops in unmapped bushed area, mapping accurate, see site 1

408
40943
40868
78

40868
30

25

40



GRAY & LEWIS

LAND USE PLANNERS, URBAN DESIGNERS & PROJECT MANAGERS

2 Hardy Street
South Perth WA 6151
Australia
Tel (618) 9474 1722
Fax (618) 9474 1172
graylew@iinet.com.au

BS 344

Our Ref: 9354

24 March 1999

Bushplan Coordinator
Ministry for Planning
469 - 489 Wellington Street
PERTH WA 6000

Dear Sir/Madam

RE: DRAFT - PERTH'S BUSHPLAN

In response to Perth's Bushplan we submit that this plan accurately reflect the boundaries and extent of the designations "*Conservation Category Wetlands in Bushplan Sites*" and "*Other Conservation Category Wetlands*" as denoted on the map entitled "*Regionally Significant Bushland and Associated Wetlands*" contained in the Plan.

The basis of our submission is that such designations, in relation to Bushplan Site [redacted] appear to be based - in part - on the recommended zones and reservations contained in *Draft State Planning Policy No. 6 - Jandakot Groundwater Protection Policy*. These in turn, have been based on the prevailing zone and reservations of the Metropolitan Region Scheme (MRS).

Draft State Planning Policy No. 6 included a map of the policy area designating the extent and boundaries of the new zone and reservation introduced under MRS Amendment 981/33. However, the map incorrectly showed the extent and boundaries of both the new zone and a reservation as it applied to lot 39 Taylor Road, Forrestdale, owned by a client of our firm. This error has been brought to the attention of, and been acknowledged by the Western Australian Planning Commission who are currently in the process of rectifying the error.

We also understand, from independent environmental advice we sought on behalf of the owner of lot 39 in context of Perth's Bushplan, that the authoritative document on wetland mapping and management categories in the Perth Metropolitan area is the *"Wetlands of the Swan Coastal Plain"* (*Wetland Atlas*) document published by the then WA Water Authority and the Department of Environmental Protection. Any mapping showing wetland areas in the Perth's Bushplan should accurately reflect these wetlands mapped in the *Wetland Atlas*.

We trust this advice is of assistance to you, however should you require further clarification in regards to the submission please contact me on the above telephone number.

Yours faithfully
GRAY & LEWIS

SUBMISSION NO. 234

Anthony Dowling

Anthony Dowling

(9354:mfp:sub:ad:cg)

MINISTRY FOR PLANNING
25 MAR 1999
805-2-1-32pt2
FILE

WETLANDS CONSERVATION SOCIETY (INC)

6 a to t

c/- 14 Stone Court, Kardinya, WA 6163

16 July 1995

The System Six Study Team
Department of Environmental Protection
141 St George's Terrace
Perth WA 6000

Dear Sir,

System Six Review

The Wetlands Conservation Society wishes to make a submission to the System Six Review. This submission is in two parts. Firstly some comments on the general principles and secondly some specific nominations.

(1) General Principles

The original System Six Red Book, published in 1983, included 19 general recommendations. Many of these are now irrelevant or outdated. Recommendations 1 - 6 relate to the management of State Forests. These have been overtaken by events. It is now clear that the only effective way to conserve State Forest is to place it in national parks or nature reserves. There is an urgent need to set aside a comprehensive and representative system of forest reserves and this should be part of a new general recommendation.

Recommendations 7 - 12 have also been overtaken by events. Many of the areas recommended for protection as reserves have been destroyed (eg. Casuarina M98, Buckland Hill M55, Port Kennedy M106, etc.) Many others have not been established because of CALM's reluctance to take on new reserves without additional funding. Perhaps these reserves should be vested in other authorities (eg. local government, community groups, LCDCs, etc.) if CALM are unwilling to accept them. The Port Kennedy LCDC has done an outstanding job of managing that reserve, for example, at little cost to the WA Government.

Recommendations 13 and 14 are still relevant and they should be supplemented by a recommendation about how this process will be funded. A regional improvement fund like the MRIF should be established to facilitate the acquisition of land for parks and recreation in regional areas.

Recommendations 15 - 17 need very careful attention. Although the Ministry for Planning has done quite a good job of identifying and resuming land for Regional

Parks, CALM has failed to co-operate and so far we still do not have any legally established Regional Parks. The WCS believes that the Regional Park Concept is extremely important in the System Six Area because of the multiple uses of reserves. The concept of a regional park as an area for conservation, recreation and landscape protection is now well established. We have least confidence in CALM's willingness to manage these Parks and we have proposed that MFP should continue to manage them until all of the policy and management issues have been resolved. We believe that funding should come from local authority rates, land tax and development tax. Ultimately a Regional Parks Authority may be the best body to manage them. Because they are so different to national parks and nature reserves the RPA should be quite different from the NPNCA and have its own budget. It should work closely with CALM, MFP and the local authorities.

Recommendations 18 and 19 are still relevant and have been partially implemented. However recommendation 18 does not specify which agency should fund and coordinate this task. This should be addressed in the update.

The General Recommendations should include an additional set which relate to the funding and implementation of the specific recommendations. We believe that there is a need for an implementation committee which will set priorities and review progress. A major review or progress report should be required every three years. A funding mechanism for implementation and management of the System Six conservation estate should be clearly identified in the general recommendations. The failure to do this was one of the main reasons why the original System Six exercise was so unsuccessful.

(2) Specific Recommendations

I am aware that the DEP has provided a detailed nomination form. However, we wish to nominate so many areas that it is quite impracticable for us to fill in such detailed forms. Most of the areas we wish to nominate are already documented in official Government reports, so the degree of detail requested is unnecessary. However, I would be happy to supply any additional information you require for any of the nominations we have made. Please call me on 337 7113 (h) or 360 2274 (w) or 310 1711 (fax) if you need further information.

Our specific recommendations for new areas to be included in the System Six Report are :

(a) The Spectacles Swamps near Kwinana. These are part of the Beeliar Regional Park and are fully described in the Planning Report for that Park. They are also zoned P & R in the MRS.

(b) Long Swamp on Hope Valley Road, Kwinana. This is also included in the Beeliar Regional Park. It is the last of the wetlands in the western chain of the Cockburn Wetlands. It is privately owned.

(c) Bollard Bulrush Swamp in Wellard. This is also part of the Beeliar Regional Park

(d) Tamworth Hill Swamp in Baldivis. This is part of the proposed Rockingham Lakes Regional park. It is fully documented in the ecological study of the Rockingham lakes carried out by V and C Semeniuk for the Australian Heritage Commission. It is zoned for Parks and Recreation in the MRS and it is affected by a mining claim.

(e) Anstey Swamp, Baldivis. This is also a part of the proposed Rockingham Lakes Regional Park. It is owned by the MFP and is zoned for Parks and Recreation. It is fully documented in the Semeniuk study and by the EPA in its original report on the Secret Harbour project.

(f) Paganoni Swamp, Baldivis. This wetland is an outstanding conservation area. It is owned by the MFP and is zoned for Parks and Recreation. it is fully documented in the Semeniuk study and in the Wildflower Society's nomination of this reserve to the Register of the National Estate.

(g) Lark Hill wetlands. This area lies adjacent to Port Kennedy M106 and contains some important wetlands and parallel dune formations. It is fully described by the Australian Heritage Commission in its listing of the area. The land is owned by the MFP and is zoned for Parks and Recreation. It is intended for inclusion in the Port Kennedy Scientific Park.

(h) Jandakot Botanical Park. This area is fully documented by the MFP in its Planning study for the Jandakot Botanical Park. It includes some areas such as M97, M98, M99 and M100 which are already in the System Six Red Book. However, there are several other important reserves in this area which should be included in the System Six Report. All of this land is reserved for Parks and Recreation and most of it is owned by the State.

(i) Piney Lake, Winthrop. This wetland was not included in System Six. However, it is part of the Beeliar Regional park and supports a diverse range of waterfowl and has some remnant vegetation. The City of Melville recently completed a management plan for this reserve.

(j) Blue Gum Swamp, Mt Pleasant. This wetland is an important wildlife refuge. It is well managed by the City of Melville and is being rehabilitated by a local group. It has a management plan, prepared by the City of Melville. It could be incorporated into M73 as it is very close to Booragoon Lake.

(k) Brixton Street Wetlands, Gosnells. These important wetlands should be added to M69. Their importance is well documented in the EPA assessment of the housing proposals for this area.

(l) Ken Hurst Park. Leeming. This is an important area of wetland and banksia woodland adjacent to M94. It contains declared rare flora as indicated in the Floristic Study of the Swan Coastal Plain. The Murdoch Branch of the Wildflower Society has done a detailed flora survey of the site. Contact Diana Corbyn for details.

(m) Twin Bartram Swamp, Hird Road Swamp, Solomon Road Swamp and Gibbs / Russell Swamp in Jandakot. These small wetlands are the best remaining examples of the Jandakot suite of wetlands. They are reserved in the local open space system and are well documented by V. Semeniuk in the report to Gold Estates on Wetlands East of Thomsons Lake.

(n) Creery Wetlands. These important samphire marshes should be added to C50 (Peel Inlet). Their values are fully documented in the Bamford Report which was attached to the proposal for the Harbour City Canal Estate.

(o) Vasse - Wonnerup Regional park. The whole area of the Broadwater, Deadwater and the Vasse Wonnerup estuaries should become a regional park. This concept should be proposed in the System Six update.

(p) Cockburn Wetlands - Eastern Chain M93. The boundaries of this area should be modified to coincide with the boundaries of the Beeliar Regional Park.

(q) Folly, Maramanup, Duck and Beenyup Pools, Baldivis. These small pools on the Folly Drain are important breeding and feeding areas for wildlife. The Folly Drain is an important wildlife corridor and its conservation value should be recognised in the System Six Report.

(r) West Corio Swamp, Karnup. This is an important breeding area for the straw-necked ibis. It should be protected. The EPA did an assessment of it several years ago when sand mining was proposed.

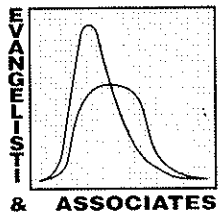
(s) Serpentine River Valley. The entire length of the Serpentine River and its flood plain should be listed in the System Six Report. It is a major wildlife corridor and a habitat for many species. It should be recommended as a regional park.

(t) Wilbinga and Guilderton. Two large blocks of coastal heathland south of the mouth of the Moore River. The Wilbinga block was proposed as a land swap for M1 which has been approved for subdivision. These blocks are adjacent to C12 and together provide an outstanding opportunity to conserve the best remaining transect of coastal vegetation in the northern part of System Six.

If you require further information about any aspect of this submission, please contact me. I would like some feedback on your decision about these areas.

Yours faithfully,

Philip Jennings
President



WATER RESOURCES MANAGEMENT PLAN

MIDDLE CANNING CATCHMENT

(STAGE 1 - VOLUME 1)

Prepared for the

Water Authority of Western Australia

By

Evangelisti & Associates
Consulting Engineers and Project Managers

in association with

Landvision
Consultants in Urban and Environmental Planning

and

The V & C Semeniuk Research Group
Environmental Scientists

October 1995

CONSERVATION BRANCH
DEPARTMENT of ENVIRONMENTAL PROTECTION

Memorandum

ATTENTION:	Sean Collingwood
FROM:	Bronwen Keighery/Gary Whisson
DATE:	25th June 2001
SUBJECT:	BS 344 – Identification of area of regionally significant vegetation in Lot 40
FILE NO:	PB 155/1

BACKGROUND

Bush Forever Site 344 encompasses a series of upland and wetland areas (see Appendix 1: Site Description). Much of the area of the Site was initially identified as part of the Jandakot Botanic Park (now the Jandakot Regional Park).

The Ministry for Planning was approached by the owner of Lot 40 Armadale Road (see Map 1) as he wished to explore options for subdivision within the context of a Bush Forever 'rural complimentary' planning solution. The total area of Lot 40 is not identified in Bush Forever as approximately one fifth is not mapped as bushland/regionally significant vegetation.

Lot 40 lies on the northern boundary of Bush Forever Site 344 along the south side of Armadale Road. The vegetation on Lot 40 has been previously surveyed (see Appendix 2: Keighery 1993 – listed in Bush Forever as Keighery 1994). This report indicated that the entire area of Lot 40 was suitable for inclusion in the Jandakot Botanic Park as most of the vegetation was in excellent condition. It was considered that the area of 'disturbed vegetation' (see Map Appendix 2), which was observed to be regenerating at the time, would regenerate especially if the weedy grass *Ehrharta calycina* (Veldt Grass) was controlled.

A field inspection of Lot 40 was made by Bronwen Keighery (DEP) and Sean Collingwod (MfP) on 25th January 2001 to determine the nature and extent of regionally significant vegetation on Lot 40. Approximately one hour was spent traversing the bushland on foot. Being January there were very few plants flowering and annually renewed plants were dormant. Therefore, vegetation condition assessments are subject to revision on a mid/late spring inspection.

RESULTS OF THE SITE INSPECTION

Based on vegetation condition two areas can be identified in Lot 40 (see Map 1, note Lot 0 is here not distinguished from Lot 40, see Map 2).

Area 1 – Disturbed Vegetation

The vegetation in this area is *Banksia attenuata, B. menziesii* and *B. ilicifolia* Low Open Woodland with scattered *Eucalyptus todtiana, Allocasuarina fraseriana* and *Nuytsia floribunda* over *Scholtzia involucrata, Stirlingia latifolia* and *Aotus procumbens* Very Open Low Shrubland over **Ehrharta calycina* Grassland. (Location 1, Map 1). Overall the vegetation is in Degraded to Completely Degraded condition with patches in good condition. The area of best quality vegetation is indicated within the area on Map 1.

This area is not mapped as native vegetation in Bush Forever and is roughly equivalent to the area mapped as 'disturbed' by Keighery (1993, see Appendix 2) and as Poor (Good condition on the scale used in Bush Forever) by Trudgen (1990, see Appendix 3). However it is apparent that the condition of the vegetation has declined since 1993. It is apparent that there has been no control of *Ehrharta calycina* and without this control the native species observed by Keighery in 1993 have not appear to have been able to regenerate naturally. However more native species may be evident in a spring inspection.

Area 2 – Mapped Regionally Significant Vegetation
Upland and wetland vegetation are found in this area.
Upland vegetation: *Banksia menziesii* and *B. attenuata* Low Open Forest over *Adenanthos cygnorum* Tall Open Scrub over *Acacia pulchella, Stirlingia latifolia* and *Scholtzia involucrata* Shrubland over *Hibbertia hypericoides, Bossiaea eriocarpa* and *Leucopogon conostephioides* Low Shrubland over *Stylidium repens* and *Patersonia occidentalis* Open Herbland and *Amphipogon turbinatus* Open Grassland (Location 4, Map 1). Overall the vegetation is in Excellent condition with some scattered weeds (**Ehrharta calycina* and *Gladiolus caryophyllaceous*).
Wetland vegetation: *Melaleuca preissiana* Low Open Forest over *Astartea* aff. *fascicularis* Tall Open Scrub over *Hypolaena exsulca* Open Sedgeland is found to wards the centre of the wetland area (Location 2, Map 1). The vegetation is in Excellent condition. On the margins of the wetland area there is an area of *Banksia attenuata, B. ilicifolia* and *Allocasuarina fraseriana* Low Woodland over *Xanthorrhoea preissii* Open Heath over *Dasypogon bromelifolius* and *Phlebocarya ciliata* Herbland to Open Herbland and *Hypolaena exsulca* Open Sedgeland (Location 3, Map 1). Scattered dense areas of *Regelia ciliata, Kunzea glabrescens* and *Adenathos cygnorum* are found in this area. This area is also generally in excellent condition but there are a few areas associated with severe localised disturbance which from the pattern of deaths (a broad range of species not related to dieback susceptibility) it appears that this could be related to groundwater fluctuations. The wetland area depicted in Map 1 is slightly larger than that mapped in Bush Forever (see Map 4). The entire area of wetland as mapped in Map 1 is considered to be conservation category wetland.

This area is native vegetation in Bush Forever and is roughly equivalent to the area mapped by Keighery (1993, see Appendix 2) in Lot 40 as *Banksia* dominated vegetation and *Melaleuca preissiana* dominated vegetation. The condition is consistent with that described by Keighery.

COMMENT/CONCLUSION

It is evident from the field inspection that the native vegetation mapping in Bush Forever is a relatively accurate depiction of the extent of the highest quality vegetation in Lot 40 (see Maps 1, 2 and 3). The mapped bushland in Lot 40 (Map 1, Area 2) is of a type and quality that confirms its identification as regionally significant vegetation. However while the area (Map 1, Area 1) mapped outside Bush Forever Site 344 within Lot 40 is in a much more disturbed condition than Area 2 its location as a tongue shape within the regionally significant area is relevant to the integrity and management of the of the area of the Bush Forever Site in Lot 40

(and adjacent Lot 10).

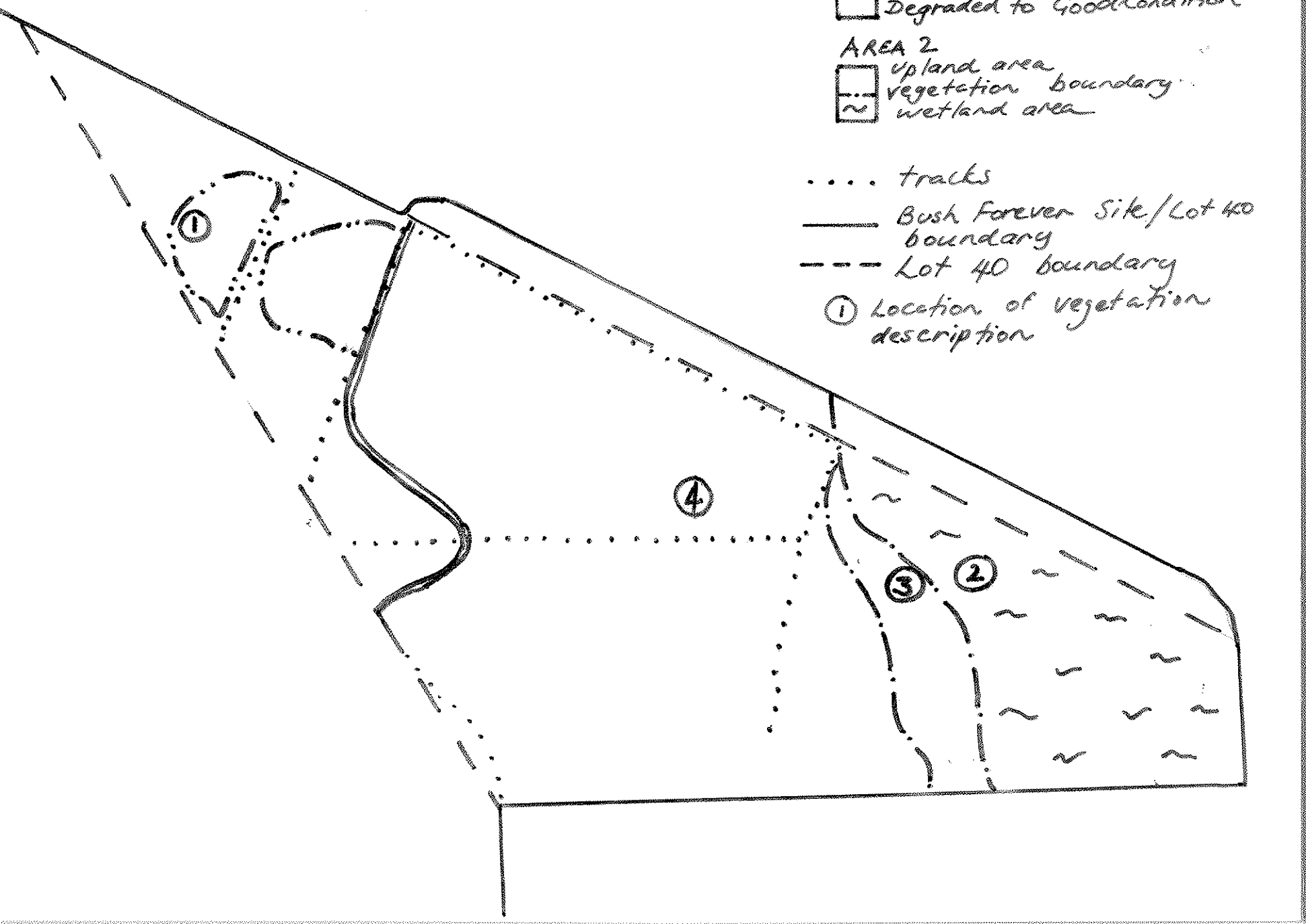
The regionally significant vegetation (Area 2) on Lot 40 should be retained and protected by a statutory conservation covenant. Given the condition of the vegetation in Area 1 development could be considered in this area providing as much of the native vegetation is retained as possible and the proposed activities do not impact on the adjacent regionally significant vegetation. Any proposed building envelopes should be located towards Armadale Road and not at the eastern end of Area 1 in the core of the regionally significant vegetation. In the case of building envelopes being developed the remainder of Area 1 should be restored to natural vegetation.

REFERENCES

(Unlisted references can be found in Bush Forever Volume 2)

Government of Western Australia 2000a. *Bush Forever. Volume 1 Policies, Principles and Processes*. Western Australian Planning Commission, Perth, Western Australia.

Government of Western Australia 2000b. *Bush Forever. Volume 2 - Directory of Bush Forever Sites*. Department of Environmental Protection, Perth, Western Australia.


Degraded to Good condition
AREA 2
upland area
vegetation boundary
wetland area
tracks
Bush Forever Site/Lot 40 boundary
Lot 40 boundary
① Location of vegetation description
①
④
③
②

Lot 40
Armadale Rd
Forrestdale
Aerial 2000

- Cadastre with Lot Numbers Blue - Overlay Imag
- Contours - 1m (DOLA)
- Bushplan Sites Draft (Boundaries)
- Bush Forever Sites - Boundaries

Map 2: Bush Forever Site 344 – 2000 Aerial Photo of the northern part of the Site along Armadale Road (DOLA 2000).

Map Ident: plot010124_2
Prepared By: Sean Collingwood
Prepared For: SPC
Date: 24 Jan 2001
Scale 1:3000
0 ▬▬▬▬ 50 m
MFP INTERNAL USE ONLY

Lot 40
Armadale Rd
Forrestdale
Veg Details

- Southern River Complex
- Cadastre
- Bushplan Sites Draft (Boundaries)
- Bush Forever Sites - Boundaries

Map 3: Bush Forever Site 344 - Native vegetation mapping in the northern part of the Site along Armadale Road (AGWEST 1998).

Map Ident: plot010124_4
Prepared By: Sean Collingwood
Prepared For: SPC
Date: 24 Jan 2001
Scale 1:3000
0 50 m
MFP INTERNAL USE ONLY

Lot 40
Armadale Rd
Forrestdale
Wetlands

- Contours - 1m (DOLA)
- Cadastre
- Conservation
- Multiple Use
- Resource Enhanced
- Bushplan Sites Draft (Boundaries)
- Bush Forever Sites - Boundaries

Map 4: Bush Forever Site 344 – Wetland mapping in the northern part of the Site along Armadale Road (WRC 2000).

Map Ident: plot010124_3
Prepared By: Sean Collingwood
Prepared For: SPC
Date: 24 Jan 2001
Scale 1:3000
0 ▬▬▬ 50 m
MFP INTERNAL USE ONLY

Appendix 2:. JANDAKOT BOTANICAL PARK REPORT 4

Vegetation, Flora and Condition of Lot 40, Jandakot
G.J.Keighery
June, 1993

VEGETATION

The main vegetation types present are labelled 1, 2, and 3 on the accompaning map.
1)Most of the lot is covered by *Banksia* woodland of varying composition depending on drainage and depth to water in winter. On the ridges there is a low woodland of *Banksia menziesii*/ *B. attenuata* over low heath (to 1 metre) of *Stirlingia latifolia*, *Eremaea pauciflora*, *Leucopogon conostephioides*, *Astroloma xerophyllum*, *Calytrix flavescens* and *Allocasuarina humilis*. The sedge layer is donminated by *Lyginia barbata*, *Phelbocarya ciliata*, *Amphipogon turbinatus* and *Hypolaena exsulca*

In the swales and edging drainage lines a low woodland of *Banksia attenuata* is dominant, with scattered *B. menziesii*, *Eucalyptus todtiana* and *B. illicifolia*. This is over a tall shrubland of *Kunzea ericifolia* and *Adenanthos cygnarum*, which is over a low open heath of *Hibbertia* subvaginata, *Scholtzia involucrata*, *Leucopogon conostephioides* and *Eriostemon spicatus*. The sedge layer is dominated by *Desypogon bromeliifolius* and *Phelbocarya ciliata*

2)This vegetation merges into *Melaleuca preissiana* low woodland over tall open shrubland of *Kunzea ericifolia* over closed shrubland of *Pericalymmma ellipticum*, *Astartea fasicularis*, *Aotus intermedia* and *Calothamnus lateralis* in the winter wet drainage lines.

3)On the south-west corner there is a deep swamp dominated by *Melaleuca rhaphiophylla* over mixed shrubland of *Melaleuca teretifolia*, *M. lateritia*, *M. viminea* and *Astartea fasicularis*

CONDITION

Condition ratings are from the attached scale.
Apart from gross disturbance along the Gas Pipeline, adjacent to Forrest Road, and along the northern access track. Both areas appear to have been partially cleared in the past, and are currently regenerating, but require Veldt Grass control. These areas are hatched red on the accompaning map, and are in good condition.
The rest of the block is in excellent condition.

SIGNIFICANT SPECIES

Early winter is not an ideal survey period, however, 192 species of plants were recorded (Table 1), suggesting the block would contain over 200 species if surveyed in detail.
Two significant records were obtained:
Gonocarpus pithyoides, a priority three species was scattered throughout the Banksia woodland.
Astroloma xerophyllum is here at its southern margin of it's range, and is the first and only record of this species from the Jandakot Study Area. Previous southern records were from the Wanneroo area. The species is common in the *Banksia* woodland.

TABLE ONE: FLORA LIST

KEY:
1= *Banksia* woodland
2= *Melaleuca preissiana* low woodland
3= *Melaleuca rhaphiophylla* low woodland

PTERIDOPHYTA (ferns)

Pteridium esculentum	2

GYMNOPHYTA

ZAMIACEAE

Macrozamia reidlei	2

ANGIOSPERMAE (flowering plants)

MONOCOTYLEDONS

ANTHERICACEAE

Arthropodium capillipes	1
Caesia micrantha	1
Chaemascilla corymbosa	1
Corynotheca micrantha	1
Sowerbaea laxiflora	1
Thysanotus patersonii	1
Thysanotus sparteus	1
Thysanotus thyrsoideus	1
Tricoryne tenella	1

CENTROLEPIDACEAE

Centrolepis aristata	1
Centrolepis drummondii	1

COLCHICACEAE

Burchardia umbellata	1

CYPERACEAE

Baumea acuta	1
Baumea juncea	3
Baumea preissii	3
Cyperus alterniflorus	3
Cyperus tenellus	3
Isolepis cernua	1
Lepidosperma angustatum	3
Schoenus curviflorus	1
Schoenus rodwayanus	2
Tetraria octandra	1

DASYPOGONACEAE

Dasypogon bromeliifolius	1
Lomandra caespitosa	1
Lomandra hermaphrodita	1
Lomandra nigricans	1
Lomandra preissii	1
Lomandra sericea	1

HAEMODORACEAE

Anigozanthos manglesii	1
Conostylis aculeata ssp. aculeata	1

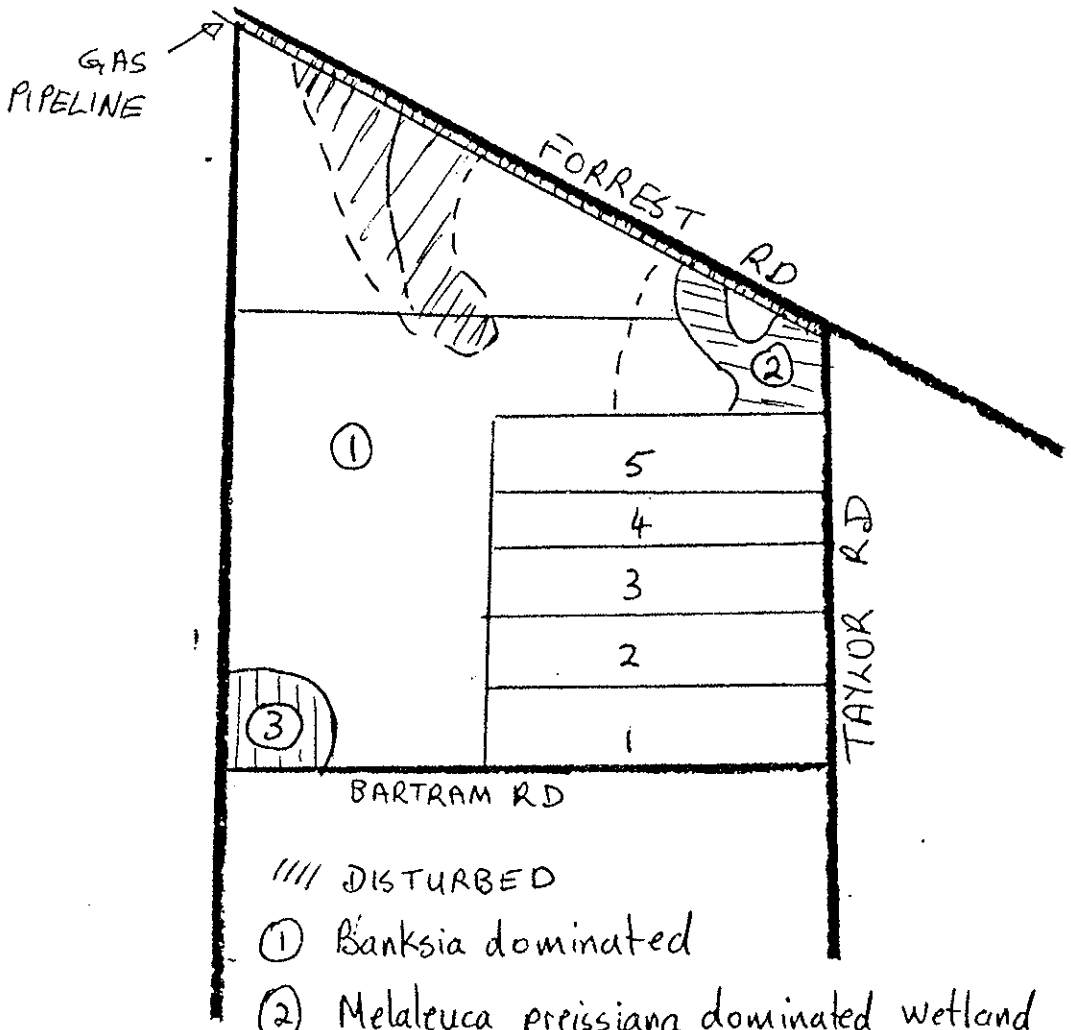
Ptilotus polystachyus	1
APIACEAE	
Actinotus glomeratus	1
Homalosciadum homalocarpum	1
Platysace compressa	1
Trachymene pilosa	1
Xanthosia huegelii	1
ASTERACEAE	
Cotula coronopifolia	3
*Dittrichia graveolens	3
*Hypochaeris glabra	1,2,3
Lagenifera hugelii	1
Millotia tenuifolia	1
Siloxerus humifusus	2,3
*Sonchus ?oleraceus	3
*Ursinia anthemoides	1
BRASSICACEAE	
*Brassica tournefortii	Disturbed
CASUARINACEAE	
Allocasuarina fraserana	1
Allocasuarina humilis	1
CRASSULACEAE	
Crassula colorata	1
Crassula natans	3
DILLENIACEAE	
Hibbertia hypericoides	1
Hibbertia racemosa	1
Hibbertia subvaginata	1
Hibbertia vaginata	2
DROSERACEAE	
Drosera erythorrhiza	1,2
Drosera glanduligera	1
Drosera macrantha	1
Drosera menziesii	2
EPACRIDACEAE	
Astroloma pallidum	1
Astroloma xerophyllum	1
Conostephium pendulum	1
Conostephium preissii	1
Leucopogon conostephioides	1
Lysinema ciliatum	1
EUPHORBIACEAE	
*Euphorbia peplus	3
GENTIANACEAE	
*Centaurium erythraea	2,3
GERANIACEAE	
*Pelargonium capitatum	Disturbed

Conostylis juncea	1
Conostylis setigera	1
Haemodorum laxum	1
Haemodorum spicatum	1
Phelbocarya ciliata	1
IRIDACEAE	
Patersonia occidentalis	1
*Romulea rosea var rosea	2,3
*Sparaxis bulbifera	3
JUNCACEAE	
Juncus bufonius	1
*Juncus capitatus	2,3
Juncus holoschoenus	3
JUNCAGINACEAE	
Triglochin procera	3
ORCHIDACEAE	
Lyperanthus nigricans	1
Diuris longifolia	2
Eriochilus dilatatus	1
Leporella fimbriata	1
Prasophyllum parviflorum	1
Pterostylis nana	1
Pterostylis vittata	1
POACEAE	
*Aira caryophyllea	1
Amphipogon turbinatus	1
Amphipogon debilis	2
*Briza maxima	1
*Cynodon dactlyon	3
Danthonia setacea	1
*Ehrharta calycina	1
*Ehrharta longiflora	3
RESTIONACEAE	
Hypolaena exsulca	1,2
Loxocarya cinerea	1
Loxocarya flexuosa	1
Lyginia barbarta	1,2
TYPHACEAE	
*Typha orientalis	3
XANTHORRHOEACEAE	
Xanthorrhoea preissii	1
DICOTYLEDONS	
AIZOACEAE	
*Carpobrotus edulis	1
AMARANTHACEAE	
Ptilotus drummondii	1

Daviesia triflora	1
Eutaxia virgata	2
Euchilopsis linearis	2
Gompholobium tomentosum	3
Hardenbergia comptoniana	2
Hovea trisperma	1
Isotropis cuneifolia	1
Jacksonia furcellata	1,2
Jacksonia ?sericea	1
Kennedia prostrata	1
*Lotus angustissimus	2,3
Nemcia capitatum	3
Pultenaea reticulata	2
Sphaerolobium ?medium	3
Templetonia biloba	3
PITTOSPORACEAE	
Pronaya fraseri	1,2
POLYGALACEAE	
Comesperma calymega	1
Comesperma confertum	2
PORTULACACEAE	
Calandrinia corrigioigloides	1
Calandrinia granulifera	1
PRIMULACEAE	
*Anagallis arvensis	2
PROTEACEAE	
Adenanthos cygnorum	1
Adenanthos obovatus	1,2
Banksia attenuata	1
Banksia illicifolia	1,2
Banksia menziesii	1
Dryandra nivea	1
Hakea prostrata	1
Hakea sulcata	2,3
Hakea varia	2
Persoonia saccata	1
Petrophile linearis	1
Stirlingia latifolia	1
RUBIACEAE	
Opercularia vaginata	3
RUTACEAE	
Boronia crenulata	3
Boronia ramosa	2
Eriostemon spicatus	2,3
SCROPHULARIACEAE	
Grattiola peruviana	3
SOLANACEAE	
*Solanum nigrum	2

GOODENIACEAE	
Dampiera linearis	1
Goodenia pulchella	2
Lechenaultia floribunda	1
Scaevola phlebopetala	1
HALORAGACEAE	
Gonocarpus pithyoides	1
LAMIACEAE	
Hemiandra pungens	1
LAURACEAE	
Cassytha pomiformis	1
Cassytha racemosa	3
LORANTHACEAE	
Nuytsia floribunda	1,2
MIMOSACEAE	
Acacia huegelii	1
Acacia pulchella var. glaberrima	1
Acacia saligna	2,3
Acacia stenoptera	1
MYRTACEAE	
Astartea fasicularis	2
Calothamnus lateralis	2
Calytrix angulata	1
Calytrix fraseri	1
Eremaea pauciflora	1
Eucalyptus todtiana	1
Hypocalymma angustifolium	2,3
Hypocalymma robustum	1
Kunzea ericifolia	1,2,3
Kunzea ?recurva	2
*Leptospermum laevigatum	Dist
Melaleuca lateritia	3
Melaleuca leptoclada	2
Melaleuca preissiana	2,3
Melaleuca rhaphiophylla	3
Melaleuca teretifolia	3
Melaleuca viminea	3
Melaleuca thymoides	1
Pericalymma elliptica	2
Regelia inops	2,3
Scholtzia involucrata	1
Verticordia ?densiflora	1
OROBANCHACEAE	
*Orobanche minor	2
PAPILIONACEAE	
Aotus intermedia	2
Aotus procumbens	1,2
Bossiaea eriocarpa	2,3
Daviesia divaricata	1

STACKHOUSIACEAE	
Stackhousia pubescens	1
Triterococcus brunonis	1
STYLIDIACEAE	
Stylidium brunonianum	1,2
Stylidium calcaratum	1
Stylidium piliferum	1
Stylidium repens	1
THYMELEACEAE	
Pimelea sulphurea	1
TREMANDRACEAE	
Platytheca galioides	1
VIOLACEAE	
Hybanthus calycinus	1



//// DISTURBED

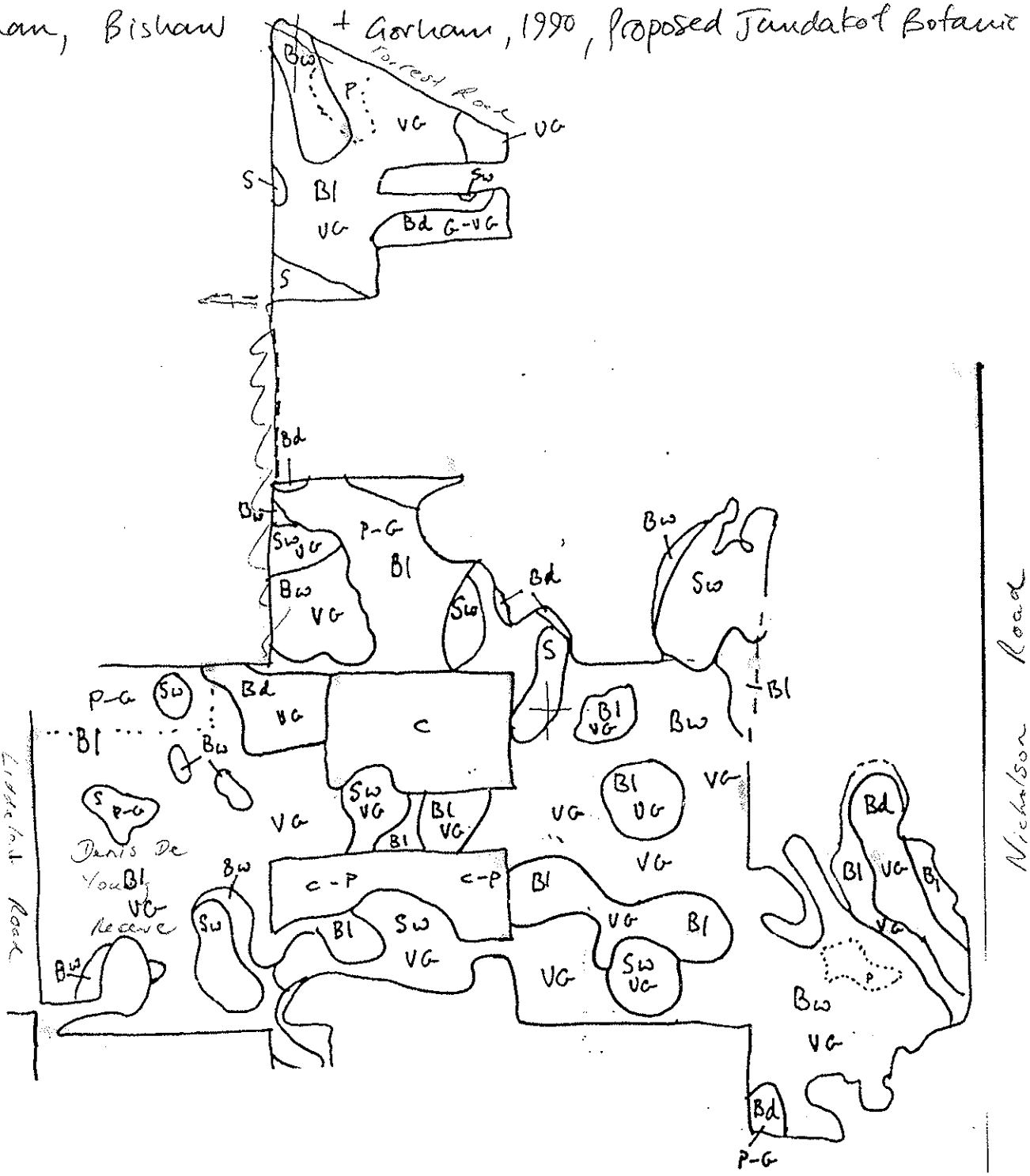
① Banksia dominated

② Melaleuca preissiana dominated wetland

③ Melaleuca rhaphiophylla dominated wetland

Appendix 3:.Vegetation mapping of Bush Forever Site 344 (Trudgen 1990 in Bowman Bishaaw and Gorham 1990)

Bowman, Bishaw + Gorham, 1990, Proposed Jandakot Botanic Park



Part Subm 13 Gibbs Rd Swamp Bushland

To: Bronwen Keighery
fax: 9322 2850

cheers
emma ☺

BUSH FOREVER VEGETATION & FLORA ASSESSMENT

NOMINATED ADDITIONAL AREA LOT 431 OXLEY ROAD, BANJUP

Sally Madden

Department for Planning and Infrastructure (DPI)

February 2002

VEGETATION AND FLORA ASSESSMENT

Vegetation on Lot 431 Oxley Rd, Banjup was investigated on 23.01.02 to determine whether it meets the scientific criteria for Regional Significance and hence should be considered for inclusion within Bush Forever. Only the Nominated Additional Area portion of the lot was surveyed (approximately 8ha). The remaining 4ha of Lot 431 is included in Bush Forever Site 344. Roughly 2.5 hrs was spent traversing the bushland on foot. Each vegetation unit was described using standard procedures documented in Bush Forever (Government of Western Australia 2000b). Appendix 2 contains the Lot Survey Sheets recorded for Lot 431. Being January there were relatively few plants flowering and annually renewed plants were dormant. Assessments are therefore subject to revision on a mid/late spring survey.

The vegetation units recorded across Lot 431, based on structure and dominant species, are shown in Figure 1. The boundaries shown are indicative only as the units intergrade. The wetland vegetation units recorded were as follows; *Melaleuca rhaphiophylla* Low Open Forest over *Astartea aff. fascicularis* Open Shrubland over *Meeboldina roycei* ms, *Lepyrodia drummondiana* Open Sedgeland in Excellent condition (see Photo 1, Appendix 3), *Melaleuca preissiana* Open Forest over *Pericalymma ellipticum* Open Heath over *Schoenus caespititius* Sedgeland in Excellent Condition (see Photo 2, Appendix 3), and *Xanthorrhoea preissii* Open Shrubland over *Hypocalymma angustifolium, Phlebocarya ciliata* Low Shrubland in Excellent condition (see Photo 3, Appendix 3). Only one upland unit was recorded; *Kunzea glabrescens, Banksia attenuata, Adenanthos cygnorum* Low Open Forest over *Dasypogon bromeliifollus* Open Low Heath in Excellent to Very Good condition (see Photo 4, Appendix 3).

The overall condition of vegetation on lot 431 is Very Good to Excellent with some disturbance along the gas pipeline (see Photo 5, Appendix 3). Very few weed species were recorded over the whole lot. The vegetation units and flora recorded are in general agreement with the findings of the previous survey of lot 431 by Gobble-Garratt and Associates (2001). Detailed descriptions of Gobble-Garratt units B3, B4a and B2b were not made in this survey as they are contained within Bush Forever Site 344, however observations in the field were consistent with their results. Unit B2a from Gobble-Garratt and Associates (2001) corresponds to the cleared area in Figure 1, and Units B2b and B2c correspond to Unit 4 in this study (KgBaAcLOF). Unit B4b corresponds to Unit 3 (XpOS), Unit B4a to Unit 2 (MpOF) and Unit B3 to Unit 1 in this study.

Floristic Community Types have not been inferred for this site, however it is likely that the inferred wetland floristic community type 4 and upland type 22 within Bush Forever Site 344 (see Appendix 1) to north also occurs on Lot 431.

A total of 55 native and 5 weed species were recorded for Lot 431 Oxley Rd during this study (see Appendix 3 for a full species list). Gobble-Garratt and Associates (2001) did not prepare an entire species list so no comparison between the survey results can be made.

REGIONAL SIGNIFICANCE CRITERIA MET

Representation of Ecological Communities:

Lot 431 Oxley Rd encompasses vegetation that is typical and representative of the Bassendean Complex - Central and South. It is of an equivalent quality to the vegetation within Bush Forever Site 344 immediately to the north, which has already been determined as being Regionally Significant. The site as a whole (Bush Forever Site 344 plus the Nominated Additional Area) can therefore be considered as regionally significant.

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands

Vegetation and Flora: detailed survey (part Site (Denis De Young Reserve) — Keighery, GJ, 1992b); limited survey (Gibson *et al.* 1994 (Dejong 01–02), part Site — Keighery, GJ, 1994)

Structural Units: mapping (Keighery, GJ, 1992b, 1994)
Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii, B. ilicifolia* and *Eucalyptus todtiana*
Wetlands: *Melaleuca preissiana* Low Woodland to Forest sometimes over *Baumea juncea* Sedgeland; *Melaleuca rhaphiophylla* Low Open Forest; *Pericalymma ellipticum, Astartea* aff. *fascicularis, Aotus intermedia* and *Calothamnus lateralis* Closed Heath; *Pericalymma ellipticum* Closed Heath; *Baumea juncea* and *B. articulata* Sedgelands

Scattered Native Plants: not assessed

Vegetation Condition: >60% Excellent to Very Good, <40% Good to Degraded, with areas of severe localised disturbance

Total Flora: 158 native taxa (part Site — Keighery, GJ, 1992b) (estimated >60% expected flora)

Significant Flora: Keighery, GJ, 1992b — *Phyllota gracilis* (3), *Verticordia lindleyi* subsp. *lindleyi* (4); *Macarthuria apetala*

Fauna: limited survey for birds (37 species) (AHC 2000 D), native mammals (2 species), reptiles (7 species) and amphibians (1 species) (Submission no.s 168g and 261). Important breeding area for at least 18 species including Freckled and Pink-eared Ducks, Black Swan, Little Pied Cormorant, Eurasian Coot and Dusky Moorhen. Significant bird species; Freckled Duck (AHC 2000 D). Important area for trans-equatorial wading birds protected under the JAMBA/ CAMBA treaty (AHC 2000 D). Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north (Site 390, across road), south and west; part of Greenways 81, 92, 97 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: majority included in Jandakot Botanic Park Proposal (MfP 1995); 'wetland of special note' (Payne 1993a); part Site Category One Area, Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Directory of Important Wetlands in Australia; Indicative place (AHC 2000 D); location for JAMBA/CAMBA species

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation

Recommendation: Part A: Site with Some Existing Protection; the care, control and management of this portion of this Site for conservation purposes within Jandakot Regional Park is endorsed. Part B: Rural Complementary Mechanism (see Table 3, Volume 1).

The Nominated Additional portion of Lot 431 Oxley Road consists of upland surrounding the Conservation Category Wetland (CCW) in the north of the lot (already included in Bush Forever) and another wetland in the south which is well vegetated. This link is continuous with only a small section cleared for a gas pipeline and the vegetation is largely in Excellent to Very Good Condition. The addition of this lot to Bush Forever Site 344 would complement the range of floristic community types and other values found there and help maintain a more complete range of ecological functions.

Protection of Wetlands: The wetland area within Lot 431 is mapped as 'Resource Enhanced', however following field verification it is considered necessary to amend the wetland mapping for the lot. The wetland dependent vegetation on the lot is of a quality consistent with that of a CCW in accordance with Bulletin 686. The amended wetland boundary is shown in Figure 1. A diversity of vegetation units was recorded in a relatively small area.

Regional Significance Criteria not met or not addressed in this study were as follows; Maintaining Ecological Processes or Natural Systems, Rarity, Diversity, and Scientific or Evolutionary Importance. Lot 431 Oxley Rd could not be considered to adequately maintain ecological functions or natural processes on its own. The wetland in the southern section of the lot, although re-classified as a CCW, is part of a large, poorly defined wetland that has mostly been cleared. No Declared Rare Flora (DRF) or Threatened Ecological Communities were recorded for Lot 431 Oxley Rd. A number of significant taxa including Declared Rare Flora are known to occur in nearby Denis de Young Reserve and may also occur on Lot 431 (Government of Western Australia 2000b). Being January there were relatively few plants flowering and annually renewed plants were dormant. Assessments are therefore subject to revision on a mid/late spring inspection. Diversity at the community level was not determined in this study (Floristic Community Types were not determined) and hence no comment on the diversity (structural, floristic or richness) of the site in relationship to other areas was made. No features of scientific or evolutionary importance were identified.

RECOMMENDATION

Lot 431 Oxley Road is worthy of consideration for inclusion within Bush Forever. It adds value to Bush Forever Site 344 to the north and enhances the ecological functioning of that area. The wetland in the southern portion of the lot is in excellent condition and this study has recommended that it be upgraded from a 'Resource Enhanced' to 'Conservation' Management Category.

REFERENCES

Gobble-Garratt and Associates, 2001, Appendix C, Botanists Site Notes, In: Land Assessment Pty Ltd, 2001, Environmental Factors and their Effect on Development Potential, Lot 431 Oxley Rd, City of Armadale, Prepared for Roberts Day Group, Subiaco, Western Australia

Government of Western Australia, 2000b, Bush Forever Volume 2 – Directory of Bush Forever Sites. Department of Environmental Protection, Perth, Western Australia

Figure 1 (map)

KEY

Vegetation Units

Unit 1 MrLOF - *Melaleuca rhaphiophylla* Low Open Forest over *Astartea aff. fascicularis* Open Shrubland over *Meeboldina roycei* ms, *Lepyrodia drummondiana* Open Sedgeland

Unit 2 MpOF - *Melaleuca preissiana* Open Forest over *Pericalymma ellipticum* Open Heath over *Schoenus caespititius* Sedgeland

Unit 3 XpOS - *Xanthorrhoea preissii* Open Shrubland over *Hypocalymma angustifolium, Phlebocarya ciliata* Low Shrubland

Unit 4 KgBaAcLOF - *Kunzea glabrescens, Banksia attenuata, Adenanthos cygnorum* Low Open Forest over *Dasypogon bromeliifolius* Open Low Heath

Unit 5 Cl - Cleared

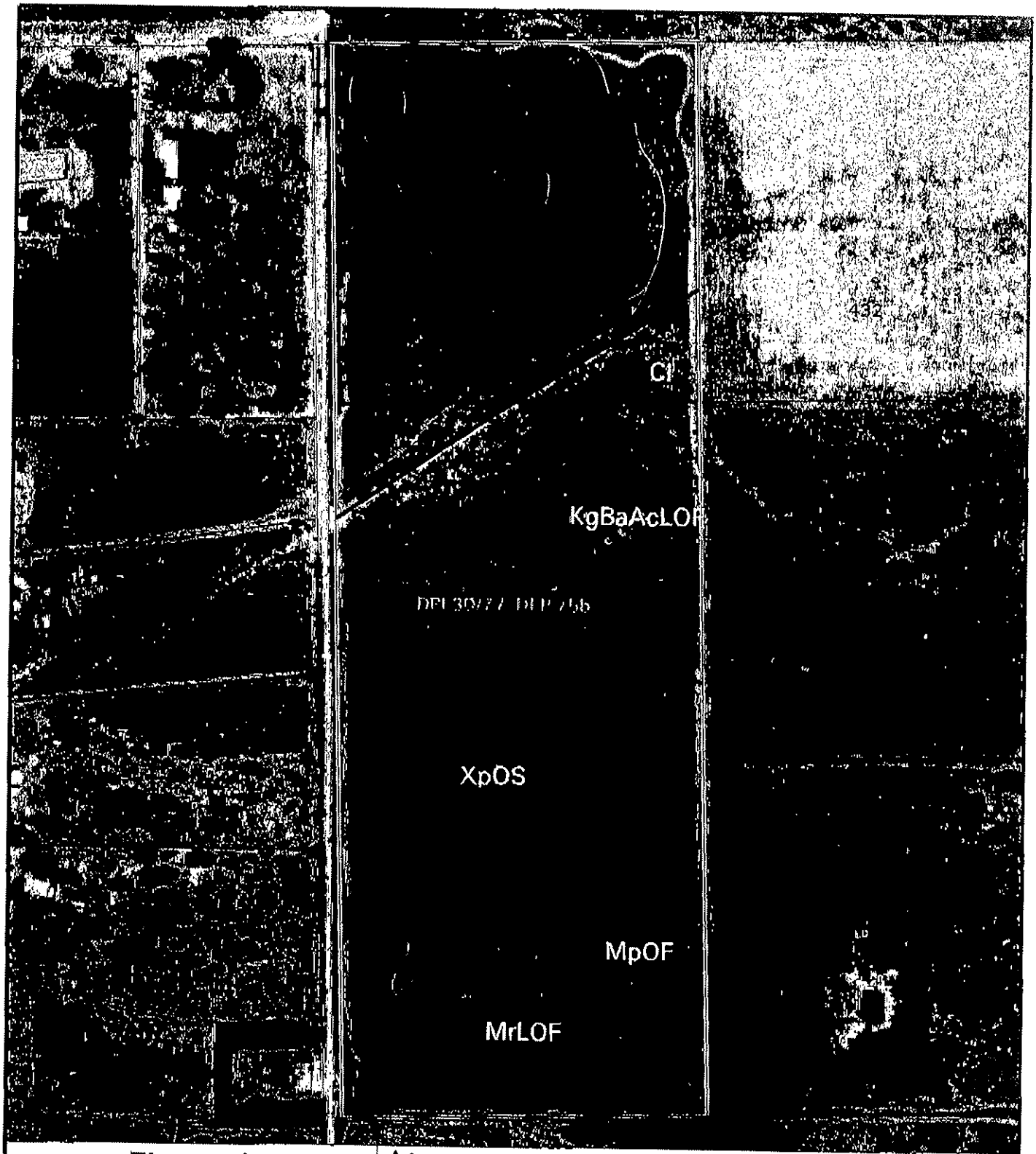


Figure 1
Vegetation Units & Revised Wetland Boundary Lot 431 Oxley Rd Banjup

DPI INTERNAL USE ONLY
Prepared By: Andrea Zappacosta
Prepared For: SALLY MADDEN
Map Ident: plot020213_1
Date: 13 Feb 2002
Scale 1:3000

- Bush Forever 2000 - Site Boundaries
- Nominated Additional Bush Forever Areas (DEP)
- Gas Pipeline
- Revised CCW Boundary
- Lot 431 Oxley Rd - Vegetation Map Units
- Lot 431 Oxley Rd - Site Description Points
- Cadastre with Lot Numbers
- EX Vegetation Rating Condition

Appendix 1 Site Description

(from Bush Forever Volume 2, Government of Western Australia, 2000b)

DENIS DE YOUNG RESERVE AND GIBBS ROAD SWAMP BUSHLAND, BANJUP/FORRESTDALE

Boundary Definition: protected area/bushland (part taken to cadastre) boundary (Areas of bushland within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 344 **Area (ha):** bushland 289.8 (Site also includes open water.)

Map no. 59, 60, 65, 66 **Map sheet series ref. no.** 2033–I SE

Other Names: Part Submission Area 13, part of Jandakot Regional Park, part of Gibbs Road Wetland System

Local Authorities (Suburb): City of Cockburn (Banjup), City of Armadale (Forrestdale)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

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 (Qrw: Sp1, Sp2)

VEGETATION AND FLORA

Bassendean Dunes

Bassendean Complex — Central and South

Combinations of Bassendean Dunes/Pinjarra Plain/Spearwood Dunes

Southern River Complex

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands

*4 *Melaleuca preissiana* damplands

*11 Wet forests and woodlands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

21c Low-lying *Banksia attenuata* woodlands or shrublands (Denis De Young Reserve)

22 *Banksia ilicifolia* woodlands (Denis De Young Reserve)

WETLANDS

Wetland Types: sumpland, dampland, artificial channel

Natural Wetland Groups

Bassendean–Pinjarra transition OR Bassendean with fluvial features

Bennett Brook (B/P.4)

Bassendean Dunes

Jandakot (B.3)

Wetland Management Objectives: Conservation (195.4ha), Resource Enhancement, Multiple Use

Swan Coastal Plain Lakes EPP: 7.7ha + 16.2ha + 0.2ha = 24.1ha (total)

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

Appendix 2

NOMINATED ADDITIONAL AREA SURVEY SHEET

NOMINATED ADDITIONAL AREA: DPI30/77, DEP75b
LOT INSPECTED: Lot 431 Oxley Rd, Banjup
DATE TRIP: 23.01.02 **RECORDERS:** Sally Madden

Purpose of Visit: Botanical Assessment of Nominated Additional Bush Forever Area to assess whether the bushland meets the scientific criteria for Regional Significance.

VEGETATION UNITS

For each vegetation unit observed describe
- *each layer in the unit according to height and cover*
- *dominant species*
- *associated significant species*
- *condition of each unit.*

Indicate location of sample/description point for each unit/s described on the map.

Unit 1
Trees and/or Mallees: *Melaleuca rhaphiophylla* Low Open Forest
Shrubs: *Astartea aff. fascicularis* Open Shrubland
Herbs:
Sedges: *Meeboldina roycei* ms, *Lepyrodia drummondiana* Open Sedgeland
Grasses:
Significant Flora
Vegetation Condition 1 2 3 4 5 6
Non-invasive weeds, evidence of rabbits

Unit 2
Trees and/or Mallees: *Melaleuca preissiana* Open Forest
Shrubs: *Pericalymma ellipticum* Open Heath
Herbs:
Sedges: *Schoenus caespititius* Sedgeland
Grasses:
Significant Flora
Vegetation Condition 1 2 3 4 5 6
Non-invasive weeds, vegetation dieback due to drought, evidence of rabbits

Unit 3
Trees and/or Mallees:
Shrubs: *Xanthorrhoea preissii* Open Shrubland over *Hypocalymma angustifolium, Phlebocarya ciliata* Low Shrubland
Herbs:
Sedges:
Grasses:
Significant Flora
Vegetation Condition 1 2 3 4 5 6
Dieback due to drought, evidence of rabbits

Unit 4
Trees and/or Mallees: *Kunzea glabrescens, Banksia attenuata, Adenanthos cygnorum* Low Open Forest
Shrubs: *Dasypogon bromeliifolius* Open Low Heath
Herbs:
Sedges:
Grasses:
Significant Flora
Vegetation Condition 1 2 → 3 4 5 6
Rabbit activity more severe

GENERAL CONDITION of LOT

Vegetation Condition - Keighery 1994 *Indicate range and % in each class*	
1 = 'Pristine'	
2 = Excellent	90% Excellent – Very Good
3 = Very Good	
4 = Good	10% Good
5 = Degraded	
6 = Completely Degraded	

Disturbance *Describe observed disturbance eg partial clearing, weeds, soil movement, changes in water regimes etc.*

The main disturbance on lot 431 Oxley Rd is due to rabbit activity and non-invasive herbaceous weeds. The wetland area is in Excellent condition although some species are suffering dieback from drought. Rabbit activity is greater in the upland area although no weeds were recorded here. The bushland on lot 431 is degraded where clearing has occurred for the gas pipeline and in the far north-eastern corner within the Bush Forever Site.

Appendix 3 Photographs

Photo 1- Unit 1 *Melaleuca rhaphiophylla* Low Open Forest over *Astartea aff. fascicularis* Open Shrubland over *Meeboldina roycei* ms, *Lepyrodia drummondiana* Open Sedgeland

Photo 2- Unit 2 *Melaleuca preisslana* Open Forest over *Pericalymma ellipticum* Open Heath over *Schoenus caespititius* Sedgeland

Photo 3- Unit 3 *Xanthorrhoea preissii* Open Shrubland over *Hypocalymma angustifolium, Phlebocarya ciliata* Low Shrubland

Photo 4 Unit 4 *Kunzea glabrescens, Banksia attenuata, Adenanthos cygnorum* Low Open Forest over *Dasypogon bromeliifolius* Open Low Heath

Photo 5- Unit 5 Cleared and degraded area along gas pipeline

Appendix 4 Species List

* indicates a weed

\# indicates collected by Gobble-Garratt and Associates 2001

Family: Aizoaceae	
	**Carpobrotus edulis*
Family: Anthericaceae	
	Arnocrinum preissii
	Thysanotus multiflorus
Family: Asteraceae	
	**Hypochaeris glabra*
	Rhodanthe citrina
	Siloxerus humifusus
Family: Casuarinaceae	
	Allocasuarina fraseriana
Family: Colchicaceae	
	Burchardia umbellata
Family: Cyperaceae	
	Lepidosperma longitudinale
	Schoenus caespititius
Family: Dasypogonaceae	
	Dasypogon bromeliifolius
Family: Dilleniaceae	
	Hibbertia stellaris
	Hibbertia sp.
Family: Droseraceae	
	Drosera leucoblasta
Family: Epacridaceae	
	Conostephium pendulum
	Leucopogon conostephioides
Family: Goodeniaceae	
	Lechenaultia floribunda
Family: Haemodoraceae	
	Phlebocarya ciliata
Family: Iridaceae	
	**Gladiolus caryophyllaceus*
	Patersonia occidentalis
Family: Lauraceae	
	Cassytha racemosa
Family: Loranthaceae	
	Nuytsia floribunda

Family: Myrtaceae	
	Astartea aff. fascicularis
	Calytrix angulata
	#Eucalyptus todtiana
	Hypocalymma angustifolium
	Kunzea glabrescens
	Melaleuca preissiana
	Melaleuca rhaphiophylla
	Melaleuca teretifolia
	Melaleuca thymoides
	Pericalymma ellipticum
	Scholtzia involucrata
Family: Papilionaceae	
	Bossiaea eriocarpa
	Euchilopsis linearis
	Gompholobium tomentosum
	Nemcia capitata
	Pultenaea ochreata
Family: Poaceae	
	Amphipogon turbinatus
	**Briza maxima*
	**Ehrharta calycina*
Family: Polygalaceae	
	Comesperma calymega
	Comesperma flavum
Family: Proteaceae	
	Adenanthos cygnorum
	Adenanthos obovatus
	#Adenanthos sericeus
	Banksia attenuata
	Banksia illicifolia
	Banksia littoralis
	Banksia menziesii
	Hakea varia
	Petrophile linearis
	Stirlingia latifolia
Family: Restionaceae	
	Hypolaena exsulca
	Lepyrodia drummondiana
	#Lyginia barbata
	Lyginia imberbis
	Meeboldina roycei ms
Family: Rutaceae	
	Boronia sp.1
	Boronia sp.2
Family: Stylidiaceae	
	Stylidium brunonianum
Family: Xanthorrhoeaceae	
	Xanthorrhoea preissii

BUSH FOREVER VEGETATION & FLORA ASSESSMENT

PART BUSH FOREVER SITE 344 - LOT 27 OXLEY ROAD, BANJUP

Sally Madden[1] and Karen Clarke[2]

[1]Department for Planning and Infrastructure (DPI) and
[2]Department of Environment, Water and Catchment Protection (DEWCP)

January 2002

SUMMARY

The regionally significant bushland on Lot 27 Oxley Rd, Banjup is shown in Figure 1. This bushland is:

- representative of wetland vegetation found in the Bassendean Vegetation Complex - Central and South
- in Very Good to Excellent condition in the core area of the central wetland system
- of a type and quality consistent with classification as Conservation Category Wetland (CCW).

The area mapped as regionally significant includes areas of poorer condition vegetation affected by past grazing, clearing and draining activities. These vegetated areas are part of the Conservation Category wetland occurring on the lot and are thus considered regionally significant. This is consistent with EPA Bulletin 686 methodology for determining management categories and delineating wetland boundaries (EPA 1993).

The Conservation Category Wetland mapping for this lot needs to be amended based on Figure 1. This corrects the mapping for the cleared upland in the north eastern part of the lot and accurately delineates the boundary of the CCW's present.

No adjustment of the Bush Forever boundary is required. Under Bush Forever, development of the lot under its current zoning (Rural-Water Protection) is compatible with conservation objectives provided the regionally significant bushland mapped in Figure 1 is retained with appropriate buffers (at least 50m for CCW's) and managed for conservation.

In addition to Bush Forever, requirements under Rural-Water Protection zoning for the retention of remnant native vegetation to maintain groundwater resources must be taken into account in any development of this lot.

BACKGROUND

Bush Forever Site 344 encompasses regionally significant bushland of two vegetation complexes, the Bassendean Complex – Central and South and the Southern River Complex. These complexes occur from west to east across the Site respectively. The Site contains vegetated uplands, vegetated wetlands and open water. The Site Description (Appendix 1) summarises the conservation values of this Bush Forever Site (Government of Western Australia 2000b).

Lot 27 Oxley Rd was included in Bush Forever Site 344 due to the presence of remnant vegetation classified as Conservation Category Wetland that formed part of a larger wetland system extending to the west and east into the Dennis De Young Nature Reserve. The vegetation on Lot 27 is mapped as Bassendean Complex - Central and South (Heddle *et al.* 1980).

METHODOLOGY

A field inspection of Lot 27 Oxley Rd, Banjup was made by Sally Madden (DPI) and Karen Clarke (DEWCP) on 14.11.01 and 4.12.01. A total of 8 hours was spent traversing the bushland by vehicle and on foot. Each vegetation unit was described using standard procedures documented in Bush Forever (Government of Western Australia, 2000b). Appendix 2 contains the Lot Survey Sheets recorded for Lot 27. Being November/December there were relatively few plants flowering and annually renewed plants were dormant (annuals that grow from seed or perennials that die back in summer to a bulb or rhizome and grow back again in autumn/winter). Therefore, vegetation condition assessments are subject to revision on a mid/late spring inspection.

The upland units were:

- **KeTOS-TS** (Figure 1) - *Kunzea glabrescens* Tall Open Shrubland to Tall Shrubland in Good to Degraded condition.
- **KeTOS with Ac & Bspp** (Figure 1) - *Kunzea glabrescens* Tall Open Shrubland with scattered *Adenanthos cygnorum, Banksia attenuata* and *Banksia menziesii* in Good to Degraded condition.
- **AcTS** (Figure 1) - *Adenanthos cygnorum* Tall Shrubland over **Ehrharta calycina* Very Open Grassland with occasional *Banksia attenuata* and *Nuytsia floribunda* in Good to Degraded condition (Photo 3 Appendix 4).

The overall condition of the vegetation present was rated as 30% Very Good to Excellent, 30% Very Good to Good and 40% Good to Degraded. The large wetland occupying the centre of the lot contains the core area of vegetation in Very Good to Excellent condition. The Good to Degraded areas are primarily the upland vegetation units and the dense regrowth of *Kunzea glabrescens* Closed Tall Scrub (**KeCTS** Figure 1) in the outer wetland areas. The lot has been drained and grazed in the past (old drains and fence lines are still present) and most of the upland vegetation and the outer areas of the wetlands have been cleared. The poorer quality vegetation is regrowth in these cleared areas.

A total of 44 native taxa and 10 weed taxa were recorded during this limited survey. Two significant taxa were recorded, *Jacksonia gracilis* ms and *Dielsia stenostachya* (Government of Western Australia 2000b). The latter was found in a number of the wetland vegetation units. Hart, Simpson and Associates (1999) recorded an additional 24 native and 5 weed taxa during an April survey.

DISCUSSION

The vegetation units and flora recorded are in general agreement with the findings of the previous survey of lot 27 by Hart, Simpson and Associates (1999). The vegetation units present have been described in more detail here but correlate well with the descriptions of Blocks 1-6 by Hart, Simpson and Associates (1999) as shown below:

Block 1 : Units **KeCTS, KeTOS-TS, KeTOS with Ac & Bspp**

Block 2: Cleared **Cl**

Block 3: Unit **AcTS**

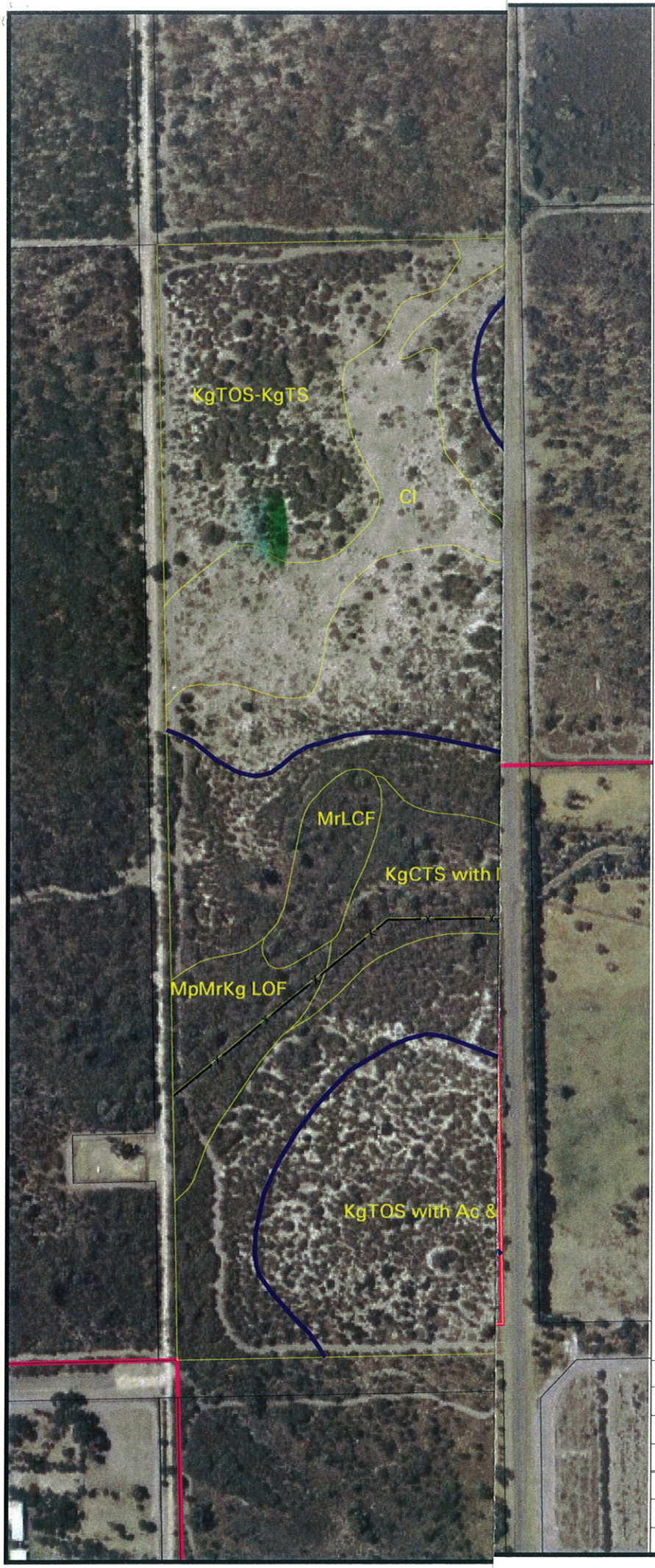
Block 4: Unit **AfCH, MpLOF, MpLOW, MpOF, MrLCF, MrLW, MpLW, MpMrKeLOF, KeCTS with Mp**

Block 5: Unit **MrOH**

Block 6: Unit **MrLOF**

Hart, Simpson and Associates (1999) recorded Blocks 5 & 6 as being in Excellent condition and Block 4 as in Excellent to Very Good condition. This is in agreement with the observations made on 14.11.01 and 4.12.01 for this study as Blocks 4,5 & 6 represent the core area of the central wetland. Blocks 1 & 3 were recorded as Degraded to Good and Block 2 (the cleared area) as Completely Degraded. Blocks 1 & 3 correlate with the upland vegetation units described in this study.

The condition of the wetland vegetation present in the core area of the large central wetland confirms its classification as a Conservation Category Wetland (CCW). However, the boundaries of this wetland need to be revised based on the mapping of the vegetation units in Figure 1. All the wetland vegetation units forming part of the central wetland must be



Lot 27 Oxley Rd
Forrestdale
Bush Forever Site 344
Vegetation Map

- Bush Forever 2000 - Site Boundaries
- Cadastre
- Lot 27 Oxley Rd (BFS 344) - Vegetation Map Units
- Conservation Category Wetland Boundary (Revised)
- Drain
- Lot 27 Oxley Rd - Site Description Points

Map Ident: plot020208_1

Prepared By: Andrea Zappacosta

Prepared For: SALLY MADDEN

Date: 08 Feb 2002

Scale 1:3000

0 50 m

DPI INTERNAL USE ONLY

Figure 1
KEY

Vegetation Units

Cl	Cleared
AfCH	*Astartea fascicularis* Closed Heath
MpOF	*Melaleuca preissiana* Open Forest
MpLOF	*Melaleuca preissiana* Low Open Forest
MpLW	*Melaleuca preissiana* Low Woodland
MpLOW	*Melaleuca preissiana* Low Open Woodland
MpMrKeLOF	*Melaleuca preissiana*, *Melaleuca rhaphiophylla* and *Kunzea glabrescens* Low Open Forest
MrLCF	*Melaleuca rhaphiophylla* Low Closed Forest
MrLOF	*Melaleuca rhaphiophylla* Low Open Forest
MrLW	*Melaleuca rhaphiophylla* Low Woodland
MrOH	*Melaleuca rhaphiophylla* Open Heath
KgCTS	*Kunzea glabrescens* Closed Tall Scrub
KgTOS-TS	*Kunzea glabrescens* Tall Open Scrub to Tall Shrubland
KgCTS with Mp	*Kunzea glabrescens* Closed Tall Scrub with scattered, emergent *Melaleuca preissiana*
KgTOS with Ac & Bspp	*Kunzea glabrescens* Tall Open Shrubland with scattered *Adenanthos cygnorum, Banksia attenuata* and *Banksia menziesii*
AcTS	*Adenanthos cygnorum* Tall Shrubland

Vegetation and Flora: detailed survey (part Site (Denis De Young Reserve) — Keighery, GJ, 1992b); limited survey (Gibson *et al.* 1994 (Dejong 01–02), part Site — Keighery, GJ, 1994)

Structural Units: mapping (Keighery, GJ, 1992b, 1994)
Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana*
Wetlands: *Melaleuca preissiana* Low Woodland to Forest sometimes over *Baumea juncea* Sedgeland; *Melaleuca rhaphiophylla* Low Open Forest; *Pericalymma ellipticum*, *Astartea* aff. *fascicularis*, *Aotus intermedia* and *Calothamnus lateralis* Closed Heath; *Pericalymma ellipticum* Closed Heath; *Baumea juncea* and *B. articulata* Sedgelands

Scattered Native Plants: not assessed

Vegetation Condition: >60% Excellent to Very Good, <40% Good to Degraded, with areas of severe localised disturbance

Total Flora: 158 native taxa (part Site — Keighery, GJ, 1992b) (estimated >60% expected flora)

Significant Flora: Keighery, GJ, 1992b — *Phyllota gracilis* (3), *Verticordia lindleyi* subsp. *lindleyi* (4); *Macarthuria apetala*

Fauna: limited survey for birds (37 species) (AHC 2000 D), native mammals (2 species), reptiles (7 species) and amphibians (1 species) (Submission no.s 168g and 261). Important breeding area for at least 18 species including Freckled and Pink-eared Ducks, Black Swan, Little Pied Cormorant, Eurasian Coot and Dusky Moorhen. Significant bird species; Freckled Duck (AHC 2000 D). Important area for trans-equatorial wading birds protected under the JAMBA/ CAMBA treaty (AHC 2000 D). Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north (Site 390, across road), south and west; part of Greenways 81, 92, 97 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: majority included in Jandakot Botanic Park Proposal (MfP 1995); 'wetland of special note' (Payne 1993a); part Site Category One Area, Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Directory of Important Wetlands in Australia; Indicative place (AHC 2000 D); location for JAMBA/CAMBA species

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation

Recommendation: Part A: Site with Some Existing Protection; the care, control and management of this portion of this Site for conservation purposes within Jandakot Regional Park is endorsed. Part B: Rural Complementary Mechanism (see Table 3, Volume 1).

BUSH FOREVER SITE
LOT SURVEY SHEET 2 –VEGETATION UNITS

For each vegetation unit observed describe
- *each layer in the unit according to height and cover*
- *dominant species*
- *associated significant species*
- *condition of each unit.*

Indicate location of sample/description point for each unit/s described on the map.

Unit 1
Trees and/or Mallees: occasional emergent *Melaleuca preissiana*
Shrubs: *Astartea fascicularis* Closed Heath, patches of *Kunzea glabrescens* Tall Open Scrub
Herbs:
Sedges: *Lepidosperma longitudinale* Sedgeland
Grasses:
Others: Vines *Cassytha racemosa* 30-70% cover
Significant Flora
Dielsia stenostachya
Vegetation Condition 1 2 → 3 4 5 6
Non-invasive weeds
Comments: Evidence of Bandicoots

Unit 2
Trees and/or Mallees: *Melaleuca preissiana* Low Open Forest
Shrubs: *Astartea fascicularis* Low Open Shrubland with patches of *Melaleuca lateritia*
Herbs: *Lotus sp.* Herbland
Sedges: *Lepidosperma longitudinale* Sedgeland
Grasses:
Significant Flora
Dielsia stenostachya
Vegetation Condition 1 2 ← 3 4 5 6
Non-invasive weeds

Unit 6
Trees and/or Mallees: *Melaleuca preissiana* Open Forest
Shrubs: *Kunzea glabrescens* Shrubland
Herbs:
Sedges: *Lepidosperma longitudinale* Open Sedgeland
Grasses:
Significant Flora
Vegetation Condition 1 2 ← 3 4 5 6

GENERAL CONDITION of LOT

Vegetation Condition - Keighery 1994 *Indicate range and % in each class*	
1 = 'Pristine'	
2 = Excellent	30% Very Good-Excellent
3 = Very Good	30% Very Good-Good
4 = Good	40% Degraded
5 = Degraded	
6 = Completely Degraded	

Disturbance *Describe observed disturbance eg partial clearing, weeds, soil movement, changes in water regimes etc.*

The site has been drained and grazed in the past (drains and old fence lines are still present). The core area of the wetland is still relatively intact and in Very Good to Excellent condition. Most of the upland vegetation and margins of the wetlands have been cleared in the past. Extensive regrowth of Kunzea glabrescens has occurred, especially in the wetter areas. Some regeneration of upland species has occurred along the southern boundary. Rabbit activity is evident in most areas. Weed invasion is primarily limited to non-invasive herbaceous species in the core area of wetland vegetation.

Appendix 3 Photographs

Photo 1- Site 1 *Astartea fascicularis* Closed Heath, patchy *Kunzea glabrescens* Tall Open Scrub, *Cassytha racemosa* 30-70%, over *Lepidosperma longitudinale* Sedgeland with occasional emergent *Melaleuca preissiana.*

Photo 2-. Site 3 *Melaleuca rhaphiophylla* Low Open Forest

Photo 3-. *Adenanthos cygnorum* Tall Shrubland over *Ehrharta calycina* Very Open Grassland

Photo 4-. Large remnant *Eucalyptus todtiana*

Photo 5- *Kunzea glabrescens* Closed Tall Shrubland

Photo 6- *Melaleuca preissiana*, *Melaleuca rhaphiophylla* and *Kunzea glabrescens* Low Open Forest over *Dasypogon bromeliifolius* Open Herbland.

Photo 7- Melaleuca rhaphiophylla Low Closed Forest over *Lepidosperma longitudinale* Sedgeland.

Photo 8- Site 6 *Melaleuca preissiana* Open Forest over *Kunzea glabrescens* Shrubland over *Lepidosperma longitudinale* Open Sedgeland

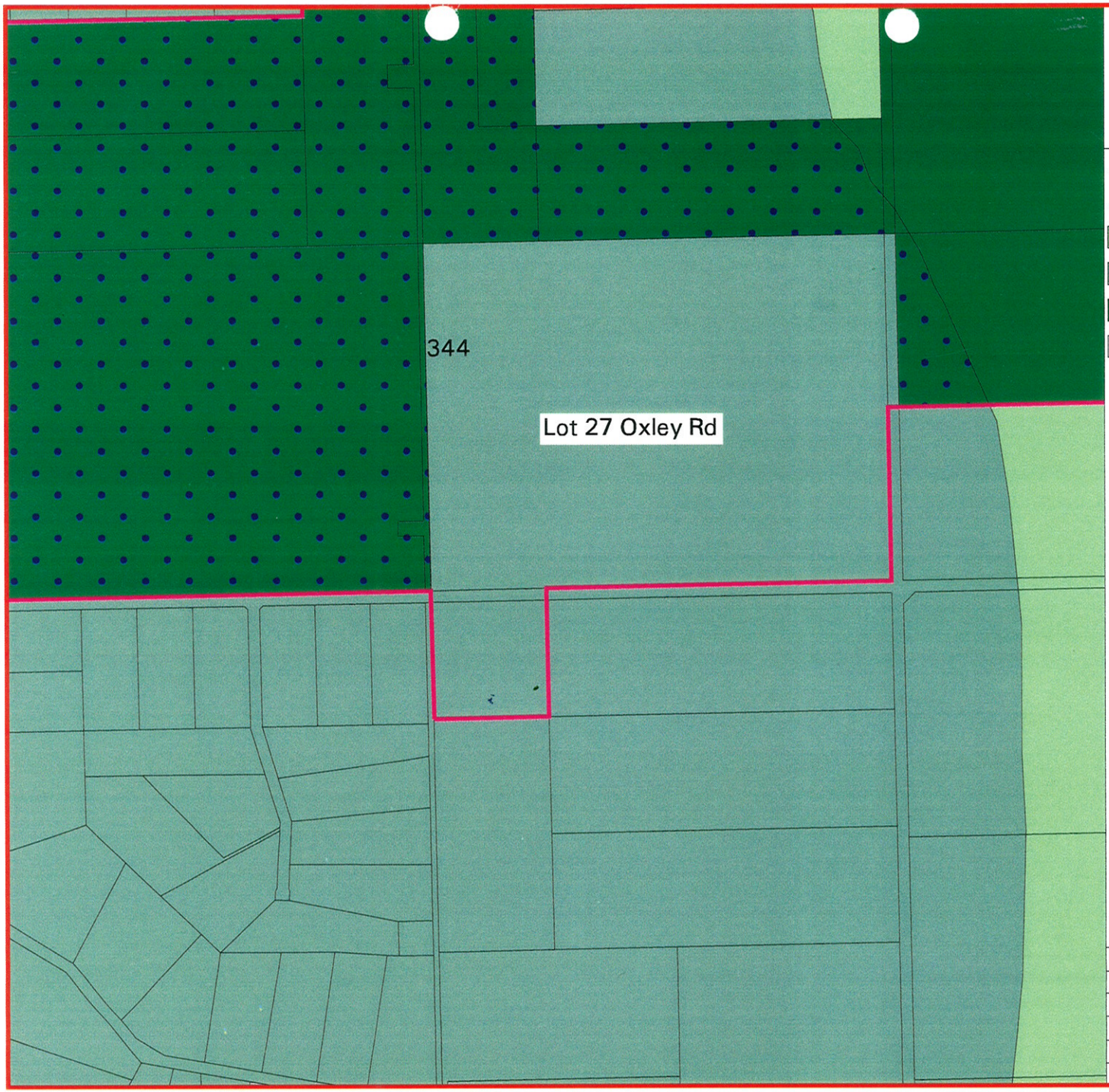
Appendix 4 Species List

* indicates a weed

\# indicates collected by Hart, Simpson and Associates 1999

Family: Aizoaceae	
	**Carpobrotus edulis*
Family: Anthericaceae	
	Thysanotus multiflorus
Family: Araceae	
	**Zantedeschia aethiopica*
Family: Asteraceae	
	**Conyza albida*
	*#*Dittrichia graveolens*
	**Hypochaeris glabra*
	Ixiolaena viscosa
	Olearia axillaris
	Podotheca gnaphalioides
Family: Casuarinaceae	
	Allocasuarina fraseriana
Family: Clusiaceae	
	**Hypericum perforatum*
Family: Crassulaceae	
	Crassula colorata
Family: Cucurbitaceae	
	*#*Citrullus lanatus*
Family: Cyperaceae	
	#Schoenus efoliatus
	Lepidosperma longitudinale
Family: Dasypogonaceae	
	Dasypogon bromeliifolius
	#Lomandra sp.
Family: Dennstaedtiaceae	
	#Pteridium esculentum
Family: Dilleniaceae	
	#Hibbertia huegelii
	#Hibbertia subvaginata
	Hibbertia vaginata
Family: Droseraceae	
	Drosera paleacea
Family: Epacridaceae	
	#Conostephium pendulum
	Leucopogon australis
	#Leucopogon conostephioides

Family: Phytolaccaceae	
	#Phytolacca octandra
Family: Poaceae	
	#Austrostipa sp.
	**Briza maxima*
	**Briza minor*
	*#*Cynodon dactylon*
	Deyeuxia quadriseta
	**Ehrharta calycina*
	*#*Paspalum dilatatum*
	*#*Pennisetum clandestinum*
Family: Proteaceae	
	Adenanthos cygnorum
	Banksia attenuata
	#Banksia ilicifolia
	#Banksia littoralis
	Banksia menziesii
	#Dryandra lindleyana
	#Hakea varia
Family: Restionaceae	
	Dielsia stenostachya
	#Hypolaena exsulca
	#Lyginia imberbis
	Meeboldina roycei
	Meeboldina scariosa
	#Meeboldina thysanantha
Family: Solanaceae.	
	**Solanum sp.*
Family: Stylidiaceae	
	Stylidium brunonianum
	Stylidium junceum
Family: Xanthorrhoeaceae	
	Xanthorrhoea preissii
Family: Zamiaceae	
	#Macrozamia riedlei



Lot 27 Oxley Rd
FORRESTDALE
Bush Forever Site 344
MRS Zonings

- Cadastre
- Bush Forever 2000 - Site Boundaries
- RURAL
- RURAL - WATER PROTECTION
- PARKS & RECREATION
- WATER CATCHMENT

DPI INTERNAL USE ONLY

Prepared By: Kate Williams

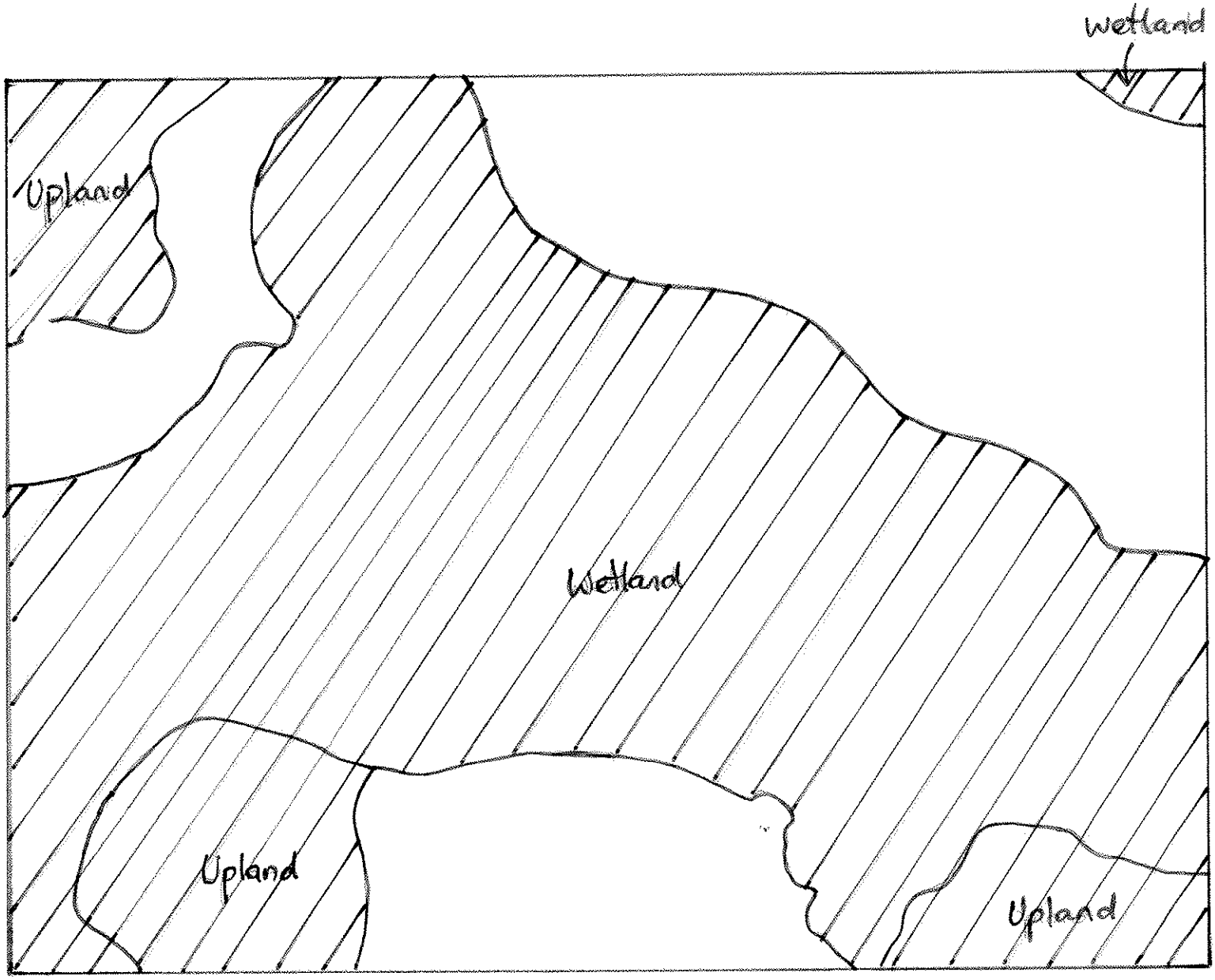
Prepared For: Site Visit 14.11.01

Map Ident: plot011112_1

Date: 12 Nov 2001

Scale 1: 10000

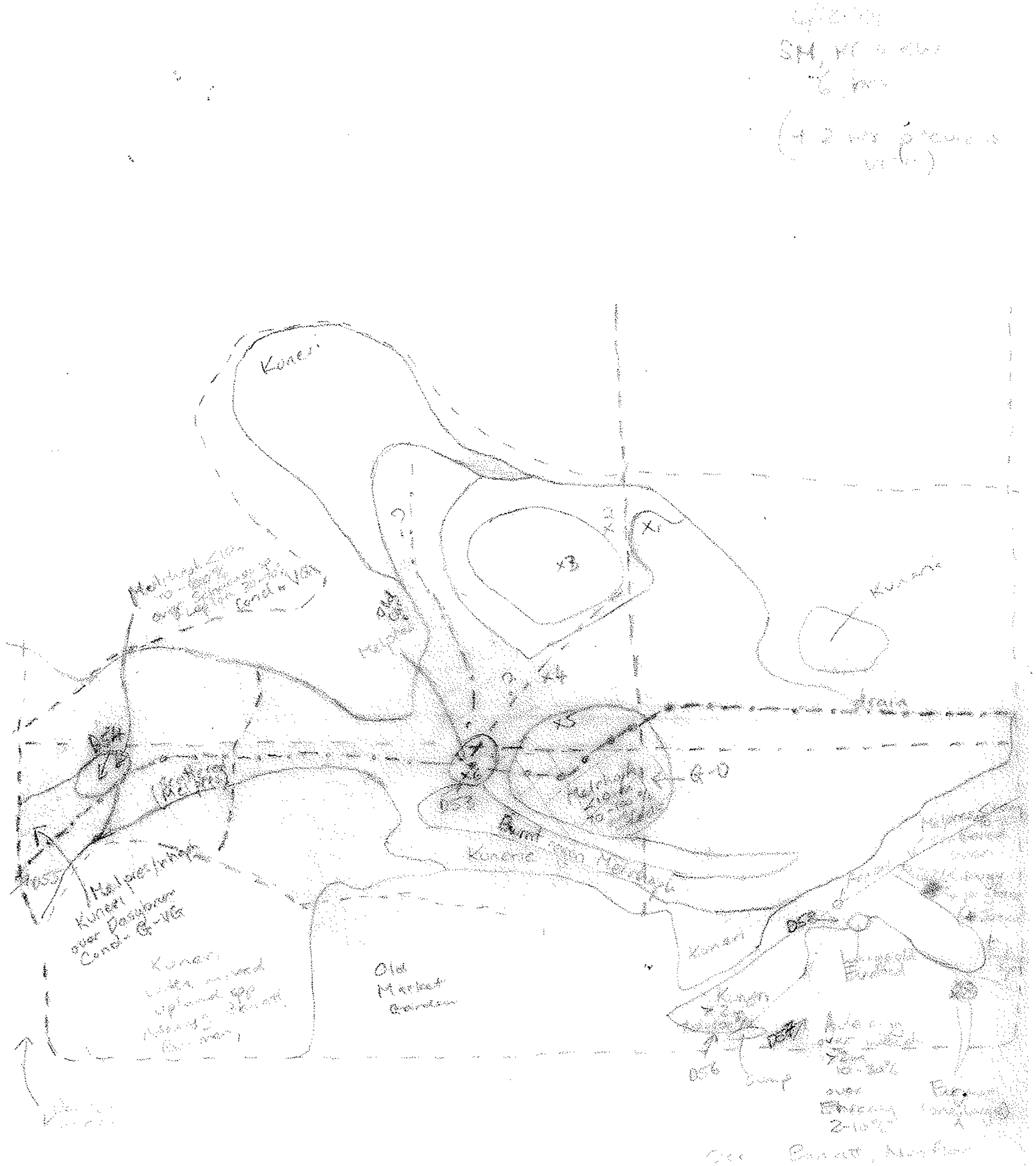
BFS344 Lot 27 Oxley Rd - Environmental Constraints Map



Remnant Vegetation - environmentally constraint

N

Scale 1:4000


SM
Kunai
x3
x1
Kunai
Rain
Old Market Garden
Kunai
Kunai over Malaghal
Cond = G-VG
Kunai over Paspalum
DS8
DS6
Swamp
Kunai
Ricenet Garden
Bamboo
2-10%

BFS 344
Lot 27 Oxley Rd and Nominated Addn Area

Cadastre with Lot Numbers

Contours - 5m (DOLA)

Bush Forever 2000 - Site Boundaries

Nominated Additional Bush Forever Areas (DEP)

DPI INTERNAL USE ONLY

Prepared By: Sally Madden

Prepared For:

Map Ident: plot011109_1

Date: 09 Nov 2001

Scale 1:8000

Lot 27 Oxley Rd
Forrestdale
2001 Aerial
CCW Boundaries

Cadastre with Lot Numbers

Bush Forever 2000 - Site Boundaries

Wetlands Management -
Conservation Category Wetlands

424
466
429
427
430
30
426
427
425
27
303
27
414
29
531
0
0
432
1
2
3
4
431
431
433
449

Map Ident: plot011203_1
Prepared By: Kate Williams
Prepared For: Site Visit
Date: 03 Dec 2001
Scale 1:4000
0 125 m

DPI INTERNAL USE ONLY

PROPOSED JANDAKOT BOTANICAL PARK

AN ASSESSMENT OF THE CONSERVATION VALUES OF VEGETATION FLORA AND WETLANDS BETWEEN JANDAKOT AND WELLARD

February 1990

BOWMAN BISHAW GORHAM
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TABLE OF CONTENTS

smaller more colourful flowers. Grows in winter wet depressions.

Diuris purdei. Found in densely vegetated winter wet depressions on the Coastal Plain. Flowers from September to October after fires.

Drakea elastica (syn. Drakea jeanensis). Found in sandy soils near swamps, often in Banksia woodland on the Coastal Plain from Perth south to Capel but also recorded from the Murchison River. Flowers from September to October.

Drakea micrantha (M.S.). An undescribed species. Grows in open sandy patches on the sandy rises near swamps in Allocasuarina woodland. In the study area it is at the northern limit of its range. Flowers from September to October.

Drosera occidentalis. Found in damp soils on the margins of swamps and in winter wet depressions (in peaty sand). Flowering occurs from November to December. Lowrie (1989) considers it to be "rather common and easy to locate, given knowledge of it's growth cycle and habitat."

3.4.2 Priority Three Species Currently Known for the Study Area

Restio stenostachyus. Found in winter wet depressions and along watercourses. Although Marchant et al (1987) suggest this species could be endemic to the Perth region it is also known from the northern forest region.

Cartonema philydroides. A poorly known and poorly collected species occurring on the Coastal Plain from Guildford south to Capel with an occurrence at Kalbari (probably a separate species). This species may more common than was previously thought (G. J. Kieghery pers. comm.).

Thysanotus arbuscula. One of the fringe lilies, found in Banksia low forest, Jarrah-Marri forest and sandplain low scrub. Grows from 160 km north of Perth to c. 260 km south-east of Perth. Flowers from September to January.

Phlebocarya filifolia. Found in Banksia woodland on sandy soils from south Eneabba to south of Busselton (G. J. Kieghry pers. comm.). A poorly collected speci now recognised to be more common than previously thought (Jandakot w previously thought to be the most southerly location for this species).

Jacksonia sericea. Apparently endemic to the Perth Region, found on calcareous ar sandy soils of the Coastal Plain from Perth to Pinjarra. Flowers from December February.

Gonocarpos pithyoides. Found in sandy soils on the Coastal Plain, extendir nor to Gingin in Banksia woodland. It appears to be poorly collected rather tha uncommon.

3.4.3 Priority Two Species Currently Known for the Study Area

Lysinema elegans. This species has been collected from the Jandakot area in the pa but has not been recollected there despite some searches. A population was recent found in the Moore River National Park (Griffin and B. Kieghery 1989) and may the only extant population.

3.4.4 Priority Five Species Currently Known for the Study Area

Dodonaea hacketiana. This taxon is endemic to the Perth region (Marchant et 1987), growing from Perth to south of Jandakot.

3.4.5 Other Significant Flora

Evandra pauciflora. This species occurs sporadically (in suitable wetland habit from the Perth area south to Albany. Probably should be on the reserve li uncommon but probably not rare.

Department of Agriculture, Western Australia.

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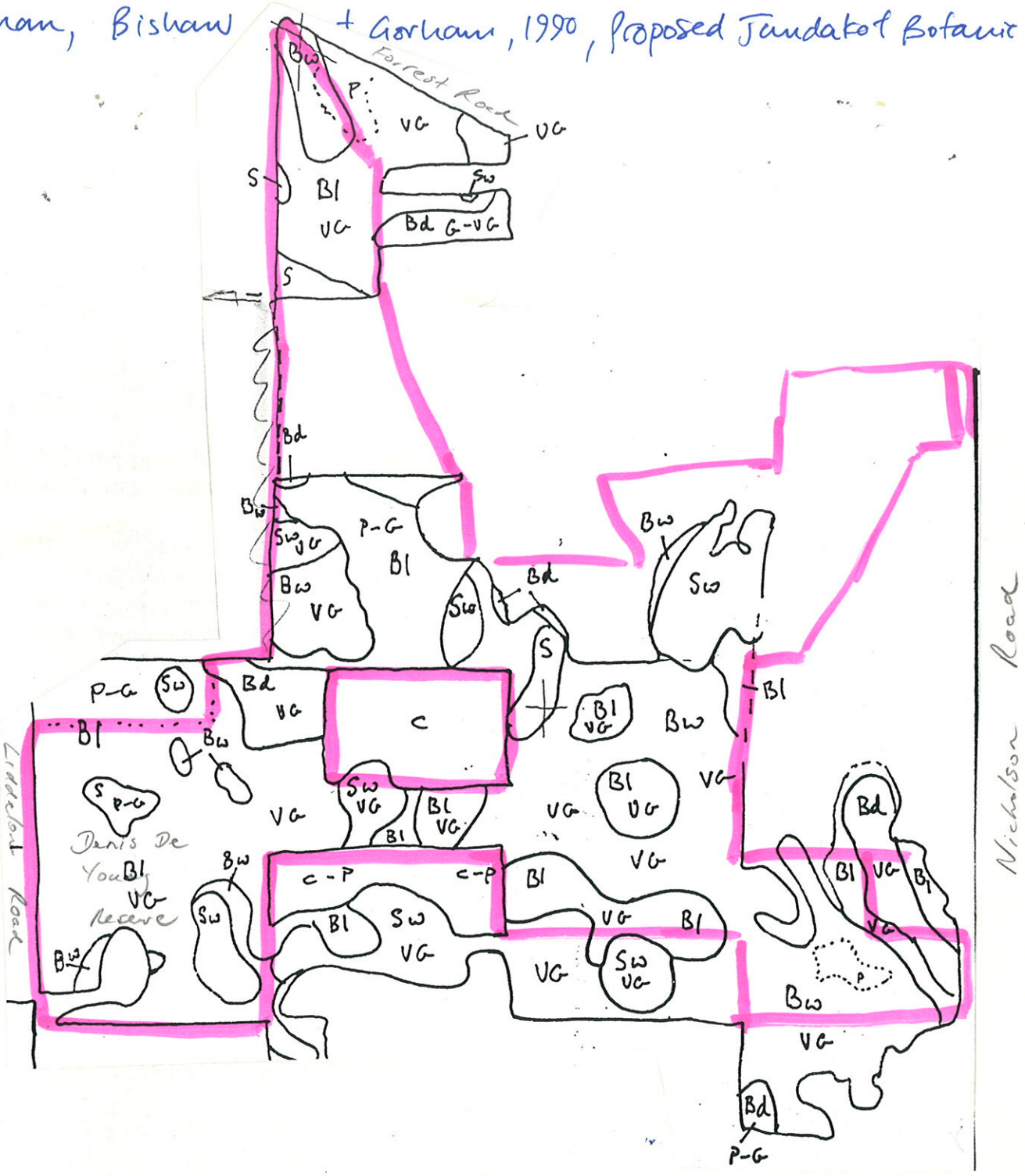


Part Subm 13 Gibbs Rd Swamp Bushland

MAP ONE: Significant Remnants of Native Vegetation

Sheet one : Northern Section of Study Area

KEY TO VEGETATION UNITS

Bassendean Complex-Central and Southern

Bd: Low woodland to low open forest of Banksia attenuata-Banksia menziesii with occassional Banksia ilicifolia, Allocasuarina fraseriana, Eucalyptus marginata and Nuytsia floribunda.

Bl: Low open forest of Banksia menziesii-Banksia ilicifolia-Eucalyptus marginata with occassional Banksia attenuata.

Bw: Low open woodland to closed heath dominated by species of Myrtaceae. The tree species are predominantly Melaleuca preissiana or Banksia ilicifolia. The understorey include Hypocalymma angustifolium, Pericalymma ellipticum and Astartea fascicularis.

Sw: Woodland of Melaleuca preissiana-Melaleuca rhaphiophylla with occassional Eucalyptus rudis and Banksia ilicifolia. With sedgelands of Baumea and Leptocarpus species and closed heaths dominated by Myrtaceae species.

L: Woodlands of Melaleuca rhaphiophylla-Eucalyptus rudis with the occassional Melaleuca preissiana and Banksia littoralis. The woodlands are interspersed with sedgelands of Baumea, Leptocarpus and Typha and areas of open water.

Karrakatta Complex-Central and South

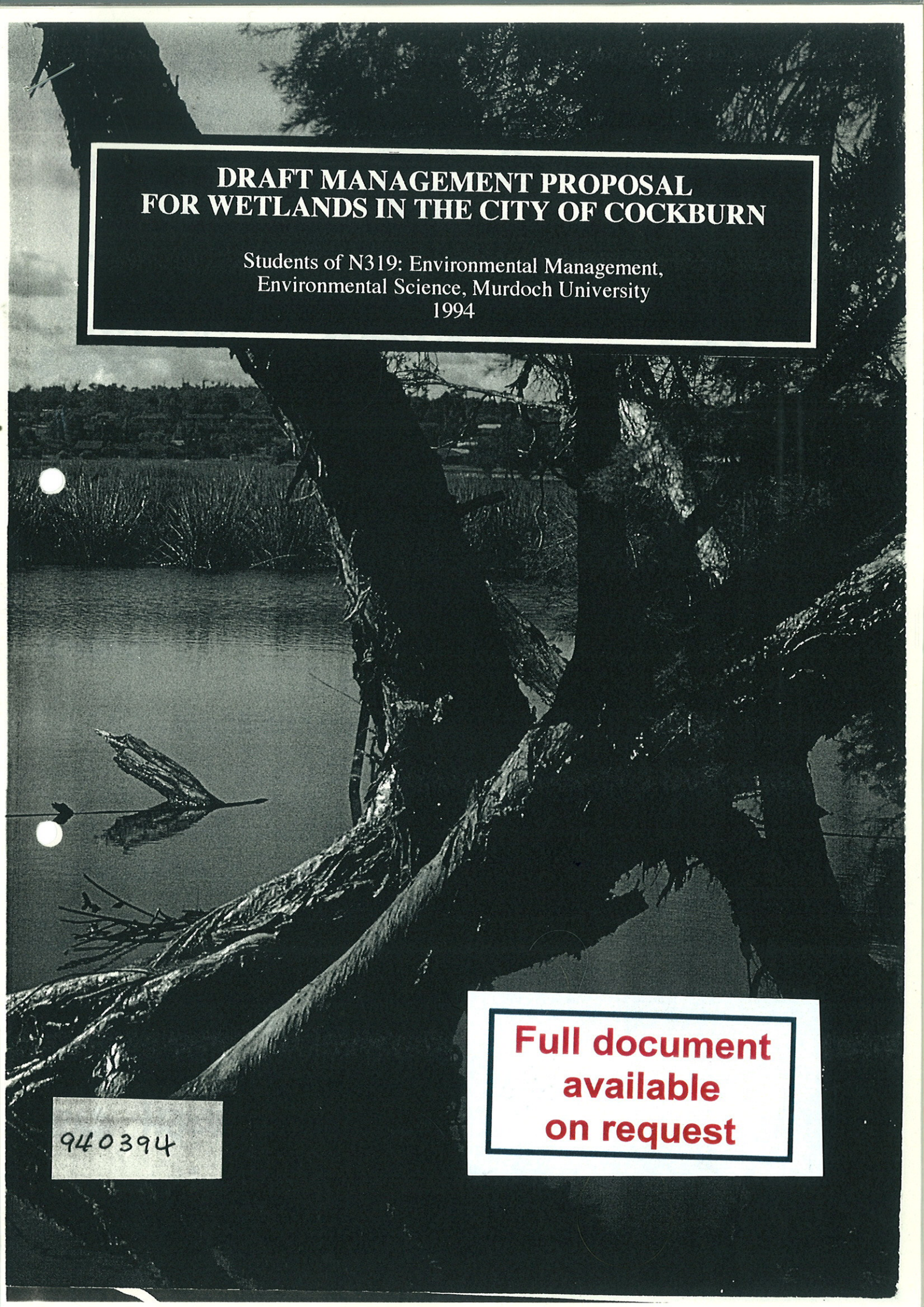
K: Woodlands of Eucalyptus gomphocephala-Eucalyptus calophylla-Eucalyptus marginata with admixtures of Banksia attenuata-Banksia menziesii and Allocasuarina fraseriana.

KEY TO CONDITION RATING

E = Excellent
VG = Very Good
G = Good
P = Poor.
VP = Very Poor
C = Cleared
(See text for definitions)

SCALE: Approx. 1: 20,000

SOIL: Sp = Spearwood Sand; Gu = Guildford Formation
(All other areas Bassendean Sands)



DRAFT MANAGEMENT PROPOSAL FOR WETLANDS IN THE CITY OF COCKBURN

Students of N319: Environmental Management,
Environmental Science, Murdoch University

1994

JANDAKOT BOTANICAL PARK REPORT 4

Vegetation, Flora and Condition of Lot 40, Jandakot

G.J.Keighery
June, 1993

VEGETATION

The main vegetation types present are labelled 1, 2, and 3 on the accompaning map.
1)Most of the lot is covered by *Banksia* woodland of varying composition depending on drainage and depth to water in winter. On the ridges there is a low woodland of *Banksia menziesii*/*B. attenuata* over low heath (to 1 metre) of *Stirlingia latifolia*, *Eremaea pauciflora*, *Leucopogon conostephioides*, *Astroloma xerophyllum*, *Calytrix flavescens* and *Allocasuarina humilis*. The sedge layer is donminated by *Lyginia barbata*, *Phelbocarya ciliata*, *Amphipogon turbinatus* and *Hypolaena exsulca*

In the swales and edging drainage lines a low woodland of *Banksia attenuata* is dominant, with scattered *B.menziesii*, *Eucalyptus todtiana* and *B.illicifolia*. This is over a tall shrubland of *Kunzea ericifolia* and *Adenanthos cygnorum*, which is over a low open heath of *Hibbertia* subvaginata, *Scholtzia involucrata*, *Leucopogon conostephioides* and *Eriostemon spicatus*. The sedge layer is dominated by *Dasypogon bromeliifolius* and *Phelbocarya ciliata*

2)This vegetation merges into *Melaleuca preissiana* low woodland over tall open shrubland of *Kunzea ericifolia* over closed shrubland of *Pericalymmma ellipticum*, *Astartea fasicularis*, *Aotus intermedia* and *Calothamnus lateralis* in the winter wet drainage lines.

3)On the south-west corner there is a deep swamp dominated by *Melaleuca rhaphiophylla* over mixed shrubland of *Melaleuca teretifolia*, *M. lateritia*, *M.viminea* and *Astartea fasicularis*

CONDITION

Condition ratings are from the attached scale.
Apart from gross disturbance along the Gas Pipeline, adjacent to Forrest Road, and along the northern access track. Both areas appear to have been partially cleared in the past, and are currently regenerating, but require Veldt Grass control. These areas are hatched red on the accompaning map, and are in good condition.
The rest of the block is in excellent condition.

SIGNIFICANT SPECIES

Early winter is not an ideal survey period, however, 192 species of plants were recorded (Table 1), suggesting the block would contain over 200 species if surveyed in detail.
Two significant records were obtained :
Gonocarpus pithyoides, a priority three species was scattered throughout the Banksia woodland.
Astroloma xerophyllum is here at its southern margin of it's range, and is the first and only record of this species from the Jandakot Study Area. Previous southern records were from the Wanneroo area. The species is common in the *Banksia* woodland.

BS 244
BASS STH
NTH LAKE

BS 247
SPEAR. S.
MANNING

BS 248
BASS. S.
BIBRA

BS 254
BASS. S.
STH. LK.

BS 256
BASS. S
YANGEB.

BS 261
SPEAR S
L. COOGEE

BS 262
BASS. S
PIARRA

BS 263
BASS. S
W. GIBBS

BS 269
SPEAR. S.
SPECTACLE

BS 342
BASSEND S.
ANST. KEAN

BS 344
BASS. S
DE YOUNG

BS 346
SPEAR. S.
COOGEE

BS 347
BASS. S.
WANDI

BS 353
BASS S
BANKSIA

BS 388
BASS. S.
JANDAKOT

BS 389
BASS. STH
EAST of JAND

BS 390
BASS S
FORREST

BS 39
BASS. S.
THOMPSON

BS 392
SPEAR. S
HARRY WAE

BS 435
BS 429
SPEAR S
MARKE

Proposals for the

Jandakot Botanic Park

Final

Prepared for the Western Australian Planning Commission
by the Ministry for Planning
Albert Facey House
469 Wellington Street
Perth 6000 Western Australia

Ministry for Planning

March 1995

Vegetation and Flora of the Dennis De Yong (No. 31653 and No. 33002) Reserve and the Bartram Road (No. 418, Swan Loc. 206 and 209) Complex, Jandakot.

Greg Keighery
July 1992

SUMMARY

The vegetation of this area, part of the proposed Jandakot Botanic Park, has been described and a flora list compiled. The upland vegetation is *Banksia* low open woodland typical of the Bassendean sands of the region. The wetland vegetation around the larger swamps is also typical of the Jandakot Wetland Suite. However, the clay flats north of Bartram Rd. Swamp contain a *Melaleuca* shrubland of unusual species composition that does not appear to be represented elsewhere in the region.

Several priority species were located, usually in heathland immediately south of the shrubland, one being the largest known.

Two hundred and fifty three species were recorded from the area, including a new record for the Perth Region (*Phyllota gracilis*).

VEGETATION

The vegetation of the area is largely determined by the changing topography of the site, being extensive low sand ridges separating low lying wetlands and drainage lines. The wetland areas are complex mosaics of communities that generally lack distinct boundaries, but contain species' assemblages determined by the degree and extent of winter innundation and the amount of clay in the soil.

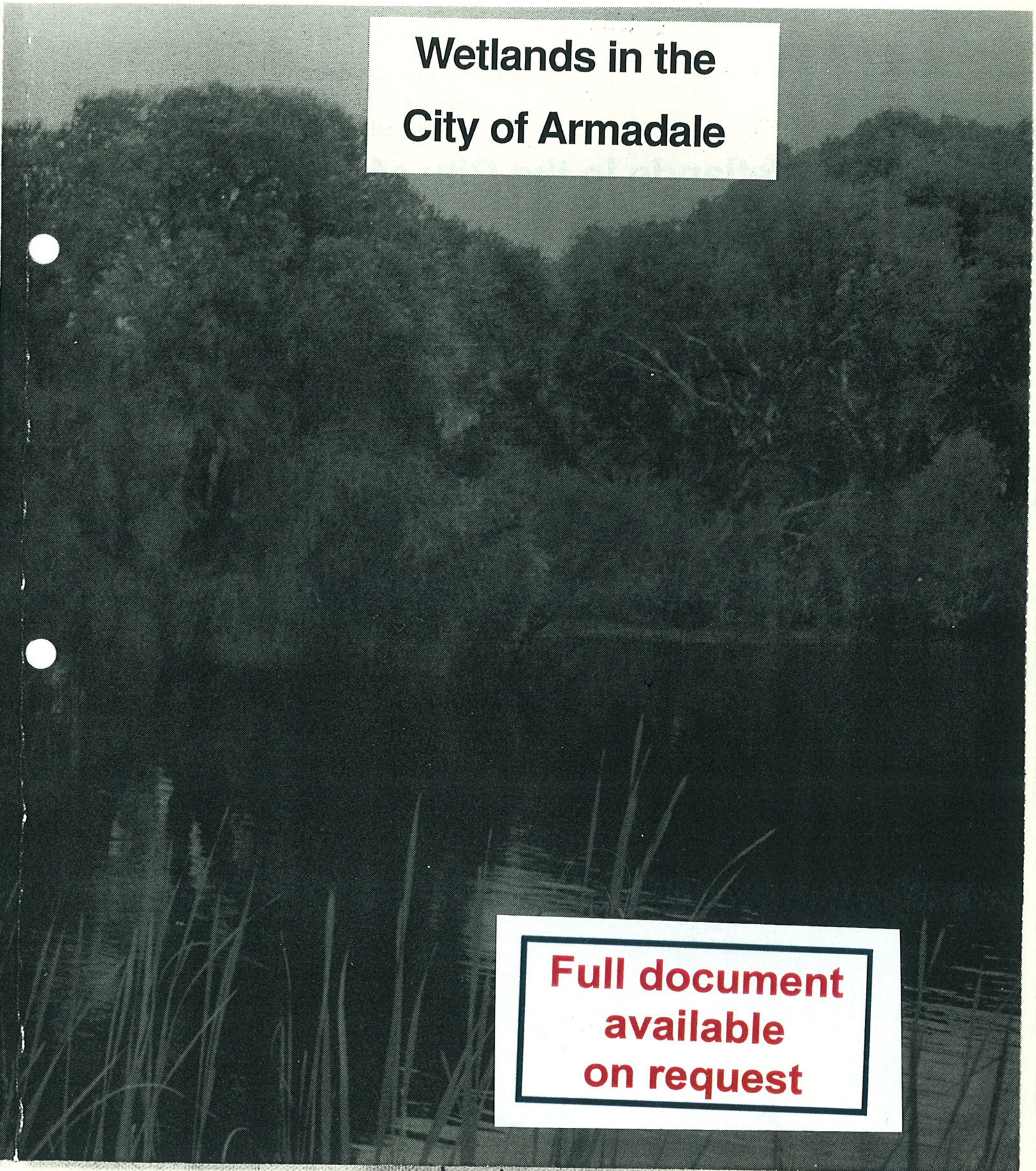
Structurally the vegetation ranges from a low heath (<0.5m) to an open woodland of *Eucalyptus rudis* to 10m.

The following vegetation community types were used as mapping units (except for *B. illicifolia*, which merges into the other *Banksia* woodland), starting from those occupying upland sites.

1. *Banksia attenuata/B. menziesii* open low woodland. Occasionally has *Allocasuarina fraseriana* present, and scattered *Eucalyptus marginata* or *E. todtiana* trees. Usually over a distinct shrub layer which is most commonly Melaleuca thymoides, Adenanthos cygnorum or Xanthorrhoea preissii. Ber... another 18-20 species of shru... being mainly Scholtzia ... tomentosum, Calytrix angulata, ... Petrophile linearis, Acacia h... and Hibbertia racemosa.

Water Authority
of Western Australia

Wetlands in the City of Armadale



Full document available on request