THOMSONS LAKE NATURE RESERVE AND ADJACENT BUSHLAND, BEELIAR

Boundary Definition: protected area boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 391 **Area (ha):** bushland 366.7 (Site also includes open water.)
Map no. 58, 59 **Map sheet series ref. no.** 2033–I SW
Other Names: part of Beeliar Regional Park, Part Submission Area 18
Local Authorities (Suburb): City of Cockburn (Success)
Includes CALM Managed Land: Reserve 15556 (Fauna Conservation and Research and Drainage)
System 6 (1983): Part M93 Part System area bushland, only bushland described

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)
Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
Wetlands (within the Spearwood/Bassendean Dune interface)
Holocene Swamp Deposits (Qhw: Cps, Ms5)

VEGETATION AND FLORA
Vegetation Complexes
Bassendean Dunes
Bassendean Complex — Central and South (at or near interface of Bassendean Complex — Central and South and Karrakatta Complex — Central and South)
Spearwood Dunes
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South
Wetlands
Herdsman Complex
Floristic Community Types: *not sampled, types inferred
Supergroup 2: Seasonal Wetlands
*11 Wet forests and woodlands
*12 *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands
Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
*28 Spearwood *Banksia attenuata* or *B. attenuata* — *Eucalyptus* woodlands

WETLANDS
Wetland Types: lake, dampland, sumpland, creek, artificial channel
Natural Wetland Groups
Bassendean Dunes
Jandakot (B.3)
Spearwood—Bassendean interface
Bibra (S/B.1)
Wetland Management Objectives: Conservation (367.4ha), Resource Enhancement, Multiple Use
Swan Coastal Plain Lakes EPP: 33.0ha + 13.9ha + 237.3ha = 284.2ha (total)

THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Crook and Evans 1981, EPA and WAWA 1990, Gibson *et al.* 1994 (Thom 01–02), Newman 1976, Weston 1993)

Structural Units: mapping (Crook and Evans 1981, EPA and WAWA 1990, Newman 1976)
Uplands: *Eucalyptus marginata* Low Open Forest; *Banksia attenuata* and *B. menziesii* Low Open Forest and Low Woodland with *Eucalyptus marginata* and *E. todtiana*; mixed Low Heath

Wetlands: *Eucalyptus rudis*, *Melaleuca preissiana* and *M. rhaphiophylla* Open Forests to Low Woodland; *Eucalyptus todtiana* and *Melaleuca preissiana* Low Open Forest to Low Woodland; *Acacia* sp. Closed to Open Tall Scrub; *Melaleuca teretifolia* Low Open Forest; *Baumea articulata* and *Typha* sp. Closed Sedgelands

Scattered Native Plants: not assessed

Vegetation Condition: >30% Excellent, >50% Very Good to Good, <20% Degraded, with areas of severe localised disturbance

Total Flora: 199 native taxa (Crook and Evans 1981) (estimated >80% expected taxa)

Significant Flora: *Dodonaea hackettiana* (4); *Lysinema elegans*

Fauna: multiple survey for birds (105 species) (RAOU 1996 D, 23 visits). Important feeding area for large assemblage and population levels of trans-equatorial wading birds protected under the JAMBA/CAMBA treaties. Significant populations of Australasian Shoveler, Hardhead, Blue-billed, Musk and Pink-eared Ducks. Significant bird species: category 1 (2), category 2 (10), category 3 (17) and category 4 (7). Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north (Site 256, across road), south (Site 392, across road), east and west; part of Greenways 76, 78, 120 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: included in Beeliar Regional Park Proposal (DPUD 1992a)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Wetlands of International Importance (Ramsar); Directory of Important Wetlands in Australia; Entered in the Interim List of the Register of the National Estate; location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

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

Recommendation: Site with Some Existing Protection; the care, control and management of this Site (Reserve 15556) for conservation purposes within Beeliar Regional Park is endorsed (see Table 3, Volume 1).

THOMSONS LAKE NATURE RESERVE AND ADJACENT BUSHLAND, BEELIAR

Boundary Definition: protected area boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 391 **Map no.** 74 **Map sheet series ref. no.** 2033–I SW

System 6 (1983): Part M93 Part System area bushland, only bushland described

Other Names
Part Submission Area 18

Local Authorities (Suburb)
City of Cockburn (Success)

Ownership Categories
State Government, Private (including commercial organisation), Local Government, Not identified

CALM Managed Land

Area (ha): total 744.0 (includes open water); bushland 366.7

Zoning
MRS: Parks and Recreation, Urban, Urban Deferred, Rural, Important Regional Roads
TPS: Local Road, R.O.W., P.A.W., Rural, Landscape

Lot/Location/Reserve numbers (Purpose), Street name
2726 Lorimer Rd; 1, 755, 764, 2253, 2726 Wedge Rd; 760 Gadd St; 751, 752, 753, 754, 4107, 4360, 4361, 4362, 4363 Senecio L; 51, 433, 677, 777 Hammond Rd; 9 Yangebup Rd; 764, 765, 766, 768, 769, 770, 771, 2252, 2253, 2254, 2256 Branch Crcs; Drain; 303, 2253, 2725, 4267 street not identified

Crown Reserve

Reserve 15556 (Fauna Conservation and Research and Drainage)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

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

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Sands derived from Tamala Limestone (Qts: S7)

Wetlands (within the Spearwood/Bassendean Dune interface)
Holocene Swamp Deposits (Qhw: Cps, Ms5)

VEGETATION AND FLORA

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Spearwood Dunes
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South

Wetlands
Herdsman Complex

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands
*11 Wet forests and woodlands
*12 *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
*28 Spearwood *Banksia attenuata* or *B. attenuata* — *Eucalyptus* woodlands

WETLANDS

Wetland Types: lake, dampland, sumpland, creek, artificial channel

Natural Wetland Groups

Bassendean Dunes
Jandakot (B.3)

Spearwood—Bassendean interface
Bibra (S/B.1)

Wetland Management Objectives: Conservation (367.4ha), Resource Enhancement, Multiple Use

Swan Coastal Plain Lakes EPP: 33.0ha + 13.9ha + 237.3ha = 284.2ha (total) .

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

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Vegetation and Flora: limited survey (Crook and Evans 1981, EPA and WAWA 1990, Gibson *et al.* 1994 (Thom 01–02), Newman 1976, Weston 1993)

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Scattered Native Plants: not assessed
Vegetation Condition: >30% Excellent, >50% Very Good to Good, <20% Degraded, with areas of severe localised disturbance
Total Flora: 199 native taxa (Crook and Evans 1981) (estimated > 80% expected taxa)
Significant Flora: *Dodonaea hackettiana* (4); *Lysinema elegans*

Fauna: surveyed by RAOU (1996 D), 23 visits, for birds (105). Important feeding area for large assemblage and population levels of trans-equatorial wading birds protected under the JAMBA/CAMBA treaties. Significant populations of Australasian Shoveler, Hardhead, Blue-billed, Musk, and Pink-eared ducks. Significant bird species: category 1 (2), category 2 (10), category 3 (17) and category 4 (7). Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north (BS256, across road), south (BS392, across road), east and west; part of proposed Greenways 91, 103, 93 (Tingay, Alan & Associates 1997a); part of a regionally significant contiguous bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: included in Beeliar Regional Park Proposal (DPUD 1992)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Wetlands of International Importance (RAMSAR); Directory of Important Wetlands in Australia; Interim List of the Register of the National Estate; Location for JAMBA/CAMBA species

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

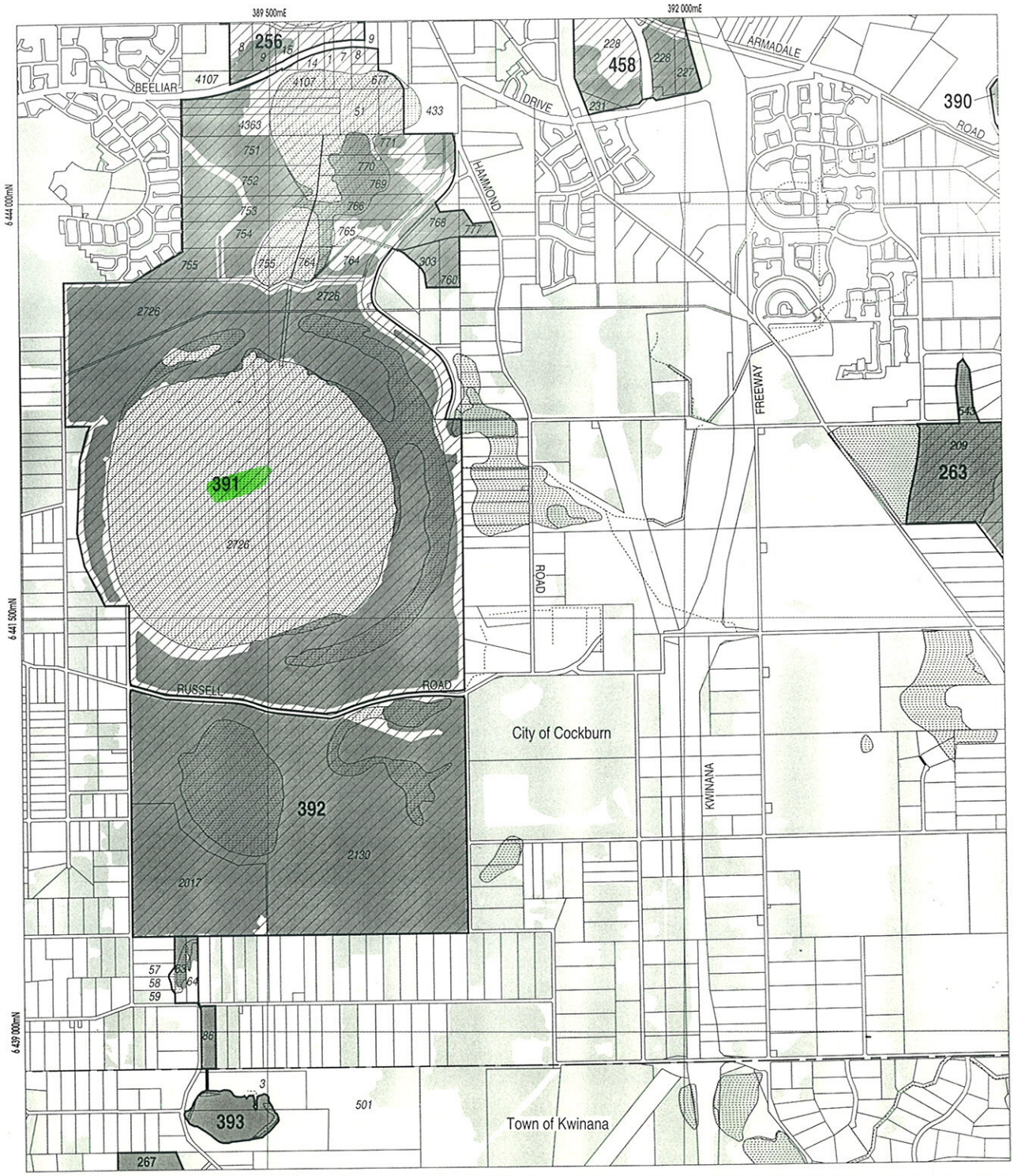
Criteria: Representation of ecological communities, Diversity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of conservation value, but which may be applied when evaluating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

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP; location of Scheduled Fauna, conservation category wetlands; under MRS Parks and Recreation Reservation and TPS Landscape Zoning, Crown Reserve

Constraints: private land; under MRS Urban Zoning and Urban Deferred Zoning, MRD regional road requirements

Recommendation: The care, control and management of this Bushplan Site (Reserve 15556) for conservation purposes within Beeliar Regional Park is endorsed.



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 SW

IV	NW / NE / 74 / SW / SE	
2033		
III		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_74.dgn

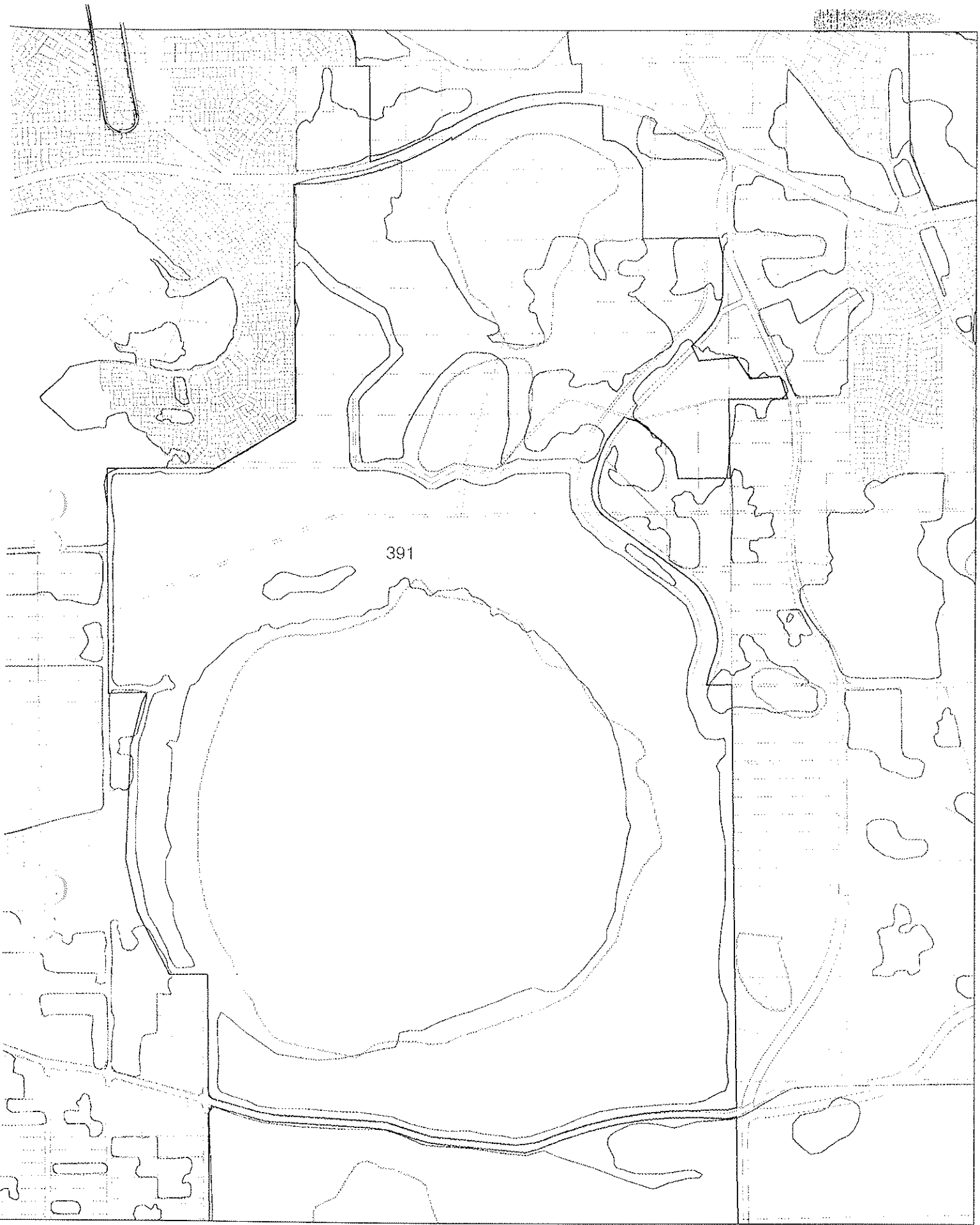
Cadastral Data supplied by Department of Land Administration, W.A.

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map

Map 74



BUSHPLAN SITES CORRECTED

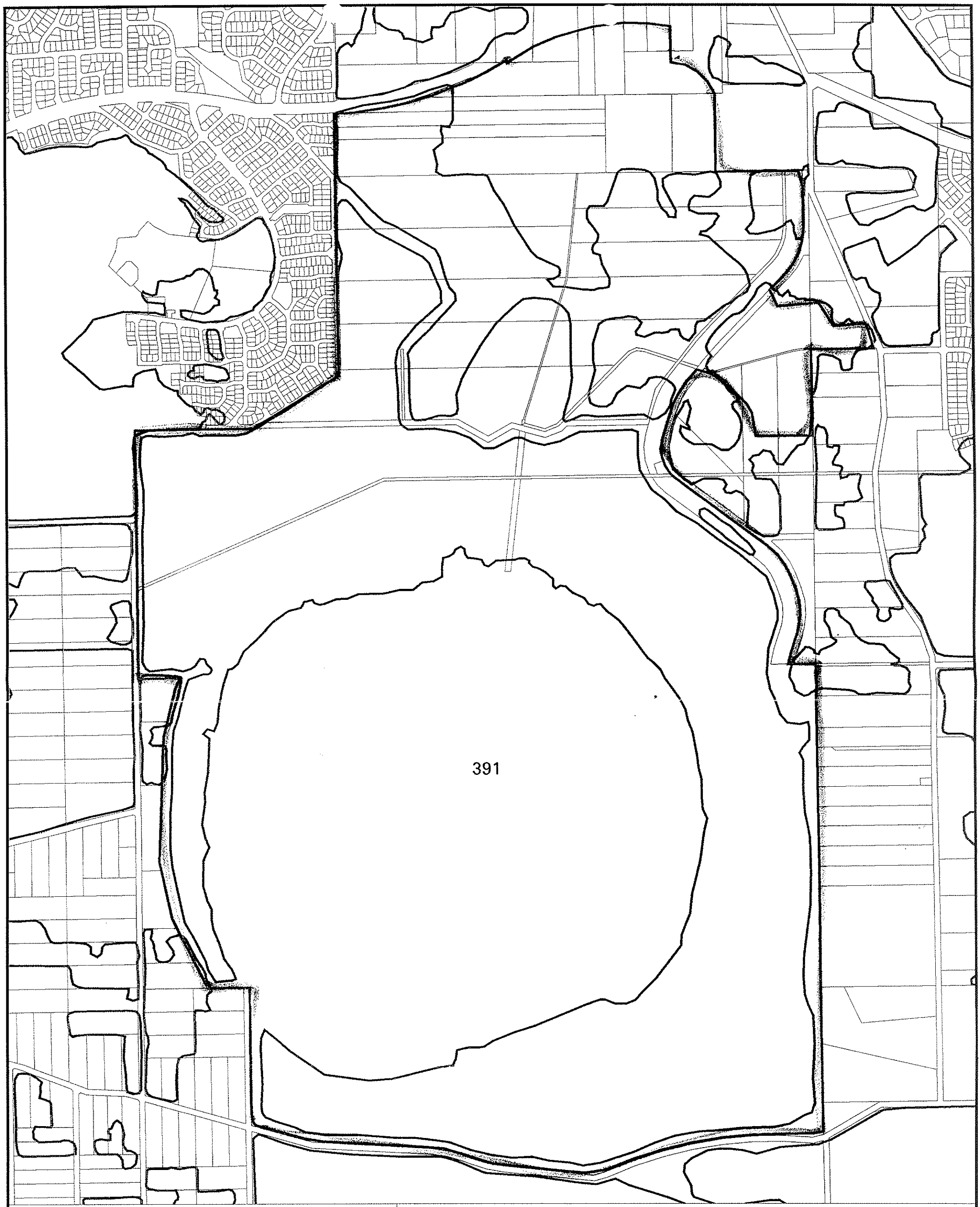
THE GOVERNMENT OF WESTERN AUSTRALIA

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

E 76 28/10/98

N



bp site 391

AG VEG 1998 BOUNDARY THEME

Cadastre

Bushplan sites refno 1-500 SCP BOUNDARY THEME

OK BJK 23/9

Map Ident: plot980604_1	DATE: 04 Jun 98
Prepared By: Andrea Zappacosta	Prepared For:
Scale 1:AUTO	MFP INTERNAL USE ONLY

0 500 m

Subm 225

BS 391 PB190

9k

That section together with a type of Greenways link through to the existing reserve would have merit bearing in mind that there is only a small ratio of bush reserves in the western portion of Cockburn. The area is also becoming heavily industrialised (general and light industry) and this section of bushland would create a type of breathing space for the long term future.

Vicinity of Site 244 - Map 67:

You will note several shaded areas abutting the Kwinana freeway along its western edge between South Street and the Roe Freeway/Kwinana Freeway interchange. Map 67 indicates that some of this bushland could have potential for being saved despite of the interchange connections. The bush in this area has a particularly good diversity of flora and Banksia Woodland. It provides a good background for commuters beyond the Freeway and enhances such areas as Leeming and Bibra Lake. ***I suggest you make some small Bushplan sites out of those remnant areas.***

Map 67 - Bushplan Site [redacted]:

I recommend that this be extended where practical to include any remnant bushland between the northern boundary of Jandakot Airport and the Roe Freeway reserve. Bush in this area is of a relatively good condition and mainly Banksia Woodlands.

Map 74 - Bushplan Site 391:

The above site contains Thomson's and Kogolup Lakes. It has omitted to include good quality diverse Banksia/Tuart Woodland in Section IV south-west of the new subdivisions in Beeliar (just north west of Thomson's Lake). Part of this land is held by Water Corporation for a reservoir and the balance is owned by Homeswest.

I recommend the site include the Water Corporation land and bushland mentioned.

Map 74 - North East - Jandakot Caravan Park Site & Hird Road Swamp:

Site [redacted] extends towards Hird Road Swamp but does not cross Hammond Road to the actual Swamp. Although Hird Road Swamp is now used partly for storm water treatment, the swamp and adjoining bush is worthy of preservation. The bushland varies from Banksia Woodland through to Malaleuca and rushes. The associated bushland encircles the Jandakot Caravan Park and fronts Hammond Road directly north of the Caravan Park. Approximately 15 hectares of bush in that northern position has particularly diverse flora including many species becoming very rare in the region e.g. pink trigger plants; white triggers; spider orchids; donkey orchids, cats paws and numerous other plants.

General File Beeliar Wetlands 3 June 1997

Vegetation Condition of Beeliar Wetlands

Ref: Mapping (Weston 1993) - from Cockburn Wetlands Western Chain File

	Page	BS	Sys 6		
1.0	—	✓228	—	Blue Gum Lake	30% G-V, 70% D*, with areas of severe...
2.0	—	✓337	M93	Lake Booragoon ✓	50% G-V, 50% D* " "
2.1	—	✓339	—	Piney Lakes	30% V-E, 20% G, 50% D-C, " " "
	—	—	—	Murdoch University	—
	—	—	—	Upper Swamp	—
	—	—	—	Melaleuca Swamp	—
	—	—	—	Banksia Woodland	—
	—	—	—	Woodlands East of Murdoch	—
	9	✓244	M93	North Lake	70% V-E, 20% G, 10% D, with...
	11	✓248	"	Bibra Lake	25% G-V, 75% D , "
	33	✓254	"	South Lake	50% G-V, 50% D , "
	—	—	—	Railway Triangle	—
	35	✓256	M93	Little Rush Lake	20% G, 80% D
	"	✓ "	"	Yangebup Lake	100% G-D , with...
	37	✓391	"	Kogolup Lake (with Thomsons L.)	
	37	"	—	Branch Circus Wetlands (")	
	—	—	—	Henderson Rd Woodlands	—
	37	✓391	M93	Thomsons Lake	50% G-V; 50% G-D* , " "
	—	?✓392	"	Banganup Lake (=Harry Waring)	70% V-E, 30% G-D*
	—	—	—	Wattleup Road Wetland	—
	—	—	M93	Wattleup Lake	—
	—	✓269	—	The Spectacles	60% V-E, 40% G-D* , "
	45	✓270	—	Woodland East of Spectacles (Sandy Lake)	20% V-E, 70% G, 10% D*, "
	—	272?	—	Woodland South of Spectacles	40% V, 60% G-D , "
	—	✓247?	M92	Manning Lake ✓	50% G, 50% D* , " "
	—	—	"	Market Garden Swamps	—
	—	—	—	West Churchill Avenue Lake	—
	—	✓261	M92	Lake Coogee (very little, if any, bushland)	10% G?, 90% D?
	—	346	"	Brownman Swamps	
	—	"	"	Lake Mt. Brown	80% V, ~~15%~~ G, 5% D*, " "
	—	—	—	Long Swamp (+ Mt Brown)	—
	—	✓349		Leda	70% V-E?, 20% G?, 10% D?, " "

* probably includes Remnant Canopy

** ratings given here are only for the western part

Condition Ratings

AHC		Bushplan	
well above threshold	A	P	Pristine
Above threshold	B	E	Excellent
At threshold	C	V	Very Good
Below threshold	D	G	Good
		D	Degraded
well below threshold (mostly not bushland)	E	C	Completely Degraded

Henderson Yangebup: 378 p. 58? 77 p. 64?

394 - Coogee hills

Vegetation Condition of Beeliar Wetlands

Ref: Mapping (Weston 1993) - from Cockburn Wetlands Western Chain File

Page	BS	Sys 6		
1.0	228	—	Blue Gum Lake	30% G-V, 70% D*, with areas of ...
2.0	337	M93	Lake Booragoon	50% G-V, 50% D* "
2.1	339	—	Piney Lakes	30% V-E, 20% G, 50% D-C, " " "
—	—	—	Murdoch University	—
—	—	—	Upper Swamp	—
—	—	—	Melaleuca Swamp	—
—	—	—	Banksia Woodland	—
—	—	—	Woodlands East of Murdoch	—
9	244	M93	North Lake	70% V-E, 20% G, 10% D, with ...
11	248	"	Bibra Lake	25% G-V, 75% D, "
33	254	"	South Lake	50% G-V, 50% D, "
—	—	—	Railway Triangle	—
35	256	M93	Little Rush Lake	20% G, 80% D
"	"	"	Yangebup Lake	100% G-D, with ...
37	391	"	Kogolup Lake (with Thomsons L.)	
37	"	—	Branch Circus Wetlands (")	
—	—	—	Henderson Rd Woodlands	—
37	391	M93	Thomsons Lake	50% G-V; 50% G-D*
—	392	"	Banganup Lake	70% V-E, 30% G-D*, " "
—	—	—	Wattleup Road Wetland	—
—	—	M93	Wattleup Lake	—
—	269	—	The Spectacles	60% V-E, 40% G-D*, " "
45	270	—	Woodland East of Spectacles	(Sandy Lake) 20% V-E, 70% G, 10% D*, "
—	272?	—	Woodland South of Spectacles	10% V, 60% G-D, " "
—	247?	M92	Manning Lake	50% G, 50% D*, " "
—	—	"	Market Garden Swamps	—
—	—	—	West Churchill Avenue Lake	—
—	261	M92	Lake Coogee (very little, if any, bushland)	10% G?, 90% D?
—	346	"	Brownman Swamps	
—	"	"	Lake Mt. Brown	80% V, 15% G, 5% D*, " "
—	—	—	Long Swamp (& Mt Brown)	—
—	349	Leda		70% V-E?, 20% G?, 10% D?, " "

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Above threshold	B	E	Excellent
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Below threshold	D	G	Good
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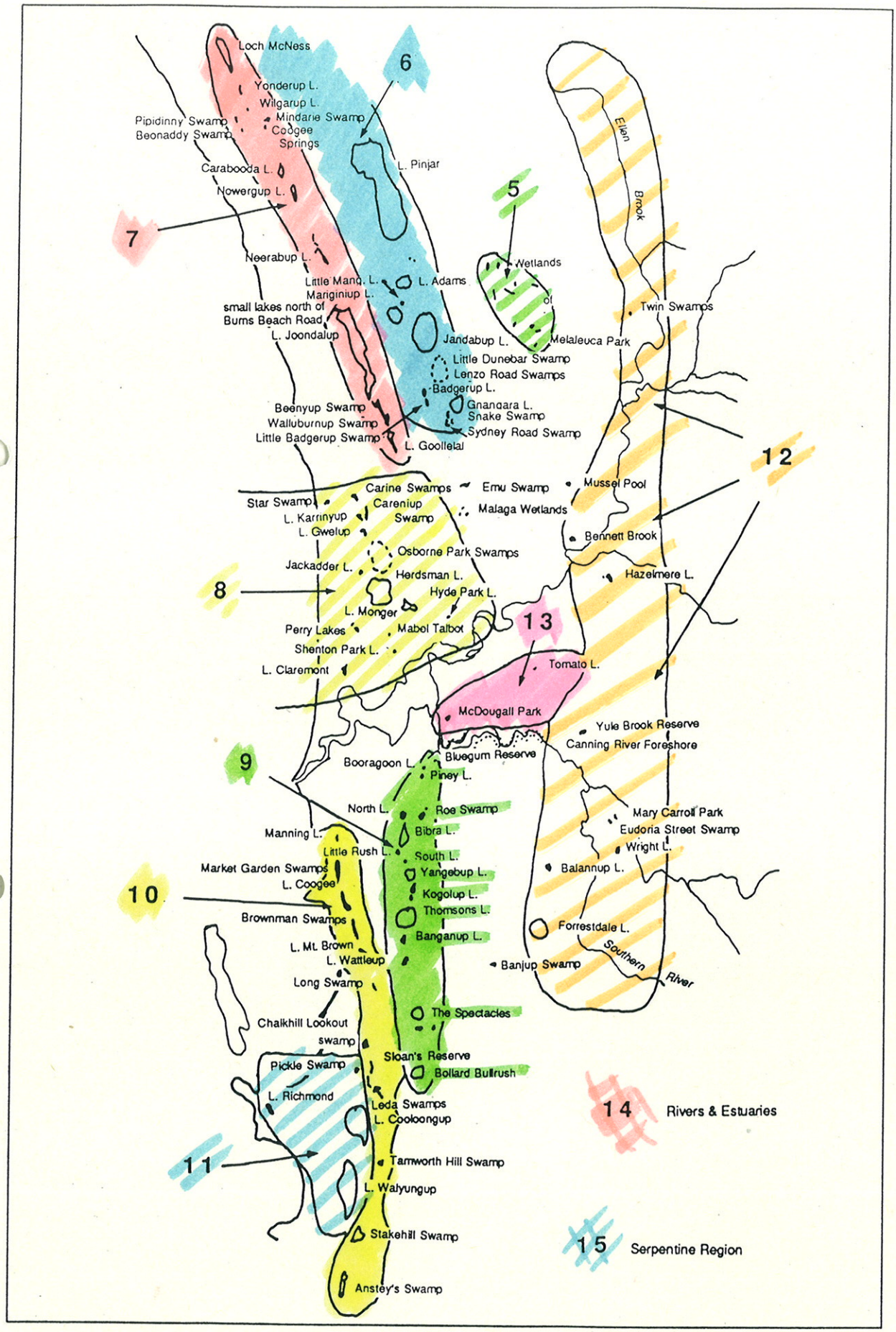
		C	Completely Degraded

394 - Coogee Lk.



Map of Perth's wetlands showing the grouping of wetlands into Chapters in this Bulletin.

V & C Semeniuk Research Group (1991b)
Wetlands of the City of Rockingham

TABLE 9 : WETLANDS OF LOCAL TO NATIONAL & INTERNATIONAL SIGNIFICANCE IN THE CITY OF ROCKINGHAM

Name of Wetland	Suite	Significance
Lake Richmond	Cooloongup Suite	Regional
Lake Cooloongup	Cooloongup Suite	National
Lake Walyungup	Cooloongup Suite	National
Anstey Q	Becher Suite	National
All wetlands in the Becher Suite	Becher Suite	National-Internat.
All wetlands in the Peelhurst Suite	Peelhurst Suite	National
Baldivis Swamp	Stakehill Suite	Regional
Tamworth Swamp	Stakehill Suite	Regional
Outreach Swamp	Stakehill Suite	Regional
Stakehill Swamp	Stakehill Suite	Regional
Churcher Swamp	Stakehill Suite	Regional
Anstey Swamp	Stakehill Suite	Regional
Small Swamp	Stakehill Suite	Local
Fletcher Swamp	Stakehill Suite	Local
Paganoni Swamp	Stakehill Suite	Regional
Small vegetated sumplands PP-B,PP-D PP-E, PP-F,	Swan River Suite	Local
Maramanup Pool	Swan River Suite	Local
Folly Pool	Swan River Suite	Local
Zed Swamp	Goegrup Suite	Local
Beenyup Swamp	Goegrup Suite	Local
PPF #2	Goegrup Suite	Local
Lower reaches of the Serpentine River	Goegrup Suite	Regional

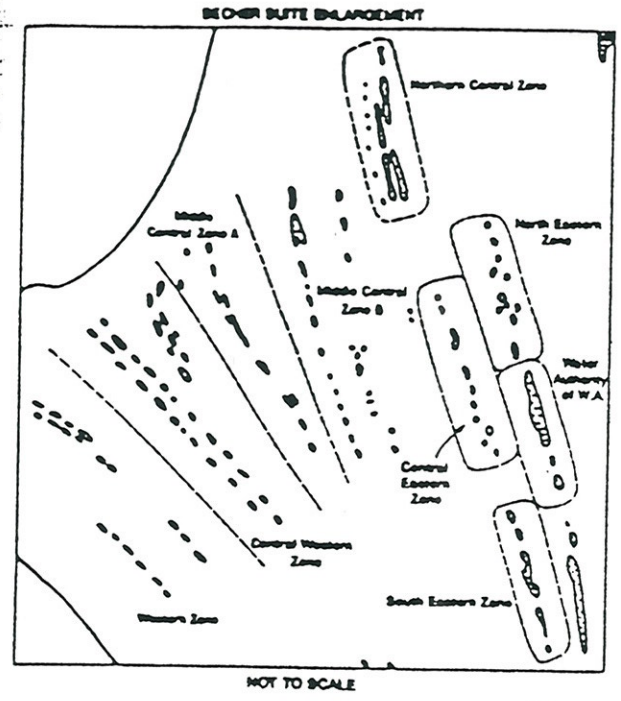
V+C Semeniuk Research Group 1991 "Wetlands" of City of Cockburn

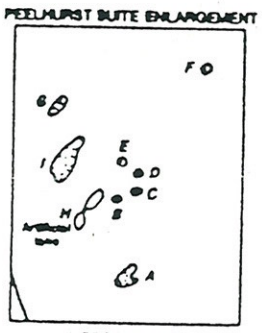
NATIONAL – INTERNATIONAL

NATIONAL

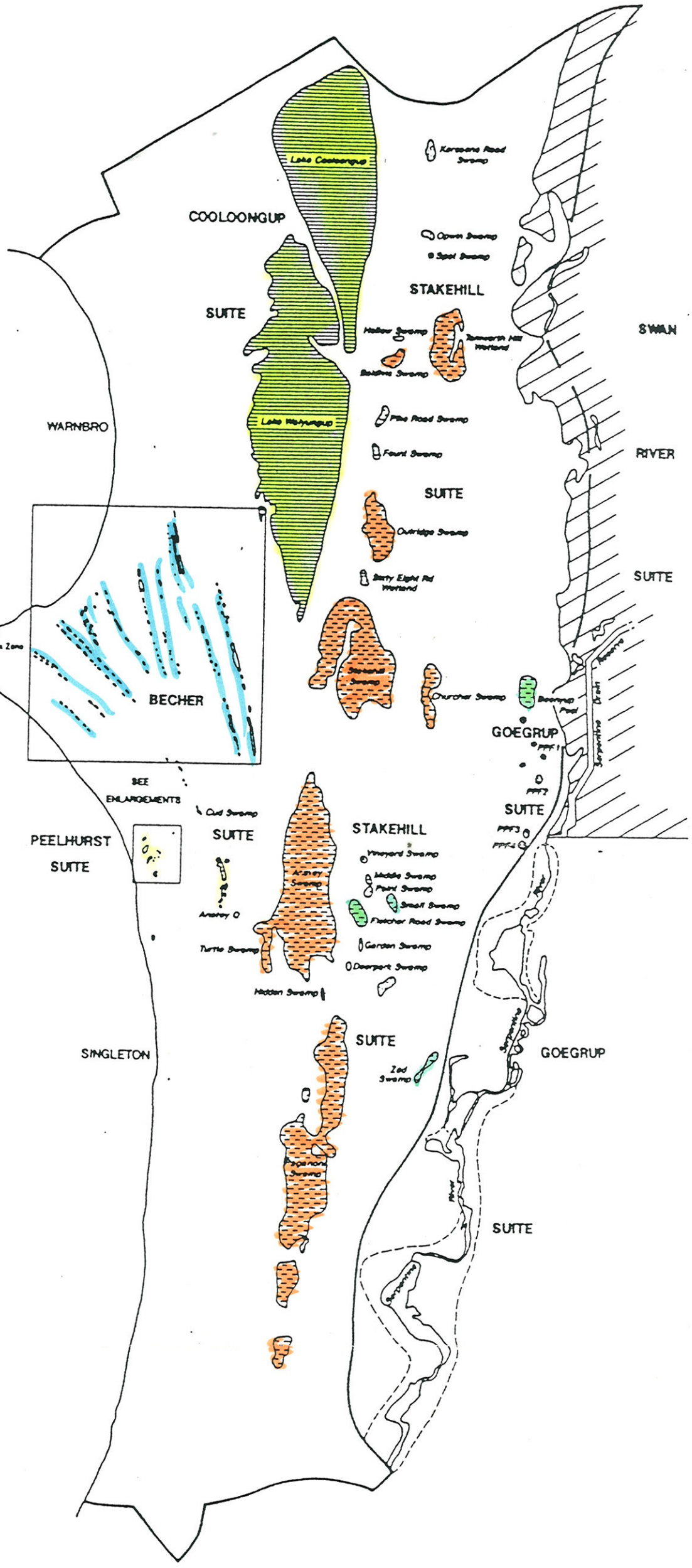
REGIONAL

LOCAL





A - Horse-shoe Swamp
B - Bald Swamp
C - Orchid Swamp
D - Hooth Swamp
E - Moat Swamp
F - Ridge Swamp
G - Hidden Swamp
H - Herb Swamp
I - Dead Tree Swamp



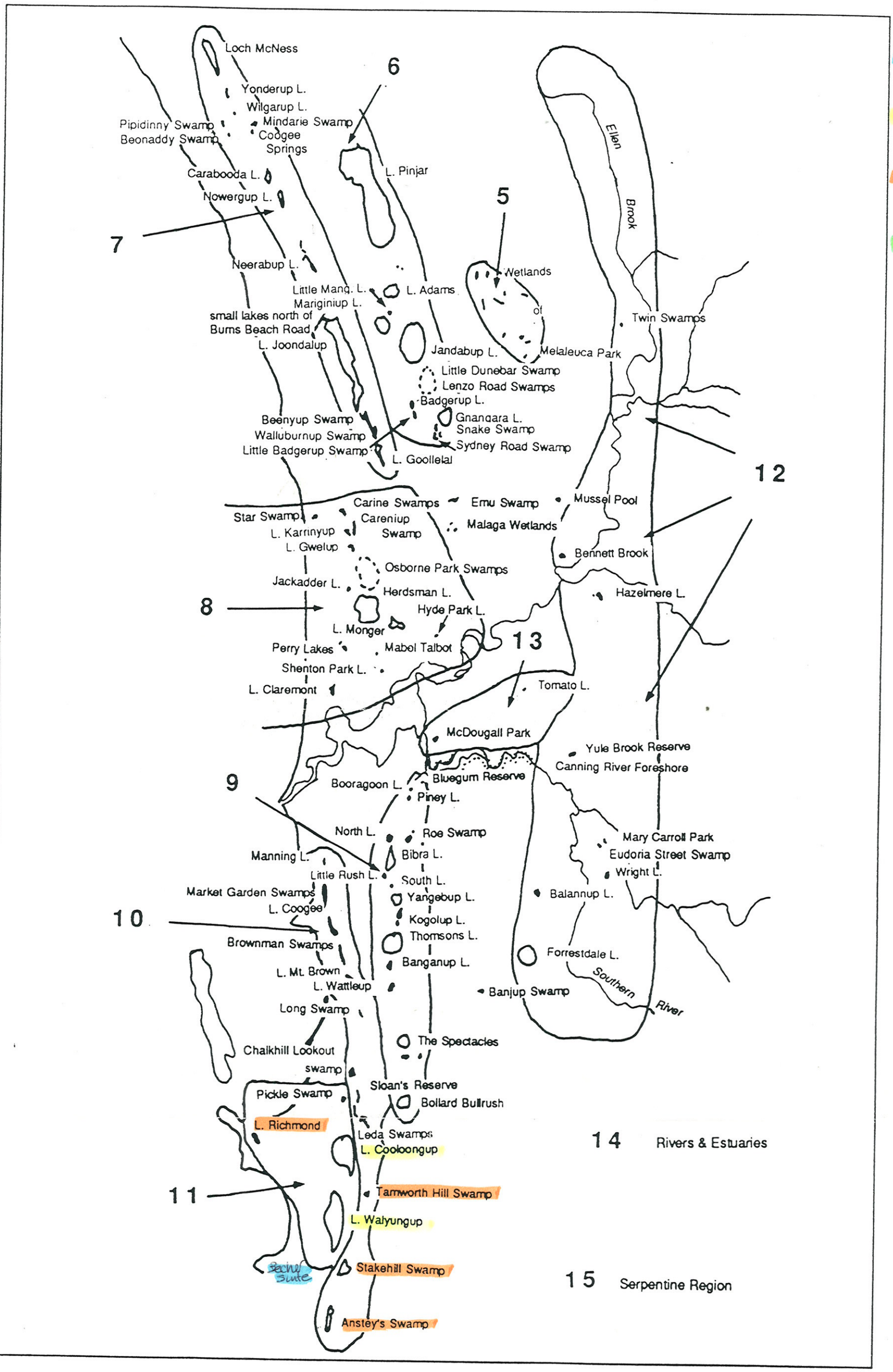
CLASSIFICATION OF WETLAND TYPES

- Lake
- Sumpland
- Dampland
- Paluseplain
- Serpentine River Floodplain

SCALE 0 1 kilometres

WETLANDS Figure 2

V+C Semeniuk Research Group



NATIONAL - INTERNAT

NATIONAL

REGIONAL

LOCAL

Map of Perth's wetlands showing the grouping of wetlands into Chapters in this Bulletin.

BS 391

R. A. O. U. TRACKING DATABASE

23/06/96 PARK SIGHTINGS REPORT

Thomsons Lake N.R. (M93)

ORDER:	REF:	BIRD NAME		NO. SIGHTINGS
0018	0216	Blue-billed Duck	3	7
0019	0217	Musk Duck	3	12
0022	0203	Black Swan		17
0025	0207	Australian Shelduck		13
0032	0208	Pacific Black Duck		17
0033	0212	Australasian Shoveler	3	11
0035	0211	Grey Teal		13
0039	0213	Pink-eared Duck	3	5
0040	0215	Hardhead	3	2
0041	0061	Australasian Grebe		6
0042	0062	Hoary-headed Grebe		8
0129	0100	Little Pied Cormorant		6
0131	0099	Pied Cormorant		1
0132	0097	Little Black Cormorant		4
0133	0096	Great Cormorant		1
0135	0106	Australian Pelican		5
0139	0188	White-faced Heron		9
0140	0185	Little Egret		1
0142	0189	White-necked Heron		1
0145	0187	Great Egret		8
0146	0186	Intermediate Egret		1
0150	0192	Nankeen Night Heron		1
0157	0179	Australian White Ibis		9
0158	0180	Straw-necked Ibis		3
0160	0182	Yellow-billed Spoonbill		5
0165	0232	Black-shouldered Kite		4
0170	0228	Whistling Kite	4	12
0173	0218	Spotted Harrier		1
0174	0219	Swamp Harrier		18
0175	0221	Brown Goshawk	4	1
0177	0222	Collared Sparrowhawk	4	2
0180	0224	Wedge-tailed Eagle		1
0181	0225	Little Eagle	4	4
0183	0235	Australian Hobby		1
0186	0237	Peregrine Falcon	1	1
0187	0240	Nankeen Kestrel		3
0192	0046	Buff-banded Rail		2
0197	0050	Baillon's Crake		2
0198	0049	Australian Spotted Crake		2
0200	0051	Spotless Crake		7
0204	0058	Purple Swamphen		18
0205	0056	Dusky Moorhen	3	4
0208	0059	Eurasian Coot		11

0221	0152	Black-tailed Godwit	2	1
0230	0159	Marsh Sandpiper	2	2
0231	0158	Common Greenshank	2	4
0233	0154	Wood Sandpiper	2	3
0244	0162	Red-necked Stint	2	4
0245	0965	Long-toed Stint	2	1
0248	0978	Pectoral Sandpiper	2	1
0249	0163	Sharp-tailed Sandpiper	2	3
0251	0161	Curlew Sandpiper	2	1
0255	0934	Ruff	2	1
0267	0146	Black-winged Stilt		13
0268	0147	Banded Stilt		2
0269	0148	Red-necked Avocet		1
0275	0143	Red-capped Plover		4
0282	0144	Black-fronted Dotterel		2
0297	0125	Silver Gull		12
0316	0110	Whiskered Tern		1
0324	0957	Rock Dove		2
0326	0988	Laughing Turtle-Dove		4
0330	0034	Common Bronzewing	3	2
0356	0794	Short-billed Black-Cockatoo	1	2
0359	0273	Galah		1
0386	0294	Australian Ringneck		15
0387	0290	Red-capped Parrot		15
0405	0337	Pallid Cuckoo		1
0408	0338	Fan-tailed Cuckoo		2
0410	0342	Horsfield's Bronze-Cuckoo		1
0446	0322	Laughing Kookaburra		15
0451	0326	Sacred Kingfisher		6
0453	0329	Rainbow Bee-eater		4
0471	0532	Splendid Fairy-wren	3	21
0492	0976	Striated Pardalote		8
0512	0465	Weebill	3	7
0517	0463	Western Gerygone		16
0524	0476	Inland Thornbill	3	4
0528	0472	Western Thornbill	3	3
0531	0486	Yellow-rumped Thornbill	3	6
0537	0638	Red Wattlebird		15
0539	0637	Little Wattlebird	4	5
0561	0608	Singing Honeyeater		9
0583	0597	Brown Honeyeater		4
0587	0631	New Holland Honeyeater	4	8
0597	0592	Western Spinebill		2
0613	0380	Scarlet Robin	3	2
0644	0549	Varied Sittella	3	1
0650	0398	Golden Whistler	3	1
0653	0401	Rufous Whistler		7
0658	0408	Grey Shrike-thrush	3	3
0670	0369	Restless Flycatcher	3	1
0671	0415	Magpie-Lark		14
0673	0361	Grey Fantail		14

0676	0364	Willie Wagtail	18
0678	0424	Black-faced Cuckoo-shrike	10
0692	0567	Dusky Woodswallow	1
0695	0702	Grey Butcherbird	14
0698	0703	Australian Magpie	20
0706	0930	Australian Raven	18
0763	0357	Welcome Swallow	14
0765	0359	Tree Martin	16
0768	0524	Clamorous Reed-Warbler	11
0772	0522	Little Grassbird	7
0781	0574	Silvereye	15

4

*** END OF REPORT ***

(1) 2
(2) 10
(3) 17
(4) 7

SUMMARY REPORT

TOTAL BIRDS SIGHTED	:	105
TOTAL NUMBER OF CARDS	:	23

*** END OF SUMMARY ***

RESULTS OF AN INVERTEBRATE SURVEY OF KOGOLUP LAKE

Prepared by Adrian Pinder, Biological and Environmental Sciences,
Murdoch University.

Methods

Sampling was carried out on the 5th of November 1988. At each of six littoral sites (Figure 1) a single 30 second sweep sample was collected, using a net of mesh size 250µm, and preserved in the field. Sites were selected to include a variety of habitat types. .

Site 1 : Clear tannin stained water, open sand substrate, sweep from in and around *Baumia articulata*, depth 80cm.

Site 2 : Flooded terrestrial grasses and decomposing vegetation, water with suspended particulate organic matter, depth 55cm.

Site 3 : Flooded terrestrial grasses (living and decomposing) and *B. articulata*, depth 33cm.

Site 4 : Open flooded channel surrounded by sedges and grass, depth 18cm.

Site 5 : Open water, decomposing branches and leaves, surface moderately covered by *Lemna*, depth 40cm.

Site 6 : Flooded sedges, water moderately covered by *Lemna*, substrate of decomposing terrestrial vegetation, depth 76cm.

The samples were sorted by eye and an estimate made of the relative abundance of each species.

Results and Discussion

A total of 32 species were recorded from the lake on this occassion (Table1), comparing favourably with surrounding wetlands. In a study of five Perth wetlands Davis and Rolls (1987) found a maximum single occassion species richness of 43 species at Thomsons Lake in July 1985, in October of that year 31 species were recorded from Thomsons Lake and 33 from North Lake (these values were obtained from six pump samples and two sweep samples at each lake). For wetlands of less environmental quality lower species richness was recorded ,for example 21 from Lake

Joondalup and 24 from Lake Monger in October 1985.
The presence or absence of any particular species may indicate specific environmental problems or pollutants, however work in this area for Australian species are insufficient. Community structure observations (for example the abundance ofpredatory species) are an often used alternative when assessing the general health of a wetland. The numbers of odonata and coleoptera (largely predatory) has been shown by Davis and Rolls (1987) to correlate well with the environmental quality of the lake. In this study eighteen of the species present were predatory. The odonata appear to be particularly sensitive to disturbance. Davis and Rolls (1987) recorded this taxa only once at Lake Monger and never at Lake Joondalup (two lakes considered to have poor environmental quality) during the 1985/86 study, wheareas at least two species were present at lakes with better overall quality, at Thomsons Lake four species were recorded in October 1985. In the present study two species of odonata were recorded from Lake Kogolup. The number of coleoptera species recorded (Table 1) was fairly high (seven, if the larval and adult Hyphydrus are different species) for one sampling occassion. In July 1986 eleven species were recorded by Pinder (1986) at Thomsons Lake. Davis and Rolls (1987) recorded a total of eleven and eight species for Thomsons Lake and Jandabup Lake respectively between April 1985 and January 1986, however, on any one sampling occassion a maximum of five species were recorded.
The most abundant invertebrates were the ostracoda and the chironomidae, as is often the case for wetlands of the Swan Coastal Plain.

Considering previous studies in the Perth region the invertebrate communities tend to reflect the water and overall wetland quality. Using the invertebrate community as an indicator, Kogolup Lake would appear to have fairly good water quality, given the diverse range of species recorded, and the proportion of these that were predatory.

References

Davis, J.A. and Rolls,S.W. (1987). A Baseline Biological Monitoring Programme for the Urban Wetlands of the Swan Coastal Plain, Western Australia. Environmental Protection Authority, Bulletin 265. E.P.A. Perth.

Pinder, A.M. (1986). Ecology of Macroinvertebrates in Seasonal Wetlands. Honours thesis, Murdoch University.

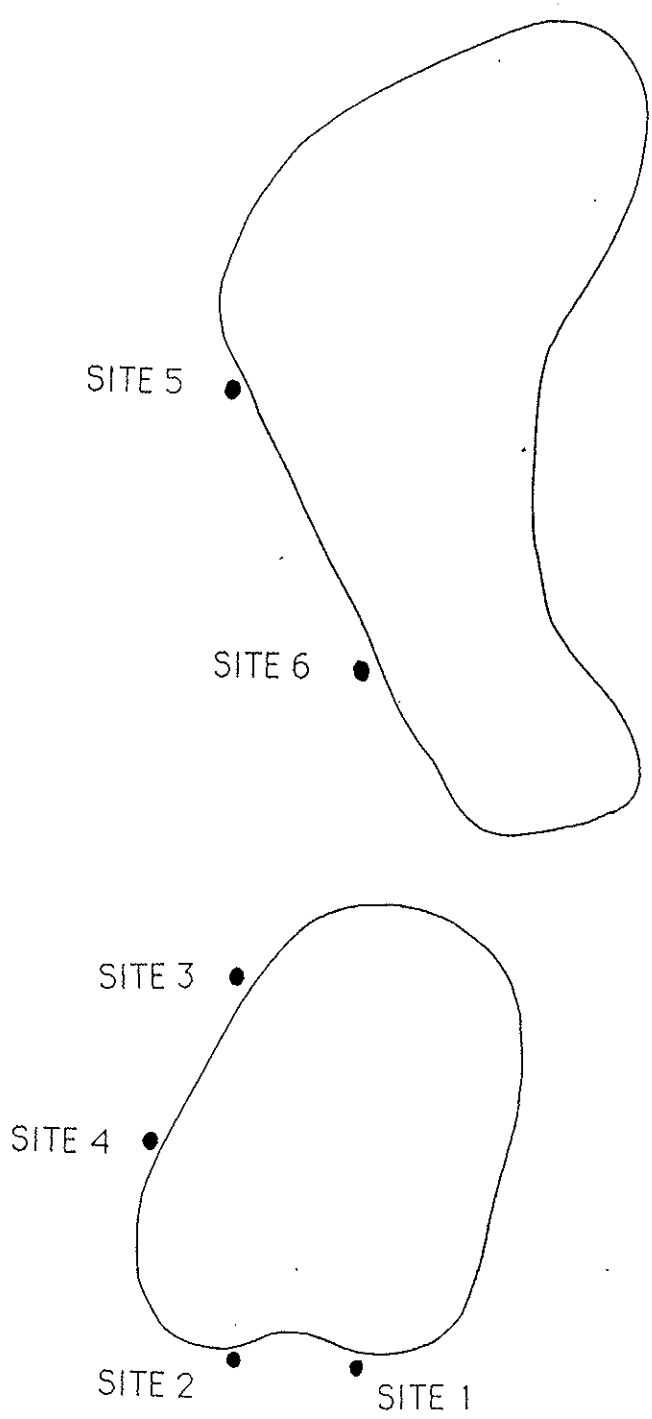


Figure 1; Sampling sites at Kogolup Lake.

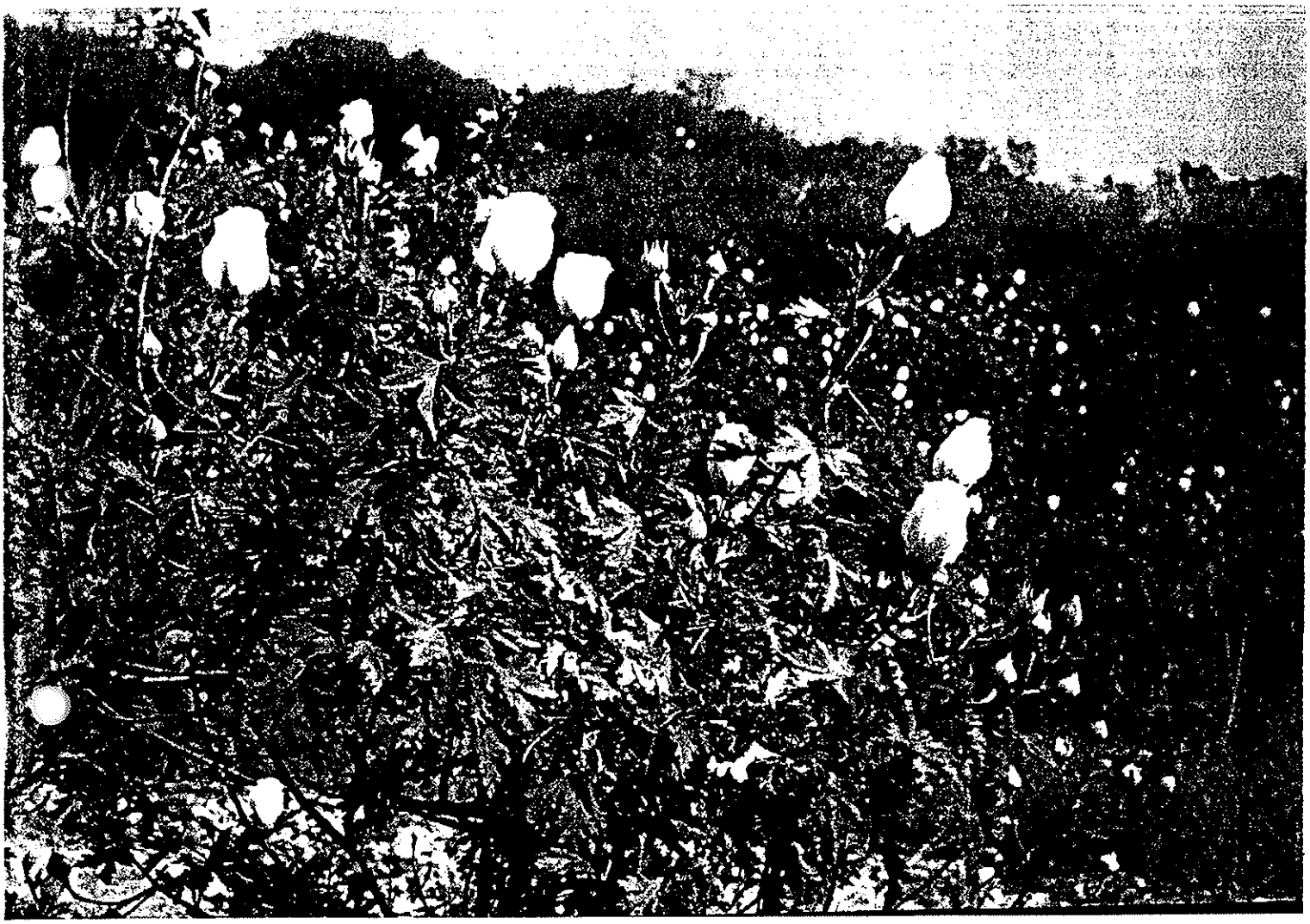
TAXA	SPECIES	SITE					
		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
Hirudinea				+			
Gastropoda (Mollusca)	*Physa acuta*			++		++	++
Hydracarina	sp. 1	+					
	sp. 2						+
Daphniidae (Cladocera)		+++					
Ostracoda	*Alboa worooa*	++++	++++	+++	++		+
	Cypretta baylyi					+	
	Sarscripridosa aculeata					+++	
	Candonocypris novaezelandiae				+++		
Cyclopoida (Copepoda)		++++					
Isopoda	*Paramphisopus palustris*	+	+	++		++	++
Odonata	*Diplacodes bipunctata*			+	+		
	Austrolestes annulosus			+			
Hemiptera	*Sigara mullaka*	+	++	+	++		
	Agraptocorixa hirtifrons	+++		+	++	++	++
	Micronecta robusta				+		
	Anisops sp.		+				
Diptera (Tipulidae)					+		
(Stratiomyidae)				+			
(Chironomidae)	*Pentaneura levidensis*		+	+			+
	Procladius villosimanus						+
	Chironomus australis	++					
	Chironomus alternans	++++	+++	+++	++++	+++	
	Polypedilum nubifer					++	
(Culicidae)				+			
Coleoptera (Dytiscidae)	*Hyphydrus sp. (larvae)*	+		++		++	+
	(adult)					++	
(Hydrophilidae)	*Berosus sp.*					++	
	Paracymus sp.		++				
	Enochrus sp.		++				
	? larvae		+				
(Helodidae)			+	++			

TABLE 1 : Species list for Kogolup Lake (5 November 1988). + = low abundance, ++++ = high abundance.

1193

Part Report:
Value identification
not objection
assessment section
(contact Heritage
Commission, Melinda
Brown for complete
report) 13/5/96

Objection Assessment of the values of the vegetation and flora of the Beeliar Wetlands



Alogyne huegelii var. *glabrescens* to the west of Manning Lake

Prepared for the Australian Heritage Commission

by Bronwen Keighery, Consultant Botanist
November 1995 and February 1996

Table 2: Bushland Areas listed on the National Estate or being considered for listing.

Bushland Areas listed/interim listed on the National Estate

Bushland Area	Area (ha)	Native Flora	Flor. Com[10].	Veg. Assoc#.	Veg. Comp.[18]
Hepburn Heights/Pinnaroo	90	230*[1]	3*	19[11].	3
Trigg/Karrinyup Reserves	120	175[2]	4		2
Banksia Road Nature Reserve	33	150[3]	3		1
Marangaroo (Res 20091)	30*	130 *[4]	1		1
Neerabup National Park	1,111	242[5]	2		?2
Star Swamp	100	191[6]	3	13[11].	?2
Woodvale Nature Reserve	44	170[7]	1		1
Beeliar Wetlands	2700	406[22]	7	31[18]	4
Thompsons Lake NR	509	199[14]		15[14] 12[18]	3
Baganup Lake	254	279[15]	4	10[15]	3
Murdoch University	?	200[13]		5[13]	2
Yangebup Lake	103*	140[16]		5[16] 7[18]	2
Piney Lake	68	96[10]		6[10]	1
Booragoon Lake	13	34[12]		3[12]	1
Market Garden Lake	38	21[17]		7[17]	1

Unlisted areas subject to current nominations

Kings Park	400	290[20]	1	5[20]	1
Bold Park	221	221[21]	4		3
M91	56	86[23]	2		1

#	these are not directly compatible as they are based on variety of approaches to describing vegetation associations
*	estimate of area, flora or floristic community types
1	estimate based on Keighery (1991), Tingay (1991), Foulds (1988) and AHC Listing Document
2+	G. Keighery pers. comm.
3+	G. Keighery pers. comm.
4	estimate from knowledge of the area
5+	G. Keighery pers. comm.
6	Bell *et al.* (1984)
7	Keighery and Langley (1994)
8	Gibson et al.(1994) and System 6 Update
9	Tingay (1991)
10	Rodda (1986)
11	Weston and Clay (1980)
12	Smith (1985)
13	Dell and Bennett (1986)
14	Crook and Evans (1981)
15	Clay (1986)
16	Ecoscape (1994)
17	Ecoscape (1995)
18	Newman *et al.* (1976)
19	Heddle *et al.* (1980)
20	Bennet in Kings Park Bushland Draft Management Plan (1993)
21	Keighery, Harvey and Keighery (1991)
22	Appendix Flora
23	Keighery and Keighery 1993

+ Reserve flora lists for bushland areas on the Swan Coastal Plain are being compiled by G.J. Keighery with assistance from B.J. Keighery and N. Gibson to establish a better knowledge of the flora of these areas and to address species conservation status for the Swan Coastal Plain.

Table 3: Floristic Community Types found in the study area
Each site is located Map 1. Study site codes refer to the following areas:
Thom - Thomson Lake Nature Reserve (Gibson *et al.* 1994)
Harry - Banganup Lake and adjacent bushland, Harry Waring Marsupial Reserve or Jandakot Research Station (Gibson *et al.* 1994)
MTB - Lakes Mount Brown and Brownman Swamps and adjacent bushland (Gibson *et al.* 1994)
NAVB - M 91 (Gibson *et al.* 1994)
Beel - 1 & 2 North Lake and adjacent bushland (System 6 Update 1995)
- 3 Murdoch University

Floristic Community Type (site)	Generalised Description	Predominant Landform Type (after Churchward and McArthur 1980)
Wetland Super Group		
5 (Map 2a) Harry 3	Mixed shrub damplands Mean species richness per site: 38.4 Av.Cond: 2.1, Cons status: Low risk	Bassendean/Pinjarra
11 (Map 2a) Harry 6 Beel 3	Wet forests and woodlands Mean species richness per site: 27.2 Av.Cond: 2.7, Cons status: Low risk	Bassendean/Pinjarra
16 (Map 2a) *NAVB 1	Highly saline seasonal wetlands Mean species richness per site: 13.5 Av.Cond: 2.9, Cons status: Vulnerable	coastal and esturine
17 (Map 2a) MTB 05	*Melaleuca rhaphiophylla - Ghania trifida* seasonal wetlands Mean species richness per site: 13.6 Av.Cond: 2.3, Cons status: Low risk	Quindalup/ Spearwood
Bassendean Dune Super Group		
21a (Map 2b) Harry 05	Central *Banksia attenuata - E. marginata* woodlands Mean species richness per site: 54.6 Av.Cond: 2.5, Cons status: Low risk	Bassendean/ Spearwood
23a Map 2b) Harry 04 #Beel 02	Central *Banksia attenuata - B.menziesii* woodlands Mean species richness per site: 62.8 Av.Cond: 2, Cons status: Low risk	Bassendean
Spearwood/Quindalup Dune Super Group		
24 (Map 2b) Thom 02 MTB 1, 2, 3 & 4 *NAVB3 &4	Northern Spearwood shrublands and woodlands Mean species richness per site: 41.8 Av.Cond: 3, Cons status: Susceptible	Spearwood
28 (Map 2b) #Beel 1 Harry 1 & 2	Spearwood *Banksia attenuata* or *Banksia attenuata - Eucalyptus* woodlands Mean species richness per site: 55.2 Av.Cond: 2.5, Cons status: Low risk	Spearwood
29a (Map 2b) *NAVB 2	Coastal shrublands on shallow sands Mean species richness per site: 40.7 Av.Cond: 2.3, Cons status: Susceptible	Quindalup

Appendix 1

This list was compiled from a series of published and unpublished lists for the study area. The principle references are cited in the key to column 4. Records were also extracted from the text of Environmental Science Murdoch University (1986) and Newman et al (1980). As most of these lists date from the 1980's there was a need to update the nomenclature.

Some additions have also been made from field visits in October and November 1995 for this study.

Key

Column 1: Taxon
Taxa are listed alphabetically in family, genera and species. Nomenclature is after Gibson *et al.* (1994). A * preceding a the genus name indicate a non-native taxon, these may be naturalised taxa or planted taxa.

Column 2: Priority Code (Department of Conservation and Land Management 1995)

Column 3: Gegraphical Range/Significant Taxa
N = Populations at the northern limit of their known range
S = Populations at the southern limit of their known range
W = Populations at the western limit of their known range
Geographic Limit - Location of limits as defined above.
= Significant taxa (see Sections 3.3.1 and 3.4.1.2 for details of significance)

Column 4: Areas

P Piney Lake Reserve (Rodda 1986)
Ba Banganup Lake (Weston and Clay 1980)
Bo Booragoon (Lake Smith 1985)
M Murdoch University (Dell and Bennett 1986)
T Thompson's Lake Nature Reserve (Crook and Evans 1981)
S The Spectacles (Clay 1986)
Y Yangebup Lake (Ecoscape 1994)
Ma Manning Lake (this report)
MG Market Garden Swamps (Ecoscape 1995)
MB Floristic Database for Swan Coastal Plain (Gibson *et al.*1994) and System 6 Update
F Floristic Database for Swan Coastal Plain (Gibson *et al.*1994) and System 6 Update.
91 System 6 area M91 (Keighery and Keighery 1993)

Taxon	Prio Code	Geographic Range	Recorded Areas
Aizoaceae			
*Carpobrotus aquilaterale			P, Ba, T, S
*Carpobrotus edulis			Ba, Bo, M, T, Y, F, 91
Carpobrotus virescens			91
Carpobrotus virescens X edulis			91
*Tetragonia decumbens			F, 91
Amaranthaceae			
Ptilotus drummondii			Ba, T, Y, 91
Ptilotus ?manglesii			P
Ptilotus polystachyus			M, Y
Anredaceae			
*Anredera cordifolia			MG
Anthericaceae			
Arnocrinum preissii			Ba, T, Y
Caesia micrantha			Ba, M, T
Caesia occidentalis			F
Chamaescilla corymbosa			Ba, M, T, S, F
Corynotheca micrantha			Ba, M, T, S, Y
Dichopogon capillipes			Ba, T, Y, F
Laxmannia ramosa			Ba
Laxmannia squarrosa			P, Ba, T, M, F
Sowerbaea laxiflora			P, Ba, M, T, S, Y, F
Thysanotus arenarius			Y
Thysanotus asper			M
Thysanotus manglesianus/patersonii complex			P, Ba, T, Y,F, 91
Thysanotus multiflorus			M
Thysanotus sparteus			Ba, T, Y, F
Thysanotus thyrsoideus			F
Thysanotus triandrus			Ba, M, Y, F
Tricoryne elatior			Ba, Bo, M, T, S, Y
Tricoryne tenella			F
Amaryllidaceae			
*Narcissus tazetta			
Apiaceae			
Apium annuum			F, 91
Apium prostratum			F
Centella cordifolia			Ba, Bo, M, T, S, Y
Daucus glochidiatus			F, 91

Taxon	Prio Code	Geographic Range	Recorded Areas
Eryngium pinnatifidum subsp. pinnatifidum			Ba, M, T, Y, F
*Foeniculum vulgare			T, Y, Mg, Ma, 91
Homalosciadium homalocarpum			Ba, Y, F
Hydrocotyle diantha			F
Hydrocotyle scutellifera			F
Platysace compressa			Ba, M, T, F
Trachymene pilosa			M, Y, F
Xanthosia huegelii			Ba, M, , S, Y, F
Araceae			
*Zantedeschia aethiopica			S, Y, H, MG, F
Asclepidaceae			
*Gomphocarpus fruticosus			MG
Asparagaceae			
*Myrsiphyllum asparagoides			Ma
Asphodelaceae			
*Asphodelus fistulosus			Ba, M, T, 91
*Trachyandra divaricata			91
Asteraceae			
*Arctotheca calendula			Ba, T, S, Y, 91
*Aster subulatus			Ba, T, F
Asteridea pulverulenta			Ba, Y
Brachyscome iberidifolia			Ba, M
*Carduus pycnocephalus			Ba
*Centaurea melitensis			Ba, F, 91
*Cirsium vulgare			Ba, MG, 91
*Conyza albida			F, 91
*Conyza bonariensis			Bo, F, 91
Cotula coronopifolia			Ma
*Dittrichia graveolens			MG, 91
*Helianthus annua			MG
Helichrysum cordatum			M, 91
Hyalosperma cotula			Ba, T, F, 91
*Hypochaeris glabra			Ba, Bo, S, Y, MG, F, 9
Ixiolaena viscosa	N	North Lake	Bi, N, F
*Lactuca serriola			Y, F
Lagenifera huegelii			Ba, S, Y, F
Millotia myosotidifolia			Ba, M, t
Millotia tenuifolia			F

Taxon	Prio Code	Geographic Range	Recorded Areas
Olearia axillaris			Ba, M, T, F, 91
Olearia elaeophila			Y
Pithocarpa corymbulosa			Y
Podolepis canescens			Ba, T
Podolepis gracilis			Ba, M, T, Y, F
Podotheca angustifolia			Y, F
Podotheca chrysantha			Ba, M, T, F
Podotheca gnaphalioides			P
Pseudognaphalium luteoalbum			Ba, F
Quinetia urvillei			Y, F
Senecio hispidulus			Ba, T
Senecio lautus			Ba, M, T, Y, F, 91
Siloxerus humifusus			Ba, M, F
*Solidago canadensis			MG
*Sonchus asper			Ba, M, F, 91
Sonchus hydrophilus			F, 91
*Sonchus oleraceus			F, 91
*Taraxacum officinale			MG
*Urospermum picroides			F, 91
*Ursinia anthemoides			Ba, S, Y, F
*Vellereophyton dealbatum			Ba, T, F, 91
Waitzia citrina			T, F
Waitzia suaveolens			F
Azollaceae			
Azolla filiculoides			Y, H
Brassicaceae			
*Brassica oxyrrhina			Y
*Brassica tournefortii			Ba, MG, F, 91
*Heliophila pusilla			Ba, F, 91
*Lobularia maritima			MG
*Sisymbrium orientale			MG
*Raphanus raphanistrum			BO, MG
*Rorippa naturtium-aquaticm			Ba, T
Callitrichaceae			
*Callitriche stagnalis			Ba
Campanulaceae			
*Wahlenbergia capensis			Ba, Y
Wahlenbergia preissii			Ba, F

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Cannaceae			
	*Canna generalis			MG
	*Canna ochnoides			MG
	Caryophyllaceae			
	*Arenaria serpyllifolia			F
	*Cerastium glomeratum			Ba, F
	*Minuartia hybrida			F, 91
	*Petrorhagia velutina			Ba, T, Y, 91
	*Sagina apetala			Ba, F
	*Sagina maritima			F, 91
	*Silene gallica			Ba, T, Y, F, 91
	*Stellaria media			Ba, F, 91
	Casuarinaceae			
	Allocasuarina fraseriana			P, Ba, M,, T, S, Y, F
	Allocasuarina humilis			P, Ba, M,, T, S, F, 91
	Centrolepidaceae			
	Centrolepis aristata			Ba
	Centrolepis drummondiana			Ba, T, Y, F
	Chenopodiaceae			
	Atriplex cinerea			F, 91
	Atriplex hypoleuca			Ma
	*Atriplex prostrata			T
	*Chenopodium album			MG
	*Chenopodium ambrosioides			Ba, T
	*Chenopodium murale			91
	Chenopodium pumilio	N	Balangup L	Ba
	Rhagodia baccata			F
	Rhagodia baccata subsp. baccata			91
#	Rhagodia baccata subsp. dioica			91
	Sarcocornia quinqueflora			MG, Ma, F, 91
	Suaeda australis			MG, 91
	Threlkeldia diffusa			F, 91
	Colchicaceae			
	Burchardia congesta			P, Ba, Bo, M,, T, S, Y,F
	Commelinaceae			
	Cartonema philydroides			Ba, M, T
	*Tradescantia fluminense			Bo

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Convolvulaceae			
#	Wilsonia backhousei			91
#	Wilsonia humilis			91
	Crassulaceae			
	Crassula colorata			P, Ba, Y, F, 91
	Crassula exserta			F, 91
	*Crassula glomerata			Ma, F, 91
	Crassula pedicellosa			F
	Cucurbutaceae			
	*Citrullus lanatus			MG
	*Cucumis myriocarpus			S, MG
	Cuscutaceae			
	*Cuscuta epithymum			Ba
	Cyperaceae			
	Baumea arthrophylla			Ba, T
	Baumea articulata			P, Ba, M, T, S, F
	Baumea juncea			T, Y ,F
	Baumea preissi			Ba, T
	Baumea riparia			Ba, T
	Baumea rubigenosa			Ba, T
	Bolboschoenus caldwellii			Ba, T, MG
	Carex preissii			F
*	Cyperus congestus			Ba, T, S, Y, MG
*	Cyperus eragrostis			Y
	Cyperus polystachyos			Ba, T
	*Cyperus rotundus			Bo, MG
	*Cyperus tenellus			P
	*Cyperus tenuiflora			Bo, M
#	Eleocharis sphacelata			K
#	Fimbristylis vilata			M, S
	Gahnia trifida			Ma, MG, F, MB
	Isolepis cernua			F, 91
	Isolepis marginata			Ba, T, F
	Lepidosperma angustatum			M, S, Y, F, 91
	Lepidosperma costale			Ba, T
	Lepidosperma drummondii			M
#	Lepidosperma gracile			M
	Lepidosperma longitudinale			Ba, Bo, M, T, S, F

Taxon	Prio Code	Geographic Range	Recorded Areas
Lepidosperma scabrum			Ba, T, S
Lepidosperma sp. (Coastal terete BJK & NG 231)			F
Lepidosperma tenue			M, S
Lepidosperma squamatum			Y, F
Mesomelaena pseudostygia			P,Ba, M, T, S, Y, F
Mesomelaena tetragona			P
Schoenus aff. laevigatus			F
Schoenus brevisetis			F
Schoenus brevifolius			Ba, T
Schoenus clandestinus			Ba, Y, F
Schoenus curvifolius			Ba, M, T, S, Y, F
Schoenus grandiflorus			Ba, T, S, Y, 91
Schoenus rodwayanus			F
Schoenus subflavus			Ba, T
Tetraria octandra			P, M, Y, F
Dasypogonaceae			
Acanthocarpus preissii			F, 91
Calectasia cyanea			Ba, M, T, S
Dasypogon bromeliifolius			P, Ba, M, T, S, F
Lomandra caespitosa			F
Lomandra hermaphrodita			F
Lomandra integra			M
Lomandra maritima			Ma, F, 91
Lomandra micrantha			Ba
Lomandra nigricans			Ba, T, F
Lomandra preissii			F
Lomandra suaveolens			Ba, M, F
Dennstaedtiaceae			
Pteridium esculentum			Bo, T, S, P, H, N
Dilleniaceae			
Hibbertia acerosa			91
Hibbertia huegelii			Ba, M, T, Y, F
Hibbertia hypericoides			P, Ba, M, T, S, Y, Ma F, 91
Hibbertia racemosa			P, Ba, M, T, S, Y, F, 91
Hibbertia spicata subsp. leptotheca	3	S Yalgorup	F, 91
Hibbertia stellaris			P, M
Hibbertia subvaginata			M, T, F

	Taxon	Prio Code	Geographic Range	Recorded Areas
Droseraceae				
	Drosera erythrorhiza			Ba, M, T, S, Y, F
	Drosera gigantea subsp. gigantea			P
	Drosera glanduligera			Ba, M, T
	Drosera macrantha			Ba, M, T, S, F
	Drosera menziesii subsp. penicillaris			P, Ba, M, T, F
	Drosera paleacea			Ba, M, Y, F
	Drosera pallida			Ba, M, Y, F
	Drosera stolonifera			M, Y, F
Epacridaceae				
	Acrotriche cordata			91
	Astroloma pallidum			Ba, M, T, S, Y, F
	Brachyloma preissii			Ba, M, F
	Conostephium pendulum			P, T, S, Y, F
	Conostephium preissii			Ba, M, T, Y
	Leucopogon australis			P, M, 91
	Leucopogon conostephioides			Ba, M, T, Y
	Leucopogon gracillimus			F
	Leucopogon oxycedrus			Ba
	Leucopogon parviflorus			M, Ma, F
	Leucopogon propinquus			Ba, Bo, M, T, S, Y, F
	Leucopogon racemulosus			M, F
	Lysinema ciliatum			P, Ba, M, T, S
Euphorbiaceae				
*	Euphorbia peplus			Ba, T, Y, Ma, MG, F, 91
*	Euphorbia terracina			Y, Ma, 91
	Monotaxis grandiflora			P, Ba, M
	Monotaxis occidentalis			Ba, Y
	Phyllanthus calycinus			Ba, M, T, S, Ma, F, 91
	Poranthera microphylla			Ba, F
*	Ricinus communis			Y, MG
Fagaceae				
*	Quercus suberus			P
*	Quercus sp.			S
Frankeniaceae				
	Frankenia pauciflora			91
Fumariaceae				
*	Fumaria capreolata			Ba, T

	Taxon	Prio Code	Geographic Range		Recorded Areas
*	Fumaria muralis				Ba, T
Gentianaceae					
*	Centaurium erythraea				F
*	Centaurium spicatum				Ba
Geraniaceae					
*	Erodium botrys				Ba, T
*	Erodium cicutarium				Ba, T, F, 91
*	Geranium molle				Ba, T, F, 91
*	Pelargonium capitatum				P, T, S, Ma, MG, F, 91
*	Pelargonium domesticum				Bo
	Pelargonium littorale				F
Goodeniaceae					
	Dampiera linearis				P, Ba, M, T, S, F
#	Dampiera triloba				M
	Goodenia ?pulchella				Ba, M, T
#	Lechenaultia biloba	W			M
	Lechenaultia expansa				Ba, T
	Lechenaultia floribunda				P, M, S, Y
	Lechenaultia linarioides	S	Spectacle		S
	Scaevola canescens				Ba, M, T, S, Y
	Scaevola crassifolia				91
	Scaevola globulifera				M
	Scaevola repens				M, Y
Haemodoraceae					
	Anigozanthos humilis				P, Ba, M, T, S, Y, F
	Anigozanthos manglesii				P, Ba, M, T, S, Y
	Anigozanthos viridis				T
	Conostylis aculeata				P, Ba, M, T, S, Y, F, 91
	Conostylis candicans				P, M, T, F
	Conostylis setigera				P, Ba, M, T, Y, F
	Haemodorum paniculatum				Ba, M, T, Y
	Haemodorum spicatum				Ba, Bo, T, Y
	Phlebocarya ciliata				P, Ba, M, T, S, F
	Tribonanthes ?uniflora				P
Gyrostemonaceae					
	Tersonia cyathiflora				MB
Haloragaceae					
	Glischrocaryon aureum				Ba

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Gonocarpus cordiger			Ba
	Gonocarpus pithyoides			F
	Myriophyllum crispatum			Ba
	Myriophyllum integrifolia			Ba
Iridaceae				
*	Chasmanthe floribunda			S
*	Gladiolus caryophyllaceus			P, Ba, M, T, S, Y, F, 91
*	Homeria flaccida			Ba, Y, F, 91
*	Ixia paniculata			Ba
	Patersonia occidentalis			P, Ba, M, T, S, Y, F
	Patersonia occidentalis (swamp form)			N
*	Romulea rosea			Ba, M, T, S, Y, F, 91
*	Tritonia sp.			B
Juncaceae				
*	Juncus acutus			MG, C
*	Juncus articulatus			Ba
*	Juncus bufonius			Ba
	Juncus caespiticius			Ba
	Juncus kraussii			MG, Ma
	Juncus pallidus			P, Bo, M, T, S,Y
	Luzula meridionalis			Ba, T
Juncaginaceae				
	Triglochin calcitrapum			91
	Triglochin procerum			Ba, M, T, F
Lamiaceae				
#	Hemigenia sericea			MB
	Hemiandra pungens			P, Ba, M, T
*	Stachys arvensis			Ba
Lauraceae				
	Cassytha flava			F, 91
	Cassytha glabella			M
	Cassytha pubescens			91
	Cassytha racemosa			Ba, M, T, F, 91
Lemnaceae				
	Lemna disperma			Ba
Lobeliaceae				
	Lobelia alata			F
	Lobelia tenuior			F

	Taxon	Prio Code	Geographic Range	Recorded Areas
Loganiaceae				
	Mitrasacme paradoxa			Ba
Loranthaceae				
	Nuytsia floribunda			P, Ba, Bo, M, T
Lythraceae				
*	Lythrum hyssopifolia			Ba
Malvaceae				
	Allogyne huegelii var. glabrescens	S	Manning L.	Ma
*	Lavatera plebeia			MG, 91
	Lawrencia spicata			91
*	Malva parviflora			MG
Menyanthaceae				
	Villarsia albiflora			Ba
	Villarsia ?capitata			Ba, T
Mimosaceae				
	Acacia cochlearis			Ba, T, Y, F
	Acacia cyclops			Ba, M, T, Y, MG, 91
	Acacia huegelii			Ba, M, T, Y, MG, 91
	Acacia lasiocarpa var. lasiocarpa			F, 91
*	Acacia longifolia			Y, Bl
	Acacia pulchella			P, Ba, Bo, M, T, Y, MG, F, 91
	Acacia rostellifera			T, Ma, F, 91
	Acacia saligna			P, Ba, Bo, M, T, Y, MG, Ma, F, 91
	Acacia stenoptera			Ba, M, T, S, Y, F
	Acacia truncata			Ma, 91
	Acacia willdenowiana			P, M, T, Y
Molluginaceae				
	Macarthuria australis			Ba, T
Moraceae				
*	Ficus carica			MG, H, Ma
*	Morus nigra			MG, Ma, S
Myoporaceae				
	Eremophila glabra			F, 91
	Myoporum insulare			91
Myrtaceae				
	Agonis linearifolia			M, N, H
	Astartea aff. fascicularis			Ba, Bo, M, T, S, Y, F
	Baeckea camphorosmae			Ba, T, S

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Beaufortia elegans			M
	Calothamnus lateralis			P
	Calothamnus quadrifidus			Ma, 91
	Calytrix angulata			Ba, T, S
	Calytrix flavescens			Ba, M, T, F
	Calytrix fraseri			Ba, M, T, F
*	Chamelaucium uncinatum	S	Bold Park	P, M, Ma, Y
	Eremaea ?asterocarpa			Ba, T
	Eremaea pauciflora			Ba, M, T
	Eucalyptus calophylla			P, Ba, M, S, Y, F
*	Eucalyptus citriodora			P
	Eucalyptus decipiens			Ma, MB, 91
	Eucalyptus gomphocephala			Ba, M, T, S, Y, Ma, MG, MB, Ma, F
	Eucalyptus marginata			P, Ba, M, T, S, Y, F
	Eucalyptus rudis			P, Ba, Bo, M, T, S, Y, F
	Eucalyptus todtiana			Ba, T, Y, F
	Hypocalymma angustifolium			P, Ba, M, T, F
	Hypocalymma robustum			P,Ba, M, T, S, Y, F
	Kunzea ericifolia			Ba, M, T, S, Y, F
*	Leptospermum laevigatum			P, M, S, Y, MG
	Melaleuca acerosa			Ma, F, 91
	Melaleuca cuticularis			Co, MG
	Melaleuca huegelii			Ma, MB, 91
	Melaleuca incana			S
*	Melaleuca lanceolata			Ma
	Melaleuca lateritia			P, M, Ro, S, F
	Melaueca preissiana			Ba,Bo, M, T, S, Y, F
	Melaleuca rhaphiophylla			P, Bo, M, S, Y, Ma, MG, Co, Ma, F
	Melaleuca seriata			Ba, M
	Melaleuca teretifolia			P,Ba, Bo, M, T, S,MG, F
	Melaleuca thymoides			P,Ba, M, T, F
	Melaleuca viminea			MG
	Pericalymma ellipticum			P, Ba, M, F
	Regelia inops			M
	Scholtzia involucrata			Ba, M, T,S, F
	Verticordia drummondii			Ba, T
Oleaceae				
*	Olea europea			MG

	Taxon	Prio Code	Geographic Range	Recorded Areas
Onagraceae				
	Epilobium billardierianum			Ba, F
	Epilobium hirtigerum			Ba, F
*	Oenothera stricta			MG
Orchidaceae				
	Caladenia deformis			Ba, T, S, Y
	Caladenia denticulata			Ba, T
	Caladenia discoidea			Ba, T
	Caladenia flava			P, Ba, T, S, Y, F
	Caladenia gemmata			Ba, T
	Caladenia latifolia			Ba, T, Y, F, 91
	Caladenia longicauda			Ba, M, T
	Caladenia ?paludosa			Ba, M, T
	Diuris emarginata			Ba, T
	Diuris longifolia			P, Ba,M, T, F
	Elythranthera brunonis			P, Ba, M, T, F
	Elythranthera emarginata			M
#	Epiblema grandiflorum			Ba
	Leporella fimbriata			M
	Lyperanthus nigricans			Ba, M, Y
	Microtis media			Ba, M, T, Y, F
*	Monadenia bracteata			F, 91
	Prasophyllum fimbria			Ba
	Prasophyllum ovale			Ba, T
	Prasophyllum parvifolium			Ba
	Pterostylis aff. nana			M, T
	Pterostylis recurva			Ba
	Pterostylis scabra var. robusta			M
	Pterostylis vittata			M, S, Y
	Thelymitra benthamiana			F
	Thelymitra campanulata			Ba, M, T
	Thelymitra crinita			M
Orobanchaceae				
*	Orobanche minor			Ba, M, Y
Oxalidaceae				
*	Oxalis pes-caprae			Ba, T
*	Oxalis purpurea			Ba, T

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Papilionaceae			
	Aotus cordifolia			P, Ba, M
	Aotus gracillima			P, Ba, M, T
	Aotus procumbens			M, Y
	Bossiaea eriocarpa			P, Ba, M, , S, YTF
	?Callistachys lanceolata			P
*	Cystus prolifera			M
	Daviesia decurrens			Ba, M, T, Y
	Daviesia divaricata			P, M, Y, F
	Daviesia nudiflora			Ba, M, T, Y
	Daviesia physodes			P, BL, Ba, M, T, S
	Daviesia triflora			P, Ba, M, T, S, Y, F
	Eutaxia virgata			E, Ba, M
	Gompholobium confertum			M
	Gompholobium tomentosum			P, Ba, M, T, S, Y, F
	Hardenbergia comptoniana			P, Ba, Bo, M, T, S, Y, MG, , 91F
	Hovea pungens			P, Ba, M, T, S, F
	Hovea trisperma			Ba, M, T, S, F
	Isotropis cuneifolia			Ba, M, T, S, Y, F
	Jacksonia aff. sericea (swamp form)	eP		N
	Jacksonia furcellata			P, Ba, Bo, M, T, S, Y, 91
	Jacksonia sternbergiana			P, Ba, Bo, M, T, S, Y, F
	Kennedia coccinea			91
	Kennedia prostrata			P, Ba, Bo, M, T, S, Y, F
	Latrobea tenella			Ba, M
*	Lupinus angustissimus			Y, MG
*	Lupinus cosentinii			Ba, T, S, Y, MG
*	Medicago polymorpha			Ba, T
*	Melilotus indicus			Ba, T, MG, F, 91
	Nemcia capitata			P, Ba, M, T, S, Y, F
	Nemcia reticulata			F, 91
*	Ornithopus sativus			Ba
	Oxylobium lineare			P, M
	Pultenaea ochreata			Ba, M, T, S
	Pultenaea reticulata			P, Ba, T, S, F
	Sphaerolobium vimineum			Ba, M, F
	Templetonia retusa			Ma, MG
*	Trifolium angustifolium			Ba

	Taxon	Prio Code	Geographic Range	Recorded Areas
*	Trifolium arvense			MG
*	Trifolium campestre			Ba, T, Y, F, 91
*	Trifolium cernuum			Ba, F, 91
*	Trifolium dubium			Ba, T
*	Trifolium glomeratum			Ba
*	Trifolium pratense			Ba, t
*	Vicia hirsuta			Ba, T
*	Vicia sativa			P, Ba, M, T, M, F
	Viminaria juncea			Ba, M, T, S
Phytolaccaceae				
*	Phytolacca octandra			91
Phormiaceae				
	Dianella revoluta			P, Ba, Bo, M, T, S, Y, MG, 9
Pinaceae				
*	Pinus pinaster			P, Ma
Pittosporaceae				
	Pittosporum phylliraeoides			MG
	Pronaya fraseri			Ba, M
	Sollya heterophylla			MG
Plantaginaceae				
*	Plantago lanceolata			MG
Poaceae				
*	Aira caryophyllea			Ba, Y, F, 91
*	Aira cupaniana			Ba
*	Aira praecox			Ba
	Amphipogon laguroides			Ba, M, T, F
	Amphipogon turbinatus			Ba, M, T, F
*	Arundo donax			Y, MG
*	Avellinia michelii			F
*	Avena barbata			P, Ba, T, F, 91
*	Avena fatua			Y, MG, F
*	Briza maxima			P, Ba, T, S, Y, F, 91
*	Briza minor			P, Ba, T, S, Y, MG, F, 91
*	Bromus diandrus			F, 91
*	Bromus hordeaceus			F, 91
*	Catapodium rigidum			91
*	Cortaderia selloana			T
	Cynodon dactylon			Bo, T, S, Y, MG

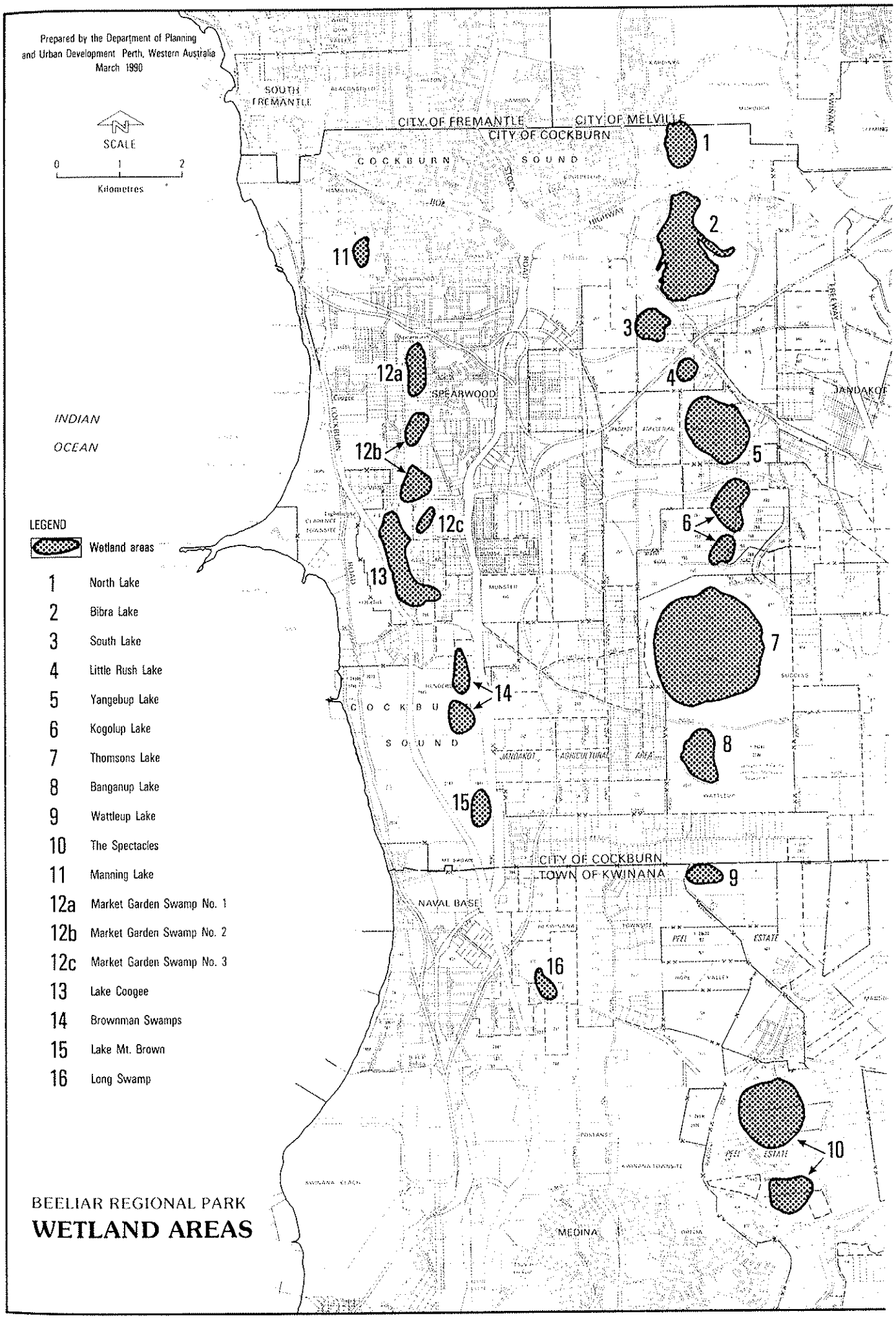
	Taxon	Prio Code	Geographic Range	Recorded Areas
	Danthonia occidentalis			Ba, T, F, 91
	Deyeuxia quadriseta			Ba, T, F
*	Diandrus gussonii			Ba, T
	Dichelachne crinita			F
*	Digitaria sanguinalis			Ba
*	Echinochloa crus-galli			MG
*	Ehrharta calycina			P, Ba, Bo, T, S, Y, MG, F, 91
*	Ehrharta longiflora			Ba, T, Y, F
	Hemarthria uncinata			Ba, T
*	Holcus setiger			F
*	Hordeum leporinum			Y
*	Lagurus ovatus			Ba, T, Y, MG, F, 91
*	Lolium multiflorum			91
*	Lolium perenne			Ba, T
*	Lolium rigidum			Y, F
	Microlaena stipoides			Ba, T, F
*	Paspalum dilatatum			MG
*	Paspalum distichum			Y, MG
*	Paspalum vaginatum			Ba, T, Y
*	Pennisetum clandestinum			Bo, S, Y, MG, Ma
*	Phalaris minor			91
*	Poa annua			F
	Poa drummondiana			Ba, T, 91
	Poa poiformis/porphyroclados			Ba, F, 91
*	Polypogon monspeliensis			Ba, T
*	Rhynchelytrum repens			Y
*	Secale cerale			MG
	Sporobolus virginicus			Y, F, 91
	Spinifex longifolius			91
*	Stenotaphrum secundatum			Ba, Bo, T, MG
	Stipa compressa			Ba, T, Y, F
	Stipa flavescens			Ba, T, Y, 91
	Stipa semibarbata			Ba, T
	Stipa variabilis			Ba, T
*	Vulpia bromoides			Ba, T, F
*	Vulpia myuros			Ba, F, 91
Polygalaceae				
	Comesperma calymega			Ba, M, T, F

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Comesperma confertum			F, 91
	Comesperma flavum			Ba
	Comesperma virgatum			Ba, M, T
Polygonaceae				
*	Emex austrlis			MG, Ma
	Muehlenbeckia polybotrya			Ba, T
*	Polygonum aviculare			MG, Ma
	Polygonum salicifolium			Bl, Bo, T
*	Rumex acetosella			Ba, T
*	Rumex crispus			Ba, T
Portulacaceae				
	Calandrinia calyptrata			F
	Calandrinia corrigioloides			Ba, T, F, 91
	Calandrinia granulifera			Ba
	Calandrinia liniflora			Y
	Portulaca oleracea			MG
Primulaceae				
*	Anagallis arvensis			P, Ba, M, T, S
	Samolus junceus			F, 91
	Samolus repens			F, 91
Proteaceae				
	Adenanthos cygnorum			P, Ba, M, T, S
	Adenanthos obovatus			S
	Banksia attenuata			P, Ba, Bo, M, T, S, Y, F, 91
	Banksia grandis			Ba, M, T, Y
	Banksia ilicifolia			P, Ba, Bo, M, T, Y, F
	Banksia littoralis			P, Ba, Bo, M, T, F
	Banksia menziesii			P, Ba, Bo, M, T, S, Y, F, 91
	Conospermum stoechadis			Ba
	Conospermum triplinervium			Ba, T
	Dryandra nivea			Ba, T, S, Y, Ma, F, 91
	Dryandra sessilis			M, T, Y, Ma, F, 91
	Grevillea preissii			Ma, F, 91
	Grevillea vestita			Ba, Y, 91
	Hakea lissocarpha			Ba, S, 91
	Hakea prostrata			Ba, M, T, Y, Ma, F, 91
	Persoonia saccata			P, Ba, T, S, Y
	Petrophile brevifolia			Y

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Petrophile linearis			P, Ba, M, T, S, Y, F
	Petrophile serruriae			F,91
	Stirlingia latifolia			P, Ba, M, T, S, Y, F
	Synaphea spinulosa			P, Ba, M, T, S, Y
	Xylomelum occidentale			Ba, M
Ranunculaceae				
	Clematis pubescens			Ba, M, T, Ma
*	Ranunculus muricatus			Ba, M, T
Restionaceae				
	Alexgeorgea nitens			Y
#	Empodisma gracillimum			M
	Hypolaena exsulca			Ba, M, T, F
	Leptocarpus aristatus			P, M, Y
	Leptocarpus coangustatus			F
	Leptocarpus scariosus			Ba
	Lepyrodia muirii			Ba, T
	Loxocarya flexuosa			M, S, Y F, 91
	Loxocarya pubescens			Ba, T, S
	Lyginia barbata			P, M, T, S, Y
	Restio stenostachyus			Ba, T
Rhamnaceae				
	Cryptandra mutila			F, 91
	Spyridium globulosum			Ma, 91
Rubiaceae				
*	Galium aparine			F, 91
*	Galium murale			F
	Opercularia hispidula			Ba, F
	Opercularia vaginata			Ba, M, S, Y, F, Ma
Rutaceae				
	Boronia crenulata			Ba, M, T, F
	Boronia ramosa			M
	Eriostemon spicatus			P, Ba, M, T, S, Y, F
Salicaceae				
*	Salix babylonica			Bl, Bo, MG
Santalaceae				
	Dodonaea aptera			Y
	Dodonaea hackettiana	4	eW	Ba, T, S
	Exocarpos sparteus			Ba, Bo, M, T, S

	Taxon	Prio Code	Geographic Range	Recorded Areas
	Leptomeria cunninghamii			F
	Leptomeria empetriformis			Ba, T
	Leptomeria spinosa			Ba
	Santalum acuminatum			Ba, 91
Scrophulariaceae				
*	Bellardia trixago			Ba, F
*	Cymbalaria muralis			Ba
*	Dischisma arenarium			Ba, F
	Gratiola peruviana			Ba
*	Parentucellia latifolia			Ba
*	Parentucellia viscosa			Ba, M, F, 91
*	Verbascum virgatum			M, T, 91
*	Veronica arvensis			F
Solanaceae				
*	Nicotiana glauca			Y, MG, 91
*	Solanum nigrum			Ba, T, S, MG, 91
	Solanum symonii			Y, MG, 91
Stackhousiaceae				
	Stackhousia monogyna			P, Ba, MG
Sterculiaceae				
	Thomasia cognata			F, 91
Stylidiaceae				
	Levenhookia pusilla			F
	Levenhookia stipitata			Ba, M, F
	Stylidium brunonianum			P, Ba, M, T, Y
	Stylidium bulbiferum			F, 91
	Stylidium calcaratum			Ba, M
	Stylidium junceum			P, Ba, T
	Stylidium piliferum			Ba, M, T, S, F
	Stylidium repens			Ba, M, T, F
	Stylidium schoenoides			Ba, M, T, Y, F
Thymelaeaceae				
	Pimelea angustifolia			Ba, M , T
	Pimelea calcicola			Ma, F, 91
	Pimelea rosea			P, Bo, M, T, S, Y, F
	Pimelea sulphurea			M, Y, F
Tropaeolaceae				
*	Tropaeolum majus			Y

Taxon	Prio Code	Geographic Range	Recorded Areas
Tremandraceae			
Platytheca galioides			Ba, M, T
Typhaceae			
Typha domingensis			Ba, T, S
* Typha orientalis			Y, MG
Urticaceae			
Parietaria debilis			91
Verbenaceae			
* Lantana camera			Y
Violaceae			
Hybanthus calycinus			P, Ba, M, T, S, Y, F, 91
Vitaceae			
* Vitus vinifera			MG
Xanthorrhoeaceae			
Xanthorrhoea brunonis			S
Xanthorrhoea preissii			P, Ba, Bo, M, T, S,Ma, MG, F
Zamiaceae			
Macrozamia riedlei			Ba, Bo, M, S, Y, F, 91
Zygophyllaceae			
Zygophyllum fruticulosum	S	Port Kennedy	91
* Tribulus terrestis			MG


Prepared by the Department of Planning
and Urban Development Perth, Western Australia
March 1990
SCALE
0 1 2
Kilometres
SOUTH FREMANTLE
CITY OF FREMANTLE
CITY OF MELVILLE
CITY OF COCKBURN
COCKBURN SOUND
INDIAN OCEAN
SPEARWOOD
JANDAKOT
JANDAKOT AGRICULTURAL AREA
NAVAL BASE
CITY OF COCKBURN
TOWN OF KWINANA
MEDINA
PEEL ESTATE
LEGEND
Wetland areas
1 North Lake
2 Bibra Lake
3 South Lake
4 Little Rush Lake
5 Yangebup Lake
6 Kogolup Lake
7 Thomsons Lake
8 Banganup Lake
9 Wattleup Lake
10 The Spectacles
11 Manning Lake
12a Market Garden Swamp No. 1
12b Market Garden Swamp No. 2
12c Market Garden Swamp No. 3
13 Lake Coogee
14 Brownman Swamps
15 Lake Mt. Brown
16 Long Swamp
BEELIAR REGIONAL PARK
WETLAND AREAS

Map

Thomsons Lake Urban Structure Study and South Jandakot Development Water Resources Management Plan

Ministerial Condition 2

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 388 May 1989

THOMSONS LAKE URBAN STRUCTURE STUDY AND SOUTH JANDAKOT DEVELOPMENT WATER RESOURCES MANAGEMENT PLAN

MINISTERIAL CONDITION 2

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia

Bulletin 388 May 1989

CONTENTS

FIGURES

APPENDICES

5.3 The proposed drain will damage native vegetation around several lakes in the Beeliar Wetlands. This will increase the midge problem, increase insecticide use to control them and degrade wildlife refuges (389 proforma letters and 14 submissions).

5.4 The fence and canal will interfere with movements of wildlife restricting feeding and breeding ranges.

5.5 Clearing for the channel and sewer line will reduce the number of large trees used for bird nesting and destroy vegetation. Rehabilitation of the sewerage easement will be slow and will result in vegetation which is not as natural as the vegetation it replaced. Rehabilitation should be to the satisfaction of the Department of Conservation and Land Management with advice from the Beeliar Regional Park Consultative Committee. An alternative route for the sewer line to Thomsons Lake Estate is available through jarrah woodland to the west of Lake Kogalup which has been recently constructed.

5.6 Not all of the species of wetland flora found in the area are found in conservation reserves and they may be lost if the development goes ahead.

Overall, the proposal will result in the loss of diversity amongst wetlands of the Beeliar Region. Domestic animals may become more of a problem in reserved areas. The movement of water may enhance the spread of dieback.

5.7 The lowering of the water table will destroy several important ephemeral wetlands, including Twin Bartrum Swamps, a breeding site for the rare Freckled Duck. Some of these wetlands contain invertebrate fauna no longer found in the Beeliar Lakes.

6. OTHER ISSUES

6.1 The opinion was expressed that the drainage system should be built on the developers own land rather than on public land intended for conservation and recreation. It was felt the channel should be financed by the developer (389 proforma letters and 5 submissions).

6.2 Private land owners and horse riding activities will be disrupted by the building of the channel and flooding of private land may still occur in wet years. Compensation of private land owners has not been considered.

6.3 One submission stated that such developments, as the drainage system, reduce the beauty of Perth and the quality of life.

6.4 One submission stated that the proponent is in breach of procedure in so far as re-zoning has been initiated before the EPA is satisfied its conditions have been met.

6.5 The proposed drain was considered to be a safety hazard for children (111 proforma letters and 4 submissions.)

6.6 One submission stated that a comprehensive survey of aboriginal sites in the area has not been carried out and there are aboriginal sites registered with the Western Australian Museum which may be affected by the proposed drainage plan.

THOMSONS LAKE
BS 391
Boss. S.

Thomsons Lake Urban Development

Revised South Jandakot Drainage Management Plan

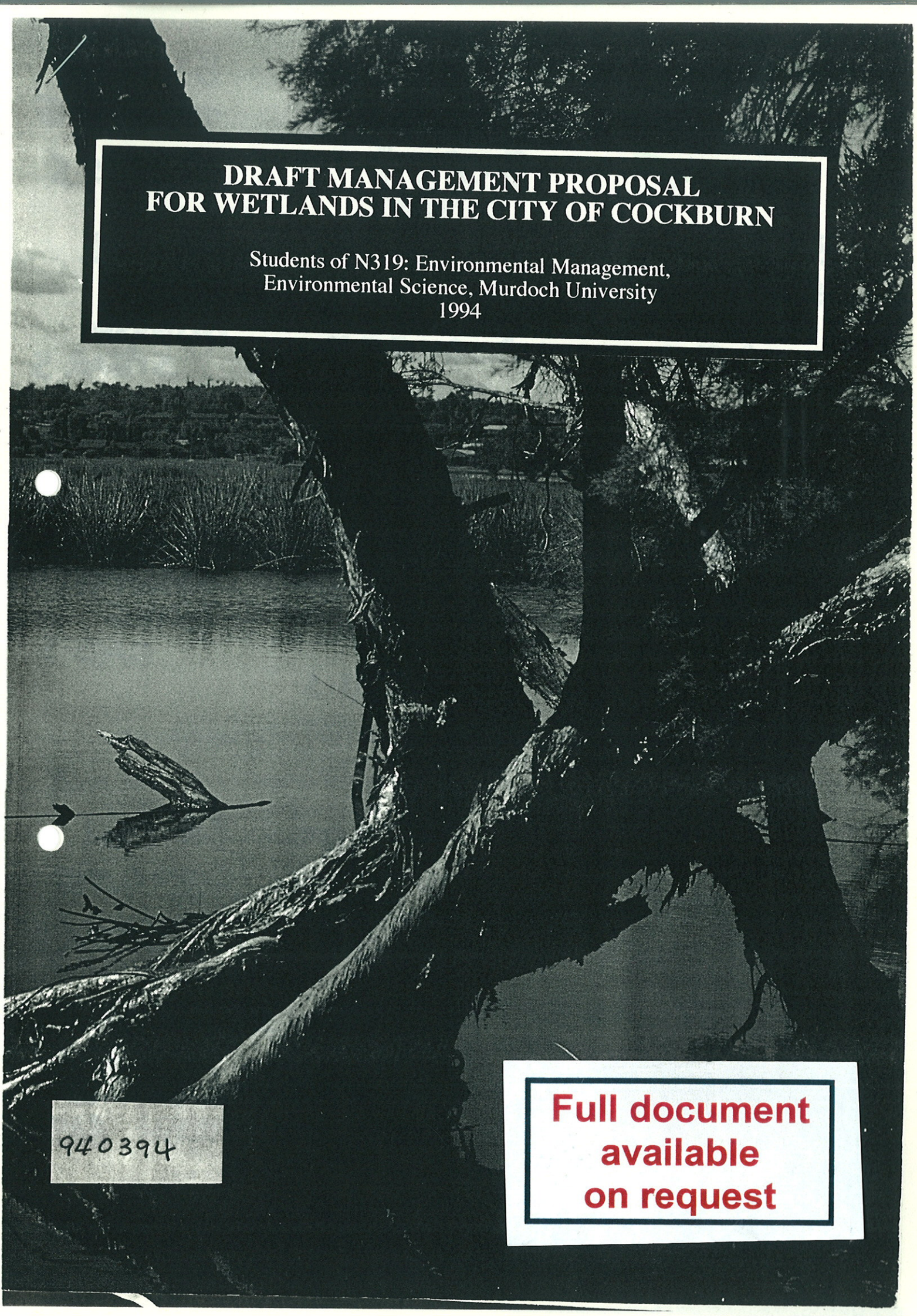
Ministerial Condition 2

Report and Recommendations

of the

Environmental Protection Authority

THE COCKBURN WETLANDS : AN ENVIRONMENTAL STUDY



DRAFT MANAGEMENT PROPOSAL FOR WETLANDS IN THE CITY OF COCKBURN

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

1994

A PRELIMINARY REPORT ON THE ECOLOGY AND CULTURAL SIGNIFICANCE OF LAKE KOGOLUP AND THE SURROUNDING AREA

A Report to the Beeliar Regional Park Coordinating Committee

Authors - Dr Frank Murray and Garry Middle

January 1989

Environmental Sciences
Murdoch University

BS391

9.9 LAKE KOGOLUP

9.9(a) GENERAL INFORMATION

LOCAL AUTHORITY: City of Cockburn
MRS ZONE: Rural
RESERVE NOS: n/a
MANAGEMENT: Private landholders
SYSTEM 6 RECOMMENDATION: M93
WAC CLASSIFICATION: LE.f.m.p/s.so.
WATER RESERVE: West of Jandakot Public Water Supply Area
DRAINAGE: Future drainage of proposed urban areas.

9.9(b) AREAS

Total wetland	58.7 ha
Paperbarks	3.3 ha
Sedgeland	15.9 ha
Open water zone	28.1 ha
Flooded gum/Acacia within wetland	9.6 ha
Modified wetland	1.8 ha

9.9(c) VEGETATION AND FAUNA

Figures 9.13 and 9.14 show wetland plant communities and a diagrammatic cross-section for Lake Kogolup. Newman (1976) described the vegetation and fauna of Lake Kogolup.

9.9(d) REFERENCE

Newman, P (editor) (1976), The Cockburn wetland study. Prepared by students of Murdoch University for the Town of Cockburn.

9.10 THOMSONS LAKE BS391

9.10.1 GENERAL INFORMATION

LOCAL AUTHORITY: City of Cockburn
MRS ZONE: Parks and Recreation
RESERVE NUMBER: A15556
PURPOSE: Conservation of Flora and Fauna
MANAGEMENT: Department of Conservation and Land Management
SYSTEM 6 RECOMMENDATION: M93
WAC CLASSIFICATION: LE.f.l.s.o
WATER RESERVE: West of Jandakot Public Water Supply Area
DRAINAGE: Current rural; future urban.

9.10.2 PHYSIOGRAPHY AND GEOLOGICAL SETTING

Thomsons Lake is a depression at the interface of Bassendean and Karrakatta systems. It is surrounded by a ring of sand dunes, most pronounced on the eastern side.

The western margin of the lake rises to high Spearwood Dunes. The land surrounding the lake shows evidence of previous shorelines.

The lake is circular in shape except for a notch at the northern end. The lake basin is saucer-shaped.

9.10.3 AREAS

Total area of Reserve	508.7 ha
Total wetland area	253.7 ha
Melaleuca/wetland woodland	1.3 ha
Sedgeland	101.2 ha
Open water zone	151.0 ha

9.10.4 HYDROLOGY (Figure 9.16)

Table 9.8. Thomsons Lake: summary of water level records related to lake bathymetry for the years 1971-84.

VOLUME		LEVEL	NO YEARS MAX	NO YEARS MIN
$m^3 \times 10^6$	%	m AHD	EXCEEDS LEVEL AND VOLUME	LESS THAN LEVEL AND VOLUME
3.75	100	13.8*	3	15
2.81	75	13.4	4	15
1.87	50	13.0	6	15
0.94	25	12.5	12	10
0.40	10	12.1	15	10
0.07	2	11.9	15	8