BANJUP BUSHLAND, BANJUP

Boundary Definition: protected area/bushland taken to zoning/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. 263 **Area (ha):** bushland 103.9 (Site also includes open water.)
Map no. 59 **Map sheet series ref. no.** 2033–I SE, 2033–I SW
Other Names: Part Submission Area 13, includes Buckingham, Bosworth and Emma Treeby Reserves, part of Jandakot Regional Park, part of Gibbs Road Wetland System
Local Authorities (Suburb): City of Cockburn (Banjup, Atwell)

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 (Qhw: Ms5) (Qrw: Sp1)

VEGETATION AND FLORA

Vegetation Complexes
Bassendean Dunes
Bassendean Complex — Central and South
Floristic Community Types: *not sampled, types inferred
Supergroup 2: Seasonal Wetlands
*4 *Melaleuca preissiana* damplands
*11 Wet forests and woodlands
*S3 Wet sedgelands on sandy clays
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
*21c Low–lying *Banksia attenuata* woodlands or shrublands
*22 *Banksia ilicifolia* woodlands
*23a Central *Banksia attenuata — B. menziesii* woodlands

WETLANDS

Wetland Types: sumpland, artificial channel
Natural Wetland Groups
Bassendean Dunes
Jandakot (B.3)
Wetland Management Objectives: Conservation (61.6ha), Resource Enhancement
Swan Coastal Plain Lakes EPP: 2ha + 1.2ha + 3.8ha = 7ha (total)

THREATENED ECOLOGICAL COMMUNITIES

Not assessed, Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (DEP 1998, Trudgen 1990, part Site — Semeniuk, V&C Research Group 1997a); detailed survey (Keighery, GJ, 1992b)

Structural Units: mapping (Keighery, GJ, 1992b, Trudgen 1990, part Site — Semeniuk, V&C Research Group 1997a)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana*

Wetlands: *Eucalyptus rudis* Tall Open woodland; *Melaleuca preissiana* Low Woodland over mixed Low Open Heath; *Melaleuca cuticularis* Low Open Woodland; *Melaleuca rhaphiophylla* Low Forest to Tall Open Scrub; Tall Scrub dominated by *Melaleuca viminea* and combinations of *M. rhaphiophylla*, *M. viminea* and *M. polygaloides*; *Pericalymma ellipticum* and *Calothamnus lateralis* Heath; *Hypocalymma angustifolium* Open Low Heath; Sedgelands dominated by *Dielsia stenostachya*, *Baumea juncea* or *B. articulata* or *Baumea juncea* and *B. articulata*

Vegetation Condition: >80% Excellent, <20% Good to Completely Degraded (Trudgen 1990)
Total Flora: 201 native taxa (Keighery, GJ, 1992b) (estimated >75% expected flora)
Significant Flora: Keighery, GJ, 1992b— *Tripterococcus paniculatus* ms (1), *Phyllota gracilis* (3), *Macarthuria apetala*, *Dielsia stenostachya* (largest known occurrence in intact bushland), *Gonocarpus pithyoides*

Fauna: Significant mammal species: Quenda (Friend 1996 D)
Linkage: adjacent bushland to the south and east; part of Greenway 81 (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)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed: Indicative place (AHC 2000 D)

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, 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 Site for conservation purposes within Jandakot Regional Park is endorsed. Part B: Local Reserve Mechanism (see Table 3, Volume 1).

BANJUP BUSHLAND, BANJUP

Boundary Definition: protected area/bushland taken to zoning/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. 263 **Map no.** 74, 75

Map sheet series ref. no. 2033–I SE, 2033–I SW

Other Names
Part Submission Area 13, includes Buckingham, Bosworth and Emma Treeby Reserves

Local Authorities (Suburb)
City of Cockburn (Banjup, Atwell)

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

Area (ha): total 141.2 (includes open water); bushland 103.9

Zoning
MRS: Parks and Recreation, Rural-Water Protection
TPS: Lakes and Drainage, Local Road, R.O.W., P.A.W., Parks and Recreation, Public Purposes

Lot/Location/Reserve numbers (Purpose), Street name
209 Beenyup Rd; 206, 577, 643 Gibbs Rd; 0 Tapper Rd; 418 Liddelow Rd; 541, 543 Bartram Rd; 541, 626, 638 Harper Rd; 37816 Gutteridge Rd
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 (Qhw: Ms5) (Qrw: Sp1)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes
Bassendean Complex — Central and South

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands
*4 *Melaleuca preissiana* damplands
*11 Wet forests and woodlands
*S3 Wet sedgelands on sandy clays

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
*21c Low lying *Banksia attenuata* woodlands or shrublands
*22 *Banksia ilicifolia* woodlands
*23a Central *Banksia attenuata* — *B. menziesii* woodlands

WETLANDS

Wetland Types: sumpland, artificial channel

Natural Wetland Groups

Bassendean Dunes
Jandakot (B.3)

Wetland Management Objectives: Conservation (61.6ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: 2ha + 1.2ha + 3.8ha = 7ha (total)

THREATENED ECOLOGICAL COMMUNITIES

Not assessed; Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: open water, vegetated wetland, vegetated uplands

Vegetation and Flora: detailed survey (Keighery, GJ, 1992b), limited survey (DEP 1998, Trudgen 1990); part Bushplan Site - Semeniuk, V&C Research Group 1997a)

Structural Units: mapping (Keighery, GJ, 1992b, Trudgen 1990; part Bushplan Site - Semeniuk, V&C Research Group 1997)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland; *Banksia attenuata* Low Woodland with scattered *B. menziesii*, *B. ilicifolia* and *Eucalyptus todtiana*

Wetlands: *Eucalyptus rudis* Tall Open woodland; *Melaleuca preissiana* Low Woodland over mixed Low Open Heath; *Melaleuca cuticularis* Low Open Woodland; *Melaleuca rhaphiophylla* Low Forest to Tall Open Scrub;

Tall Scrub dominated by *Melaleuca viminea* and combinations of *M. rhaphiophylla, M. viminea* and *M. polygaloides*; *Pericalymma ellipticum* and *Calothamnus lateralis* Heath; *Hypocalymma angustifolium* Open Low Heath; Sedgelands dominated by *Restio stenostachyus, Baumea juncea* or *B. articulata* or *Baumea juncea* and *B. articulata*

Vegetation Condition: >80% Excellent, <20% Good to Completely Degraded (Trudgen 1990)

Total Flora: 201 native taxa (Keighery, GJ, 1992b) (estimated >75% expected flora)

Significant Flora: Keighery, GJ, 1992b — *Tripterococcus paniculatus* ms (1), *Phyllota gracilis* (3), *Macarthuria apetala, Restio stenostachyus* (largest known occurrence in intact bushland), *Gonocarpus pithyoides*

Fauna: no systematic survey. Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north, south, east and west; part of proposed Greenway 96 (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)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

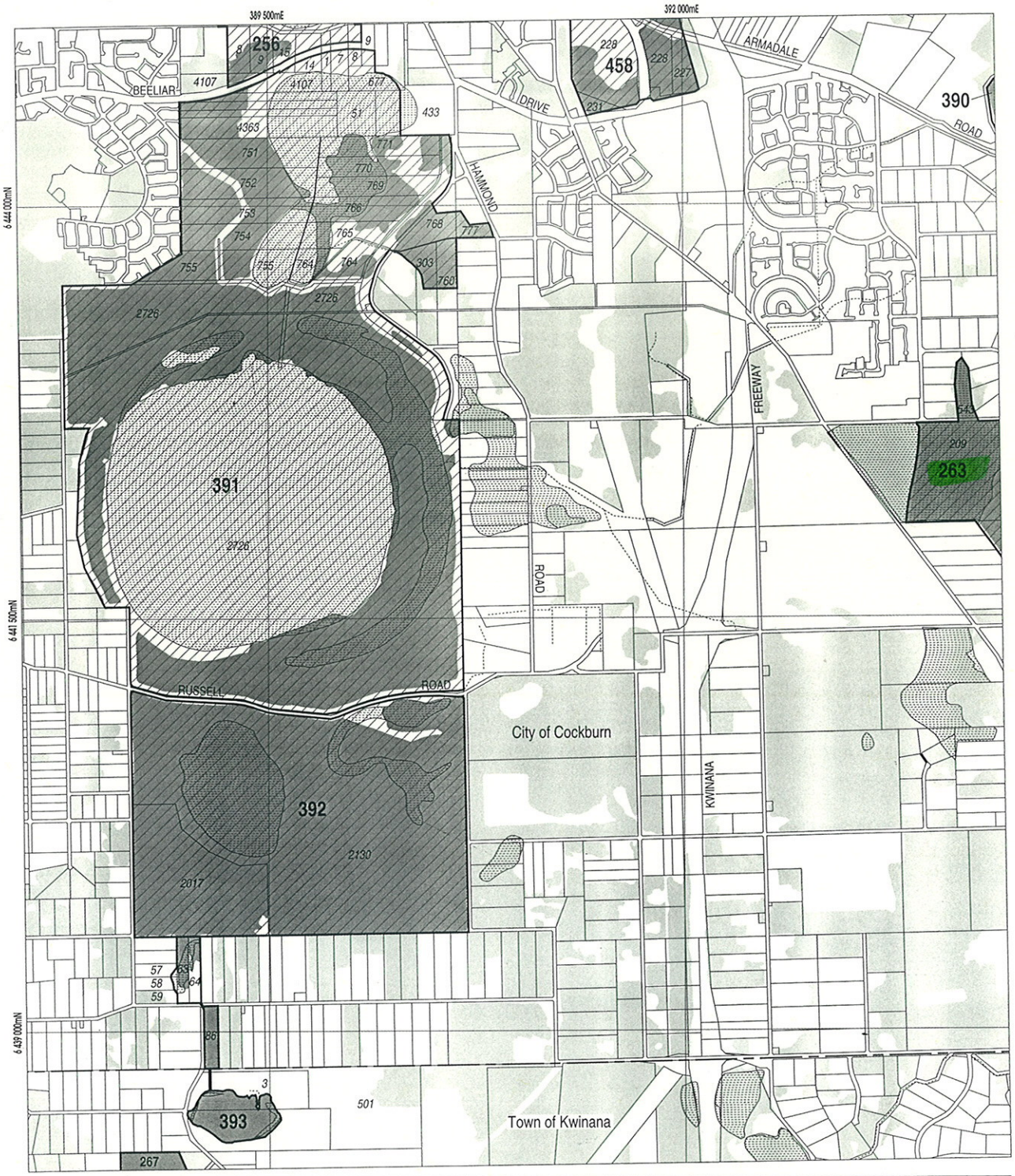
Criteria: Representation of ecological communities, Diversity, Rarity, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

Opportunities and/or Constraints

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

Constraints: private land; under General Mineral Resource Area (sand)

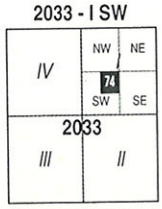
Recommendation: The care, control and management of parts of this Bushplan Site for conservation purposes within Jandakot Regional Park is endorsed. The most appropriate mechanism for the protection of the remainder of this Bushplan Site be considered through the public comment period in consultation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



LEGEND

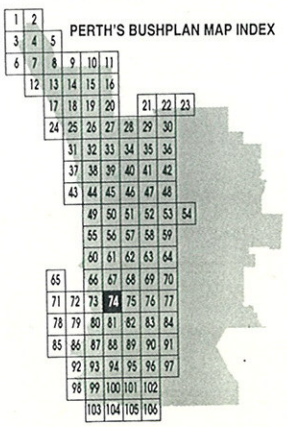
- 472 — Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- 696 — Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

2033 - I SW



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

PERTH'S BUSHPLAN MAP INDEX



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SCALE

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Metres

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

ntw-map9//environ/bushplan//bushv2_74.dgn

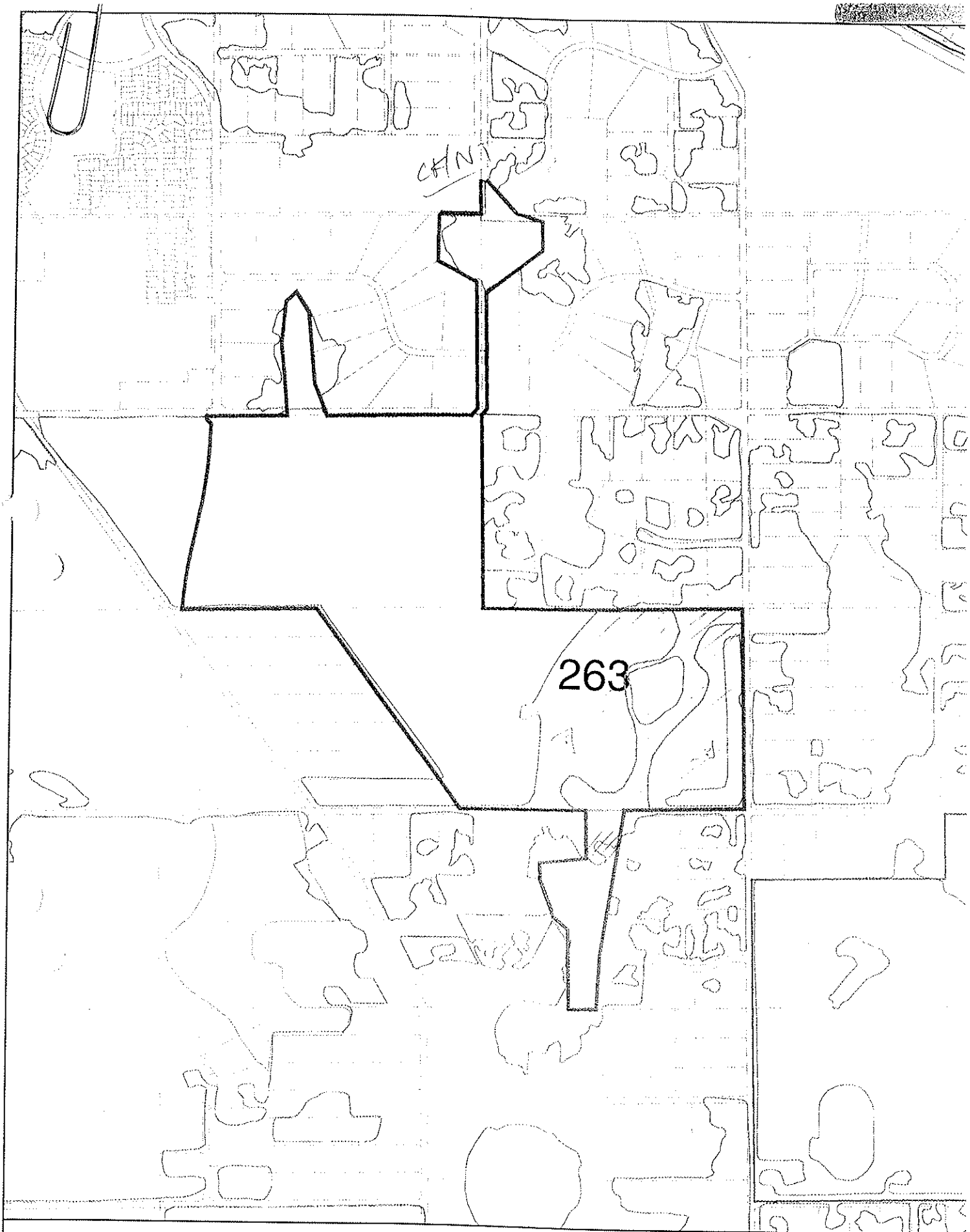
Cadastral Data supplied by Department of Land Administration, W.A.

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

NT/CL

CUSTOMER FOCUS WESTERN AUSTRALIA

SIGN. VEG. MISSING

N

- NO BOUNDARY CHANGES

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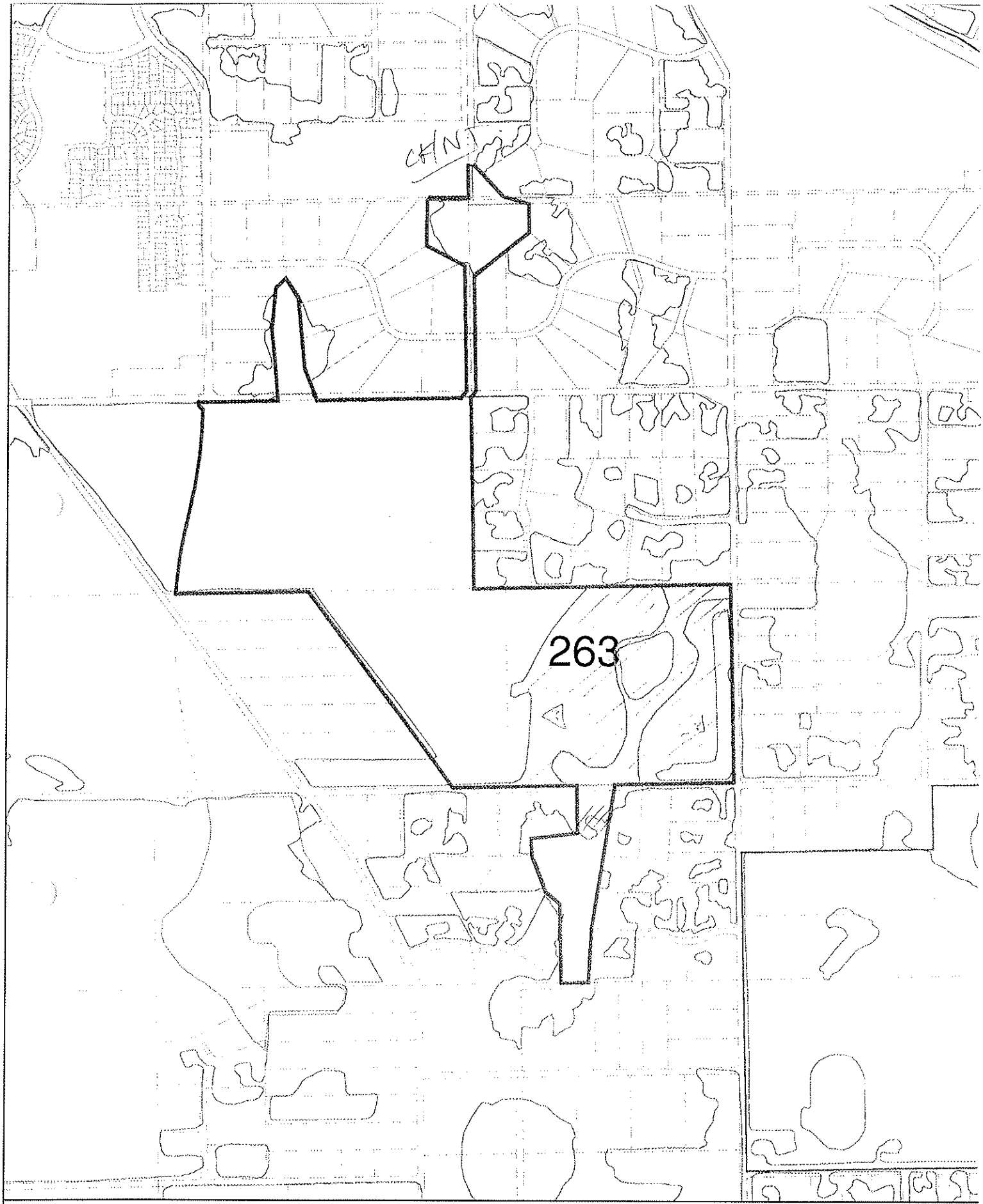

BUSHPLAN SITES CORRECTED

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

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- NO BOUNDARY CHANGES

BS 244
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BS 261
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BS 262
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PIARRA

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THOMPSON

BS 392
SPEAR. S
HARRY WAR

BS 435
BS 429
SPEAR S
MARKE

Proposals for the

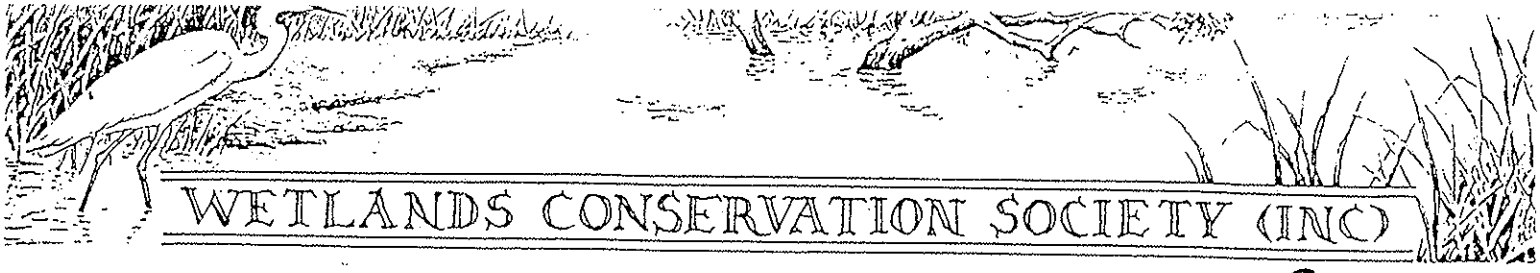
Jandakot Botanic Park

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



(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

Natural Reserves Management Study

Report to:

Environmental Division
City of Cockburn

Report by:

V & C Semeniuk Research Group

JUNE 1997

TABLE OF CONTENTS

limestone. Carbonate muds in the chain of wetlands of the Coogee Suite, to which this wetland belongs, are of calcitic and dolomitic mineralogy. The vegetation is concentriform and consists of low forest (*Melaleuca rhaphiophylla*), and sedgeland (*Gahnia trifida, Juncus kraussii, Baumea juncea*), with some invasion by the aggressive wetland weed Pampas Grass (**Cortaderia selloana)*). Also present are: *Acacia saligna, Apium prostratum, *Aster subulatus, Banksia litoralis, Centella cordifolia, *Cirsium vulgare, Lepidosperma longitudinale, Logania vaginalis, *Pennisetum clandestinum, Samolus repens, Sarcocornia quinqueflora, Sonchus hydrophilus, Sporobolus virginicus, *Stenotaphrum secundatum.* A vegetated buffer zone surrounds the northern, eastern and western side of the wetland. These surrounding ridges are vegetated by forest dominated by *Eucalyptus gomphocephala*, which is gradually replaced by scrub dominated by *Melaleuca huegelii* at higher relief and where limestone is exposed. The condition of the wetland vegetation is good (Figure 4).

The wetland Lake Mt Brown belongs to the same suite as the Brownman Swamps (Semeniuk 1988). Lake Mt Brown is part of a linked system, hydrologically and ecologically. The wetland changes from having permanent open water to seasonal open water in response to cyclic rainfall conditions but in either state it compliments the completely vegetated wetlands to the north.

The important functions of this reserve are mainly ecological, hydrological, and cultural (pertaining to heritage). They are:

1. as a waterfowl habitat; this more open wetland provides feeding and loafing sites complimenting the vegetated wetlands to the north which provide protection and cover for avifauna

2. as a receiving basin for groundwater from the north, effecting its hydroperiod and depth.

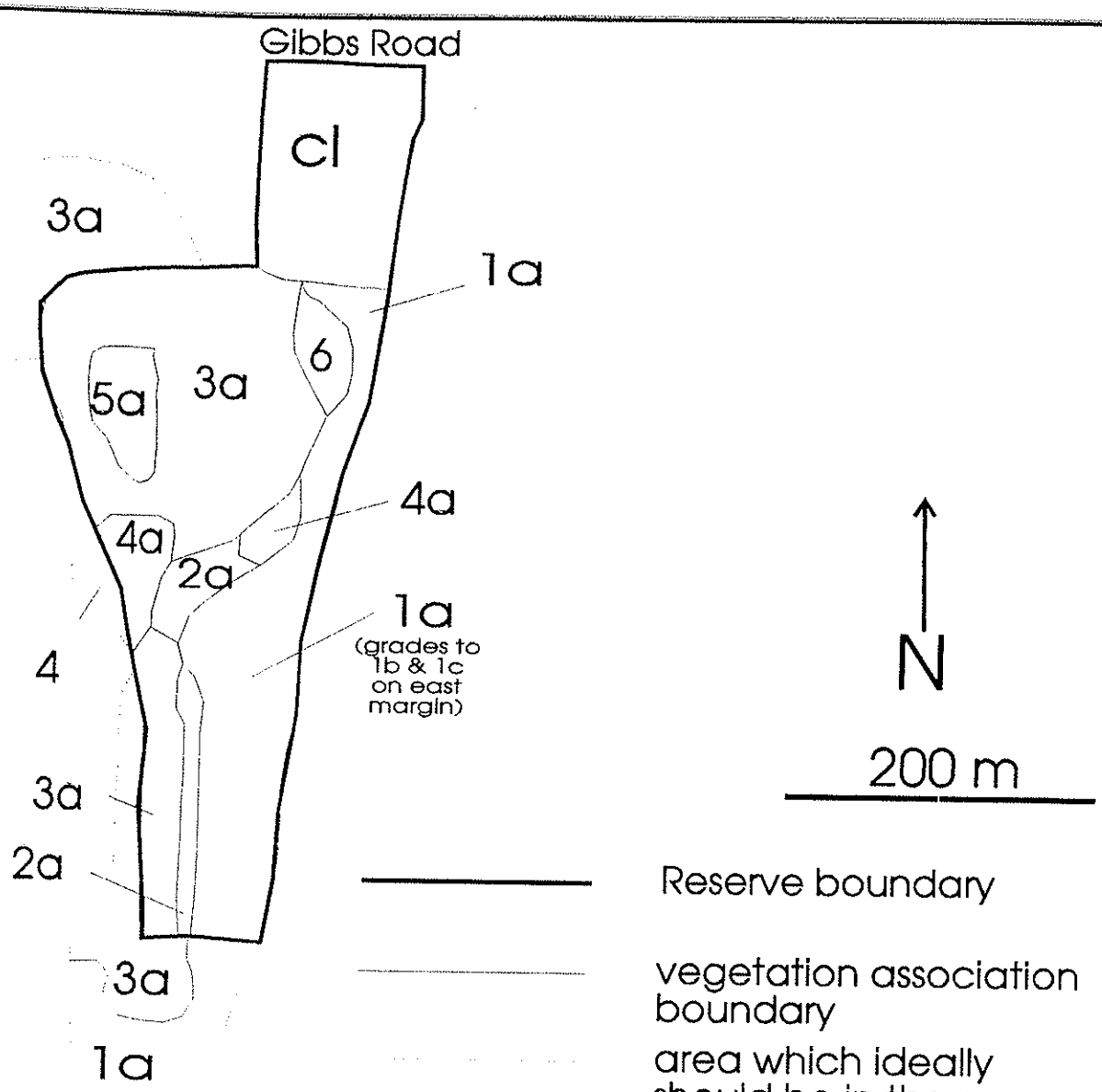
3. as an extension of wetland habitat types in the area; Lake Mt Brown is the wetter and more saline part of the suite of wetlands

4. as a site to preserve a potentially globally significant scientific heritage (dolomite)

RESERVE #8 - BUCKINGHAM RESERVE

Buckingham reserve includes portion of a wetland and no buffer zone. This reserve is located south of Gibbs Road and between Beenyup and Liddelow Roads. The wetland is a leptoscale fresh water sumpland. It is recharged by rainfall and groundwater rise and discharged through evaporation and local drawdown. The wetland contains shallow humic and iron oxide coated quartz sands and is underlain by Bassendean Sand. The vegetation is maculiform and consists of low forest and scrubland (*Melaleuca rhaphiophylla*), low woodland (*M.preissiana*), two types of scrubland (*M. viminea*) and (*M.rhaphiophylla, M.viminea, M.polygaloides*). The wetland vegetation is in good condition (Figure 7).

From on-site investigation, the most important functions are ecological and cultural (pertaining to heritage). They are:



VEGETATION ASSEMBLAGES

1. Low woodland: Melaleuca preissiana with a mixed heath understorey (Kunzea ericifolia, Astartea aff. fascicularis)
2. Scrub: Melaleuca viminea
3. Low forest: Melaleuca rhaphiophylla
4. Scrub: mixed (M. viminea, M. rhaphiophylla Melaleuca polygaloides)
5. Scrub (M. viminea > M. rhaphiophylla)
6. Fernland: Bracken

DEGREES OF DEGRADATION

a. relatively undisturbed
b. minor weed invasion
c. weeds predominate in understorey
d. tree cover only
cl. cleared

V & C Semeniuk Research Group 1997

Map of the Buckingham Reserve

Figure 7

the recharge is retarded by impervious layers in the substrate resulting in a perched water table; groundwater rise eventually connects the underlying aquifer with this perched water. The wetland contains muds (peat and carbonate mud) and is underlain by yellow sand and Tamala limestone. The vegetation is periform and consists of a peripheral zone of low *forest (M. rhaphiophylla*) with an understorey of open shrubland *Melaleuca teretifolia* and sedgeland *Baumea juncea* and *Gahnia trifida*). Part of the peripheral wetland vegetation has been cleared (Figure 9). The remaining wetland vegetation is in good condition.

Manning Lake and its surrounds have both important ecological and social functions. They are:

1. Ecologically, the wetland is a loafing and feeding site for waterfowl.

2. The wetland is the attraction on the reserve for passive recreation activity, including observing the wetland, walking around it, duck feeding, exploring the wetland, collecting water and invertebrates.

3. The wetland also is a focus for education for local residents and primary schools; activities include monitoring water quality, water levels, tree health and algal levels.

15A

RESERVE #~~17~~ - EMMA TREEBY RESERVE

Emma Treeby reserve includes a portion of wetland without a buffer zone. This reserve is located south of Forrest Road at Banjup. The wetland is a remnant of a microscale freshwater sumpland. It is recharged by rainfall and groundwater rise and is discharged through evaporation. This mechanism has been modified by a deep drain through the area. The wetland contains muddy (peat and clay mineral) sands and is underlain by Bassendean Sand. The vegetation is currently maculiform and consists of patches of remnant vegetation and regrowth. Two assemblages appear to be present but the communities are disturbed and may not reflect stable populations. There is a heath assemblage comprising a number of genera (*Astartea, Melaleuca, Calothamnus, Acacia, Agonis, Hypocalymma*) and a sedgeland comprising *B. juncea, B. articulata* and *Centella asiatica).* The vegetation ranges from good to poor condition, and sedges are re-generating in cleared areas.

15A/16A

The wetland part of the reserve is very small, however, the vegetation is luxurious and re-growth has been rapid. Basic ecological functions of the reserve may be added to if disturbance is minimised.

16A

RESERVE #~~18~~ - MATHER RESERVE

Mather reserve includes a portion of wetland. This reserve is located north of Bartram Road at Banjup. The wetland is part of a mesoscale freshwater sumpland intersected by Bartram Road and known locally as Bartram wetland. It is recharged by rainfall and discharged through evaporation. Drainage of the recharge is retarded by impervious layers in the substrate resulting in a perched water table. Groundwater rise eventually connects the underlying aquifer with this perched water. The wetland contains mud (clay minerals), muddy (peat and clay) sands, and calcrete, and is

underlain by Bassendean Sand. The vegetation is currently periform and consists of low forest (*M. rhaphiophylla*).

Geomorphologically, Mather reserve wetland is part of the Bartram Swamp wetland and as such is highly important ecologically. Bartram wetland has a large number of habitats and the open water habitat of Mather reserve is an important one for wetland fauna. Alienated from Bartram Swamp by Bartram Road, Mather Reserve has minimal ecological functions except as an area of seasonal open water which possibly is a site for loafing and feeding for some waterfowl and a habitat for seasonal aquatic fauna.

RESERVE #17 - KRAEMER RESERVE

Kraemer reserve includes a portion of wetland. This reserve is located north of Bartram Road at Banjup. The wetland is a microscale freshwater. It is recharged by rainfall and discharged through evaporation. Drainage of the recharge is retarded by impervious layers in the substrate resulting in a perched water table. Groundwater rise eventually connects the underlying aquifer with this perched water. The wetland contains alternate layers of muddy (peat and clay mineral) sands, and sands and is underlain by Bassendean Sand. The vegetation is currently latiform and consists of low forest (*M. rhaphiophylla*).

Kraemer Reserve is similar to Buckingham Reserve. Many of the ecological functions of the wetland have ceased as a result of alienation from its surrounding upland. However it represents a type of ecosystem which is becoming increasingly uncommon. It is partly disturbed but offers an aesthetic and ecological contrast with the surrounding area. It has the potential to support seasonal aquatic fauna if the regional groundwater drawdown could be reduced.

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, extending nor to Gingin in Banksia woodland. It appears to be poorly collected ratl.) 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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Trudgen, M.E. (1987). A report on the vegetation of part of Neerabup National Park and adjoining privately owned land, with analysis of the conservation issues involved in a proposed land swap. Unpublished report prepared for Maunsell and partners, Perth

Trudgen, M.E. (1988). A flora and vegetation survey of the coast of the Shire of Mandurah. State Planning Commission of Western Australia. (Unpublished report distributed in "draft" form.)

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Weston, A.S. (1989a). Vegetation and significant flora in lots 65 and 66 Anstey/Keane Roads Forrestdale City of Armadale. Unpublished report prepared for G.R. Crimp and partners.

TABLE OF C .TS

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.

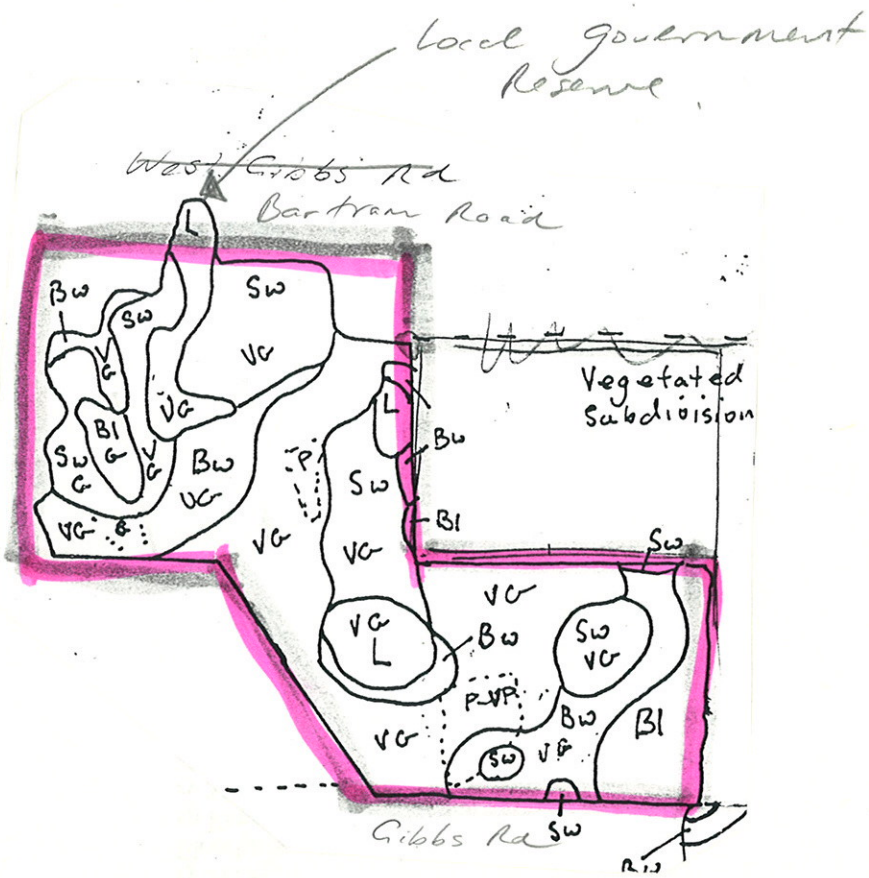
KEY TO CONDITION RATING

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

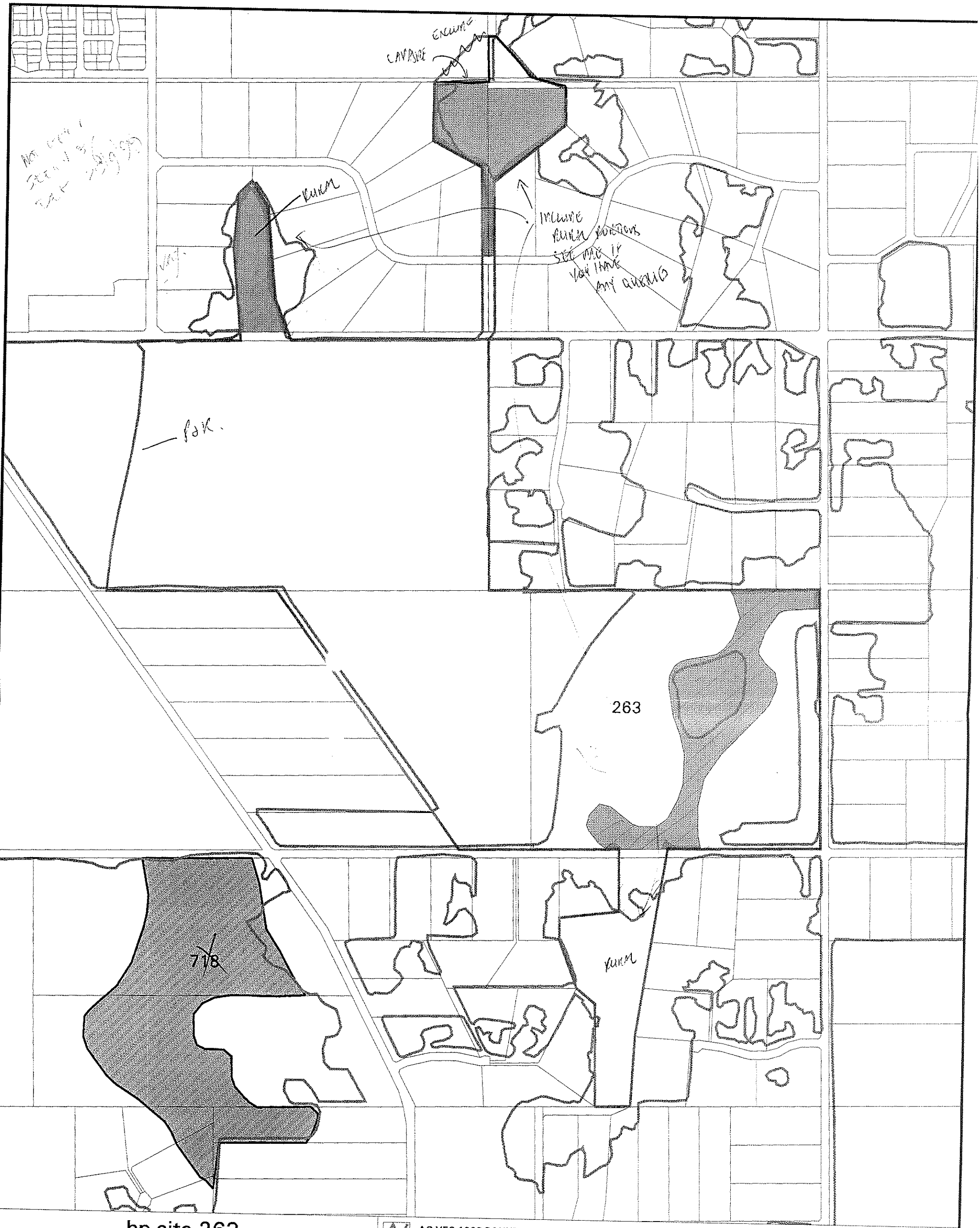
SCALE: Approx. 1: 20,000

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

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



Part Subm 13 West Gibbs Rd Bushland

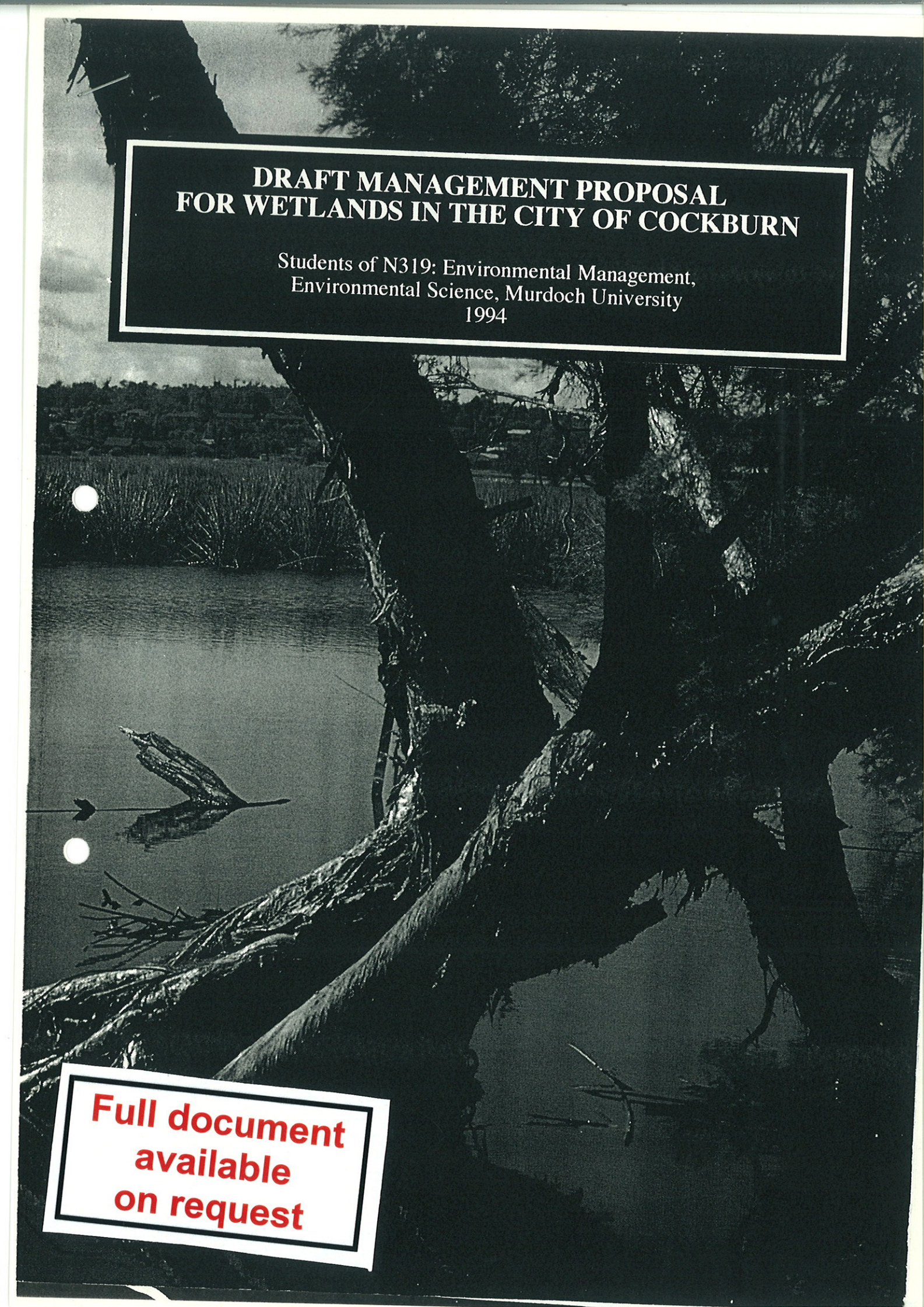


bp site 263

Map Ident: plot980527_1	DATE: 27 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



DRAFT MANAGEMENT PROPOSAL FOR WETLANDS IN THE CITY OF COCKBURN

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

1994

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 Botanic Park, has been described and a 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. Beneath this layer to 40cm another 18-20 species of shrub are commonly encountered, being mainly Scholtzia involucrata, Gompholobium tomentosum, Calytrix angulata, Leucopogon conostephoides, Petrophile linearis, Acacia huegelii, Bossiaea eriocarpa and Hibbertia racemosa.