SWAN RIVER FORESHORE, MOUNT LAWLEY/MAYLANDS

Boundary Definition: protected area/bushland (part taken to cadastre) boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 314 **Area (ha):** bushland 16.7
Map no. 47, 48 **Map sheet series ref. no.** 2034–II SE
Other Names: Maylands Foreshore Reserve, Berringa Park
Local Authorities (Suburb): City of Bayswater (Maylands, Mount Lawley), Town of Vincent (Mt Lawley)
System 6 (1983): Part M50 area of bushland goes beyond System area boundaries, all bushland described

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Pinjarra Plain
Alluvial Colluvial Deposit (Qha/Qc: Mc1)
Bassendean Dunes
Bassendean Sands (Qpb: S8)
Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
VEGETATION AND FLORA
Vegetation Complexes
Pinjarra Plain
Guildford Complex
Swan Complex
Bassendean Dunes
Bassendean Complex — Central and South
Spearwood Dunes
Karrakatta Complex — Central and South
Marine (Lagoonal and Estuarine) Deposits
Vasse Complex (most northern occurrence)
Floristic Community Types: not sampled, types not inferred
WETLANDS
Wetland Types: creek, estuary (waterbody), estuary (shoreline and peripheral)
Natural Wetland Groups
Bassendean Dunes
Jandakot (B.3)
Estuaries
Swan River (E.2)
Wetland Management Objectives: Conservation (18.5ha), Multiple Use
Swan Coastal Plain Lakes EPP: none identified
THREATENED ECOLOGICAL COMMUNITIES
Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, creek, estuary
Vegetation and Flora: limited survey (Connell 1995, Pen 1983); detailed survey (Meney 1989)
Structural Units: mapping (Meney 1989, Pen 1983)
Wetlands: *Melaleuca rhaphiophylla* Low Woodland to Low Open Forest with patches of *Juncus pallidus* Sedgeland; *Casuarina obesa* and *Melaleuca rhaphiophylla* Low Woodland to Low Open Forest; *Sarcocornia quinqueflora* and *Suaeda australia* Low Shrubland to Closed Low Heath; *Halosarcia indica* subsp. *bidens* and *H. halocnemoides* Low Shrubland to Closed Low Heath; *Juncus kraussii* Sedgeland to Closed Sedgeland; Closed Sedgelands dominated by *Bolboschoenus caldwellii* and **Typha orientalis*
Scattered Native Plants: not assessed
Vegetation Condition: varies from Excellent Condition to Completely Degraded
Total Flora: 47 native taxa, 38 weed taxa (Meney 1989) (estimated >80% expected flora)
Significant Flora: none recorded
Fauna: multiple surveys for birds (68 species) (Smith 1985, Jaensch 1987) and limited surveys for native mammals (3 species), reptiles (8 species) and amphibians (4 species) (Meney 1989). Key site for water-birds feeding and

breeding area especially ducks and rails. Significant bird species: category 1 (1), category 2 (3), category 3 (8) and category 4 (2). Significant reptile species: Mourning Skink (*Egernia luctuosa*)
Linkage: no adjacent bushland; part of Greenway 24 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)
Other Special Attributes: 'area represents 11 of the 21 communities identified along the Swan and Canning foreshore' (Meney 1989); is one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; contains open space of regional significance (DCE 1983)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Directory of Important Wetlands in Australia; Indicative place (AHC 2000 D); location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, 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: Part A: Site with Some Existing Protection; existing Parks and Recreation Reserve. Part B: Regional Creekline Mechanism (with mapped vegetation) (see Table 3, Volume 1).

SWAN RIVER FORESHORE, MOUNT LAWLEY/MAYLANDS

Boundary Definition: protected area/bushland (part taken to cadastre) boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 314 **Map no.** 51, 57 **Map sheet series ref. no.** 2034–II SE

System 6 (1983): Part M50 area of bushland goes beyond System area boundaries, all bushland described

Other Names
Maylands Foreshore Reserve, Berringa Park

Local Authorities (Suburb)
City of Bayswater (Maylands, Mount Lawley), Town of Vincent (Mt Lawley)

Ownership Categories
Local Government, State Government, Not identified

Area (ha): total 27.7; bushland 16.7

Zoning
MRS: Urban, Parks and Recreation, Waterways
TPS: Landscape, Medium Density Residential

Lot/Location/Reserve numbers (Purpose), Street name
101 Mitchell St; 0 Thirlmere Rd; 6 Guildford Rd; 13, 20, 10141 Fourth Ave; 10731 Bardon Pl; 1 Mary St
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Pinjarra Plain
Alluvial Colluvial Deposit (Qha/Qc: Mc1)

Bassendean Dunes
Bassendean Sands (Qpb: S8)

Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)

VEGETATION AND FLORA

Vegetation Complexes

Pinjarra Plain
Guildford Complex
Swan Complex

Bassendean Dunes
Bassendean Complex — Central and South

Spearwood Dunes
Karrakatta Complex — Central and South

Marine (lagoonal and estuarine) Deposits
Vasse Complex (most northern occurrence)

Floristic Community Types: not sampled, types not inferred

WETLANDS

Wetland Types: creek, estuary (waterbody), estuary (shoreline and peripheral)

Natural Wetland Groups

Bassendean Dunes
Jandakot (B.3)

Estuaries
Swan River (E.2)

Wetland Management Objectives: Conservation (18.5ha), Multiple Use

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, creek, estuary

Vegetation and Flora: detailed survey (Meney 1989); limited survey (Connell 1995, Pen 1983)

Structural Units: mapping (Meney 1989, Pen 1983)
Wetlands: *Melaleuca rhaphiophylla* Low Woodland to Low Open Forest with patches of *Juncus pallidus* Sedgeland; *Casuarina obesa* and *Melaleuca rhaphiophylla* Low Woodland to Low Open Forest; *Sarcocornia quinqueflora* and *Suaeda australia* Low Shrubland to Closed Low Heath; *Halosarcia indica* subsp. *bidens* and *H. halocnemoides* Low Shrubland to Closed Low Heath; *Juncus kraussii* Sedgeland to Closed Sedgeland; Closed Sedgelands dominated by *Bolboschoenus caldwellii* and **Typha orientalis*

Scattered Native Plants: not assessed

Vegetation Condition: varies from areas in Excellent Condition to Completely Degraded

Total Flora: 47 native taxa, 38 weeds (Meney 1989) (estimated >80% expected flora)

Significant Flora: none recorded

Fauna: multiple surveys for birds (68) (Smith, P, 1985, Jaesnch 1987) and limited surveys for native mammals (3), reptiles (8) and amphibians (4) (Meney 1989). Key site for water-birds feeding and breeding area especially ducks and rails. Significant bird species: category 1 (1), category 2 (3), category 3 (8) and category 4 (2). Significant reptile species: Mourning Skink (*Egernia luctuosa*)

Linkage: no adjacent bushland; part of proposed Greenway 24 (Tingay, Alan & Associates 1997a); part of a regionally significant contiguous bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: 'area represents 11 of the 21 communities identified along the Swan and Canning foreshore' (Meney 1989); is one of a very limited number of bushland areas on the Swan Estuary, naturally vegetated areas on the Swan Estuary having particular conservation value in providing habitat for fauna and linkage between areas of bushland; contains open space of regional significance (DCE 1983)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Directory of Important Wetlands in Australia; Not listed; Indicative Place of the Register of the National Estate; Location for JAMBA/CAMBA species

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

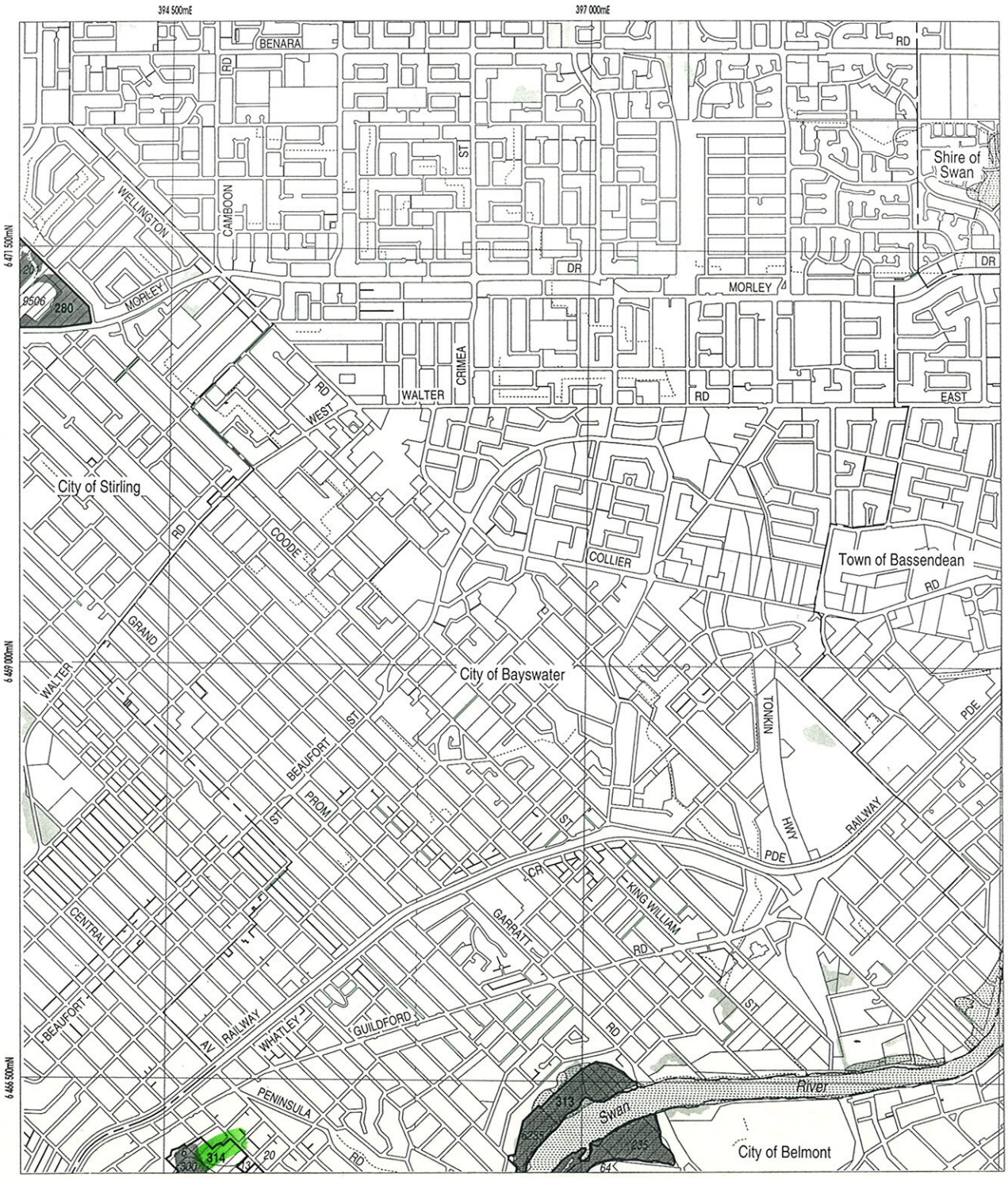
Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of conservation value, but which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

Opportunities and/or Constraints

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

Constraints: under MRS Urban Zoning

Recommendation: The most appropriate mechanism for the protection 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

2034 - II SE

IV | I
2034
III | NW | NE / SW | 51 | SE

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-map18//environ/bushplan//bushv2_51.dgn

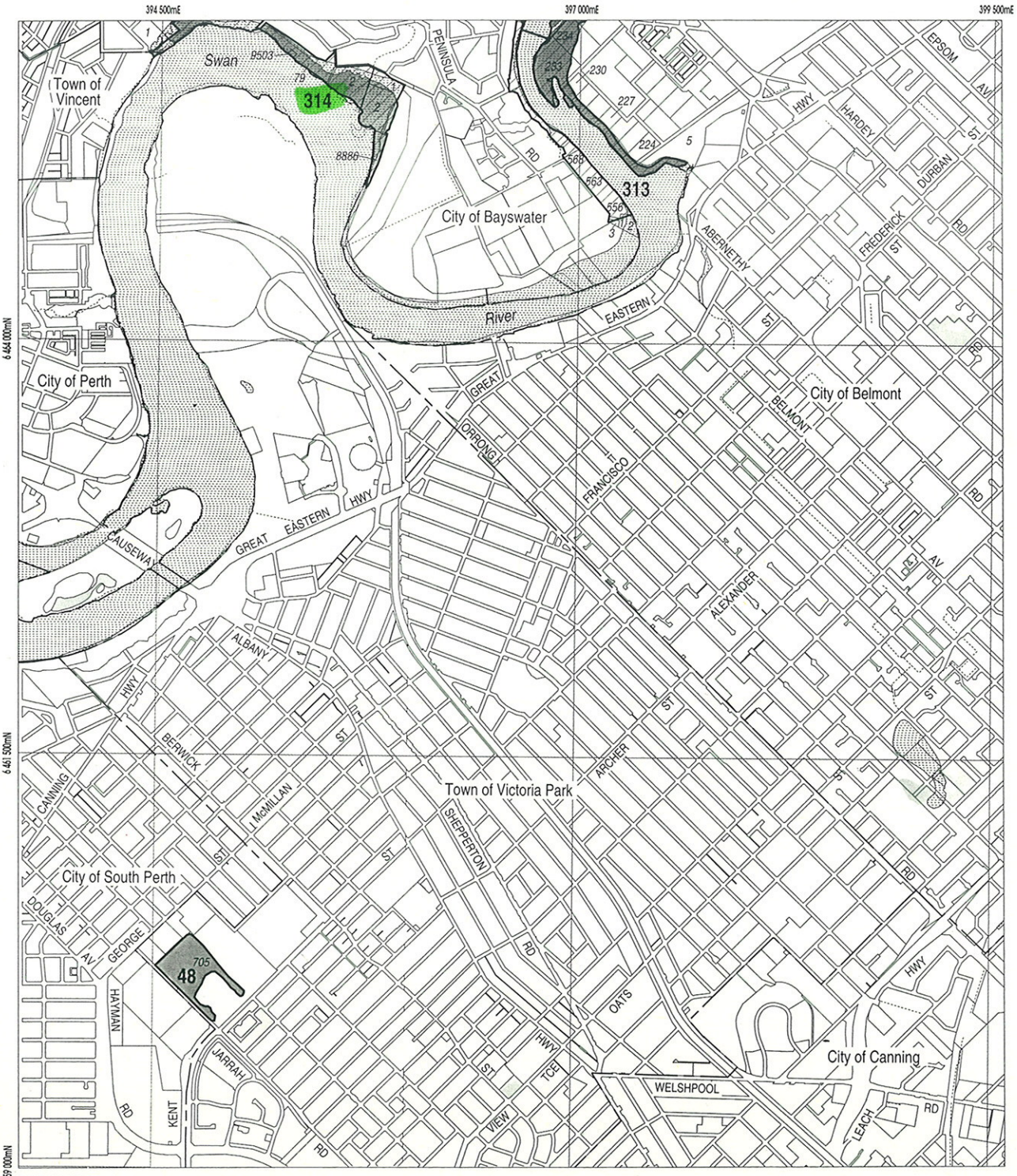
Cadastral Data supplied by Department of Land Administration, W.A.

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map

Map 51



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

2034 - II SE

IV | I
2034
III | NW | NE
SW | SE | 57

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

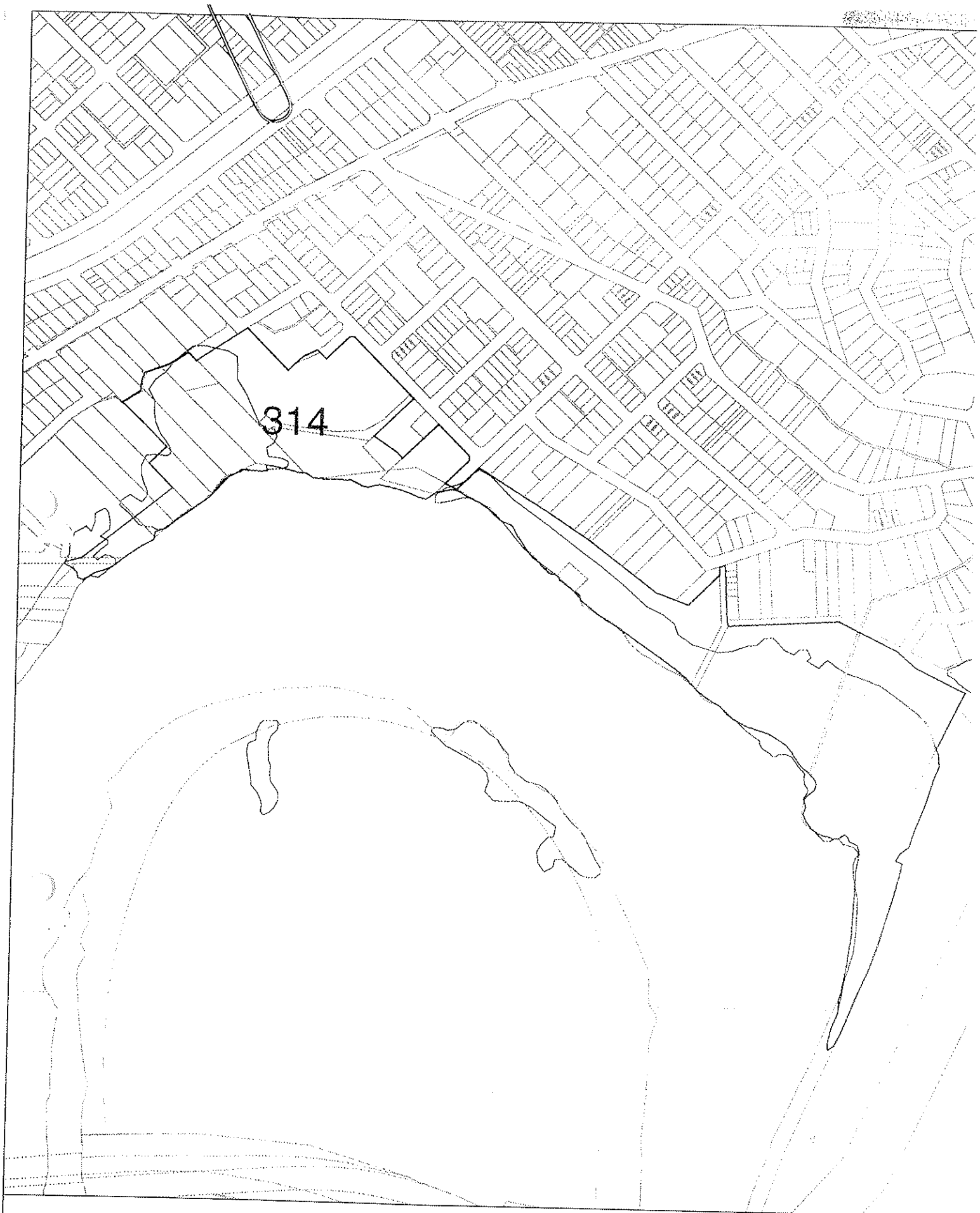
ntw-map18//environ/bushplan//bushv2_57.dgn

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

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map



BUSHPLAN SITES CORRECTED

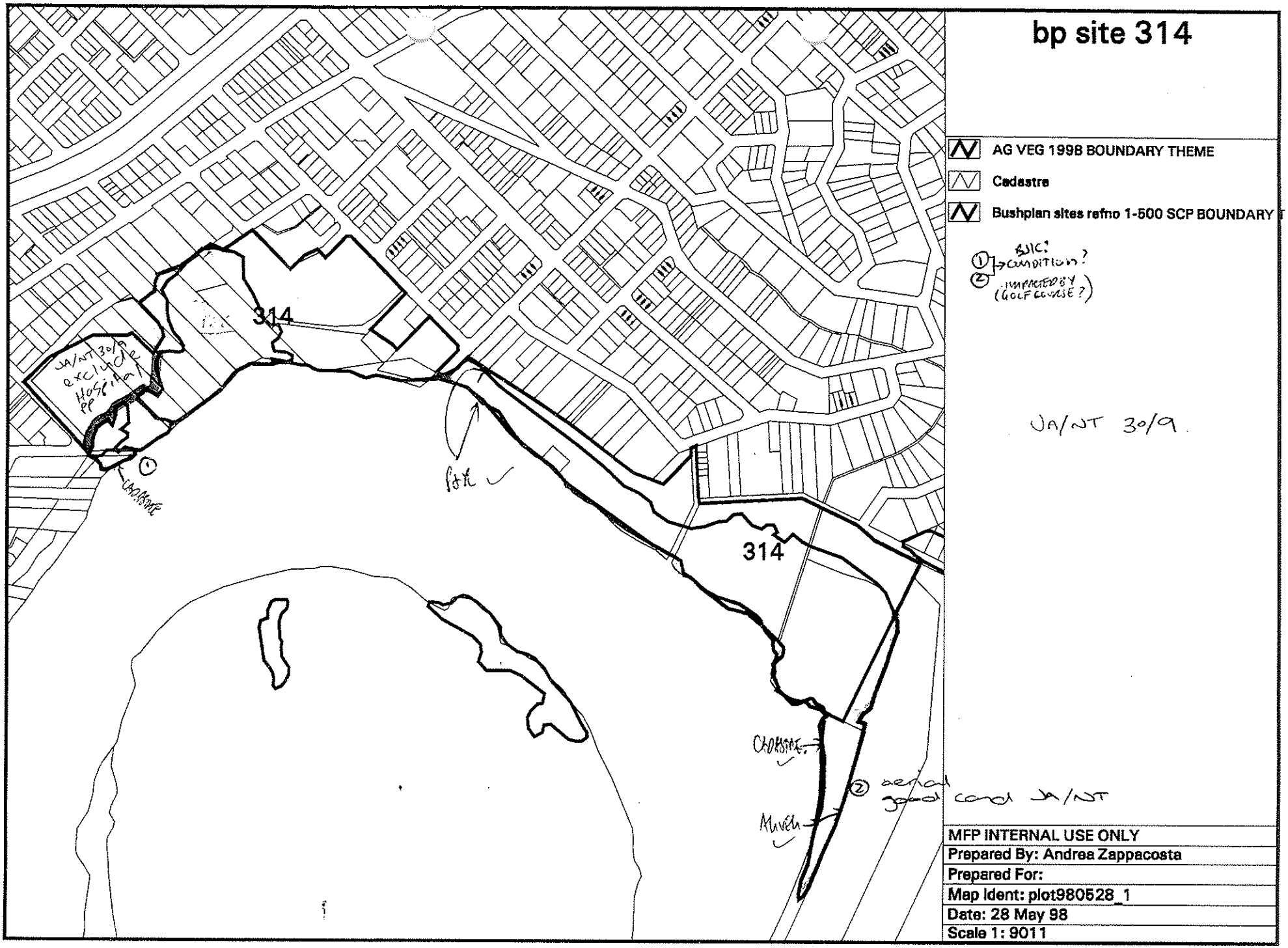
THE GOVERNMENT OF WESTERN AUSTRALIA

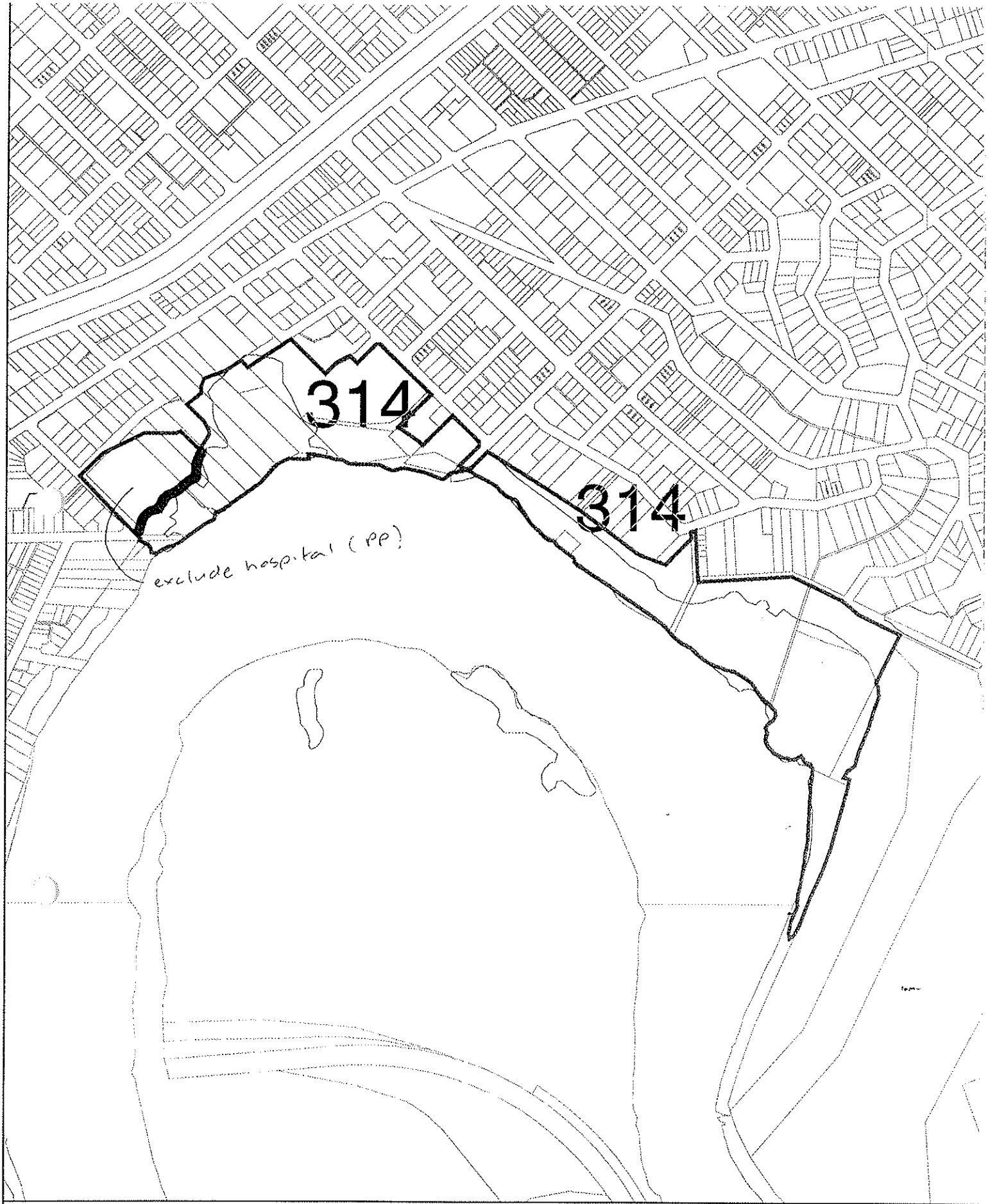
WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

B TG 28/10/98

N


bp site 314
AG VEG 1998 BOUNDARY THEME
Cadastre
Bushplan sites refno 1-500 SCP BOUNDARY
314
314
JA/NT 30/9
MFP INTERNAL USE ONLY
Prepared By: Andrea Zappacosta
Prepared For:
Map Ident: plot980528_1
Date: 28 May 98
Scale 1: 9011

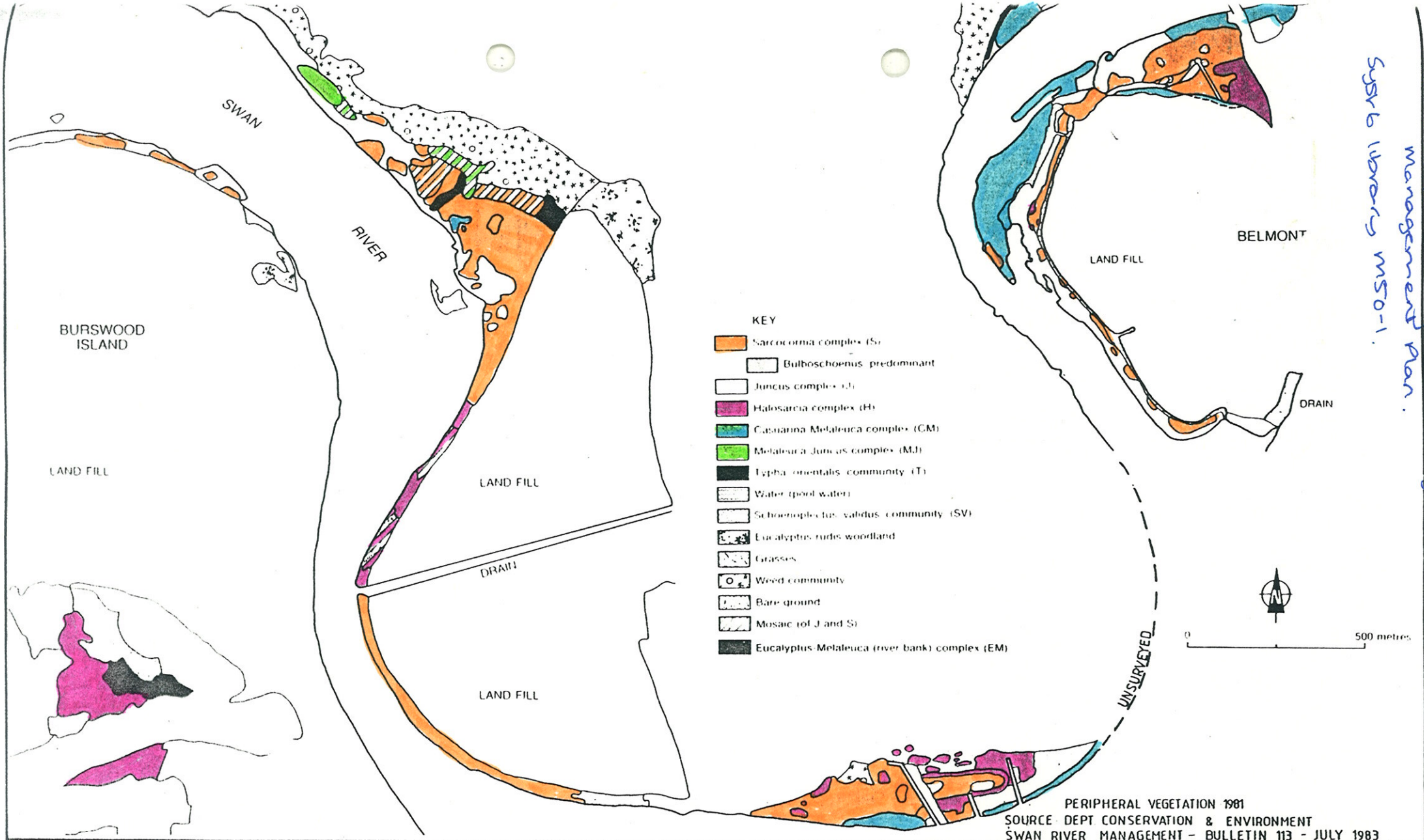


BUSHPLAN SITES CORRECTED

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS

N



PERIPHERAL VEGETATION 1981
SOURCE DEPT CONSERVATION & ENVIRONMENT
SWAN RIVER MANAGEMENT – BULLETIN 113 – JULY 1983

CITY OF STIRLING
TOWN PLANNING DEPARTMENT

FOREHORE VEGETATION

SCALE	NOT TO SCALE
DATE	23/11/88
DRAWN	J.E.G.
PLAN Nº	4

From: City of Stirling Draft Maylands Peninsula Land Use Management Plan.
Sysb Library MS0-1.

The north-western section of the Maylands foreshore has extensive reed beds of *Juncus kraussii, Scirpus vallidus* and *S. maritimus,* on the landward side of which are bulrushes and paperbark. The natural vegetation on the eastern section of foreshore has been reduced to a few reeds including *Juncus kraussii* and *Scirpus vallidus*, and a broken line of trees comprising mainly swamp sheoak, flooded gum and a few paperbarks.

As well as having high conservation value, the area is also significant for fauna. The water rat, which is uncommon in System 6 and rare elsewhere in Australia, has been recorded in the swampy section near Bardon Park. The reed beds in the north-west are feeding grounds for many water-birds, including such species as swan, coot and crake, and could be useful nesting sites for reed-warblers, if less affected by wash from boats.

The area contributes to open space of regional significance extending along the Swan River (see Figure 1, Chapter 4), because of its high conservation and recreation values. Important management considerations for the area include: encouraging the growth and regeneration of local indigenous flora; maintaining water-bird habitats; and allowing only passive recreation.

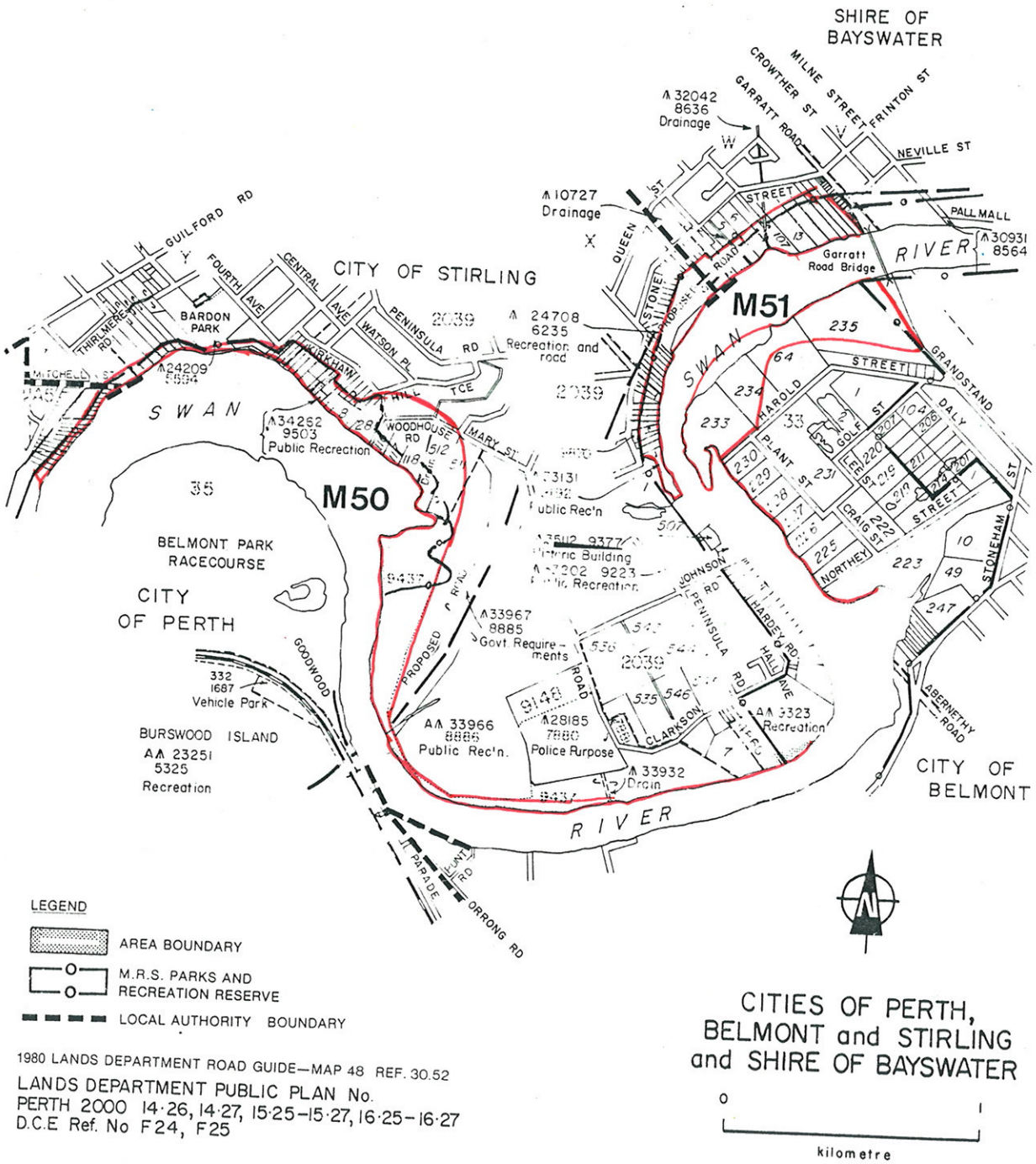


Figure 119

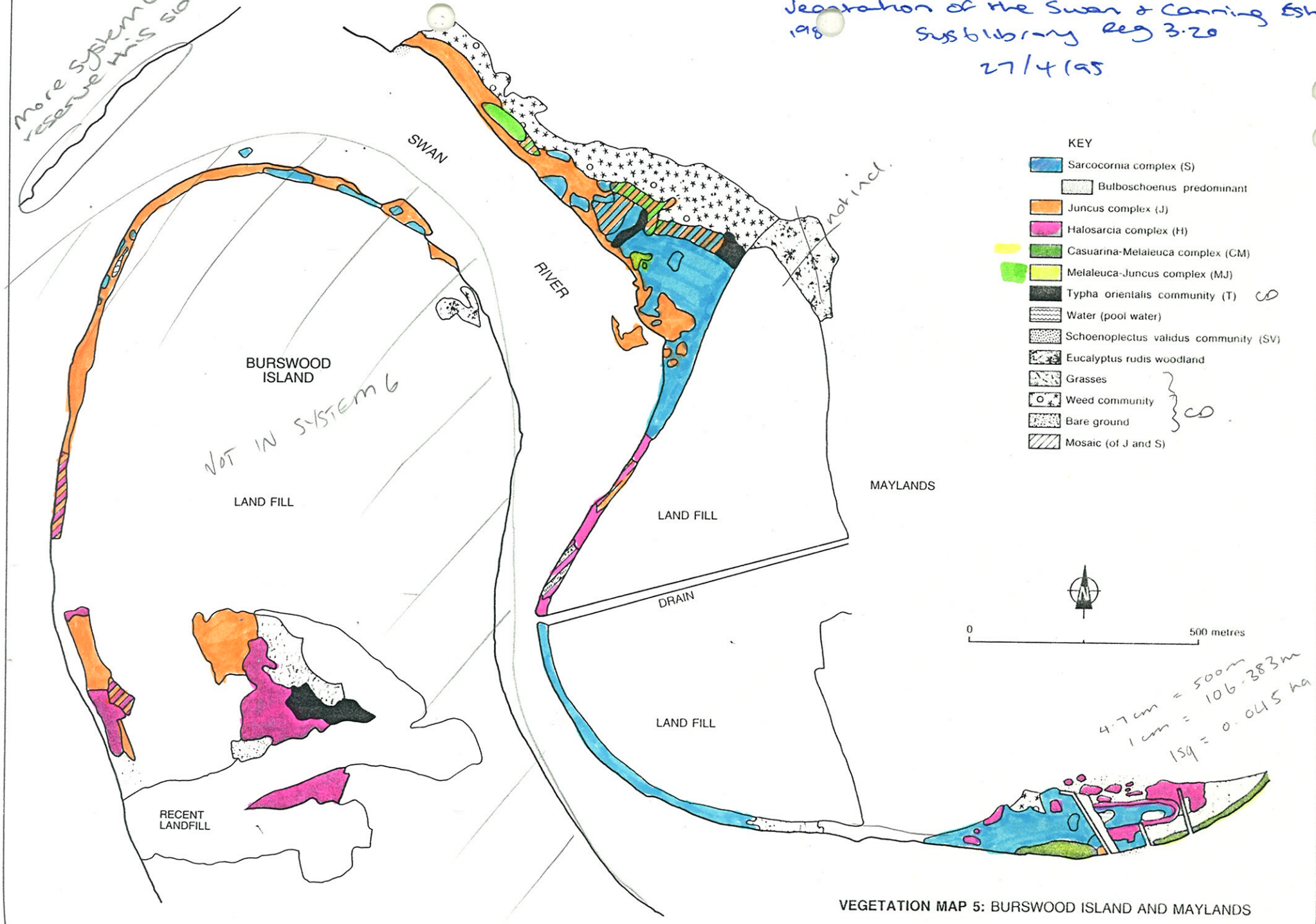
M50

from: Dpt of Cons & Envt 1983 Peripheral Vegetation of the Swan & Canning Estuaries 198

Subs library Reg 3.20

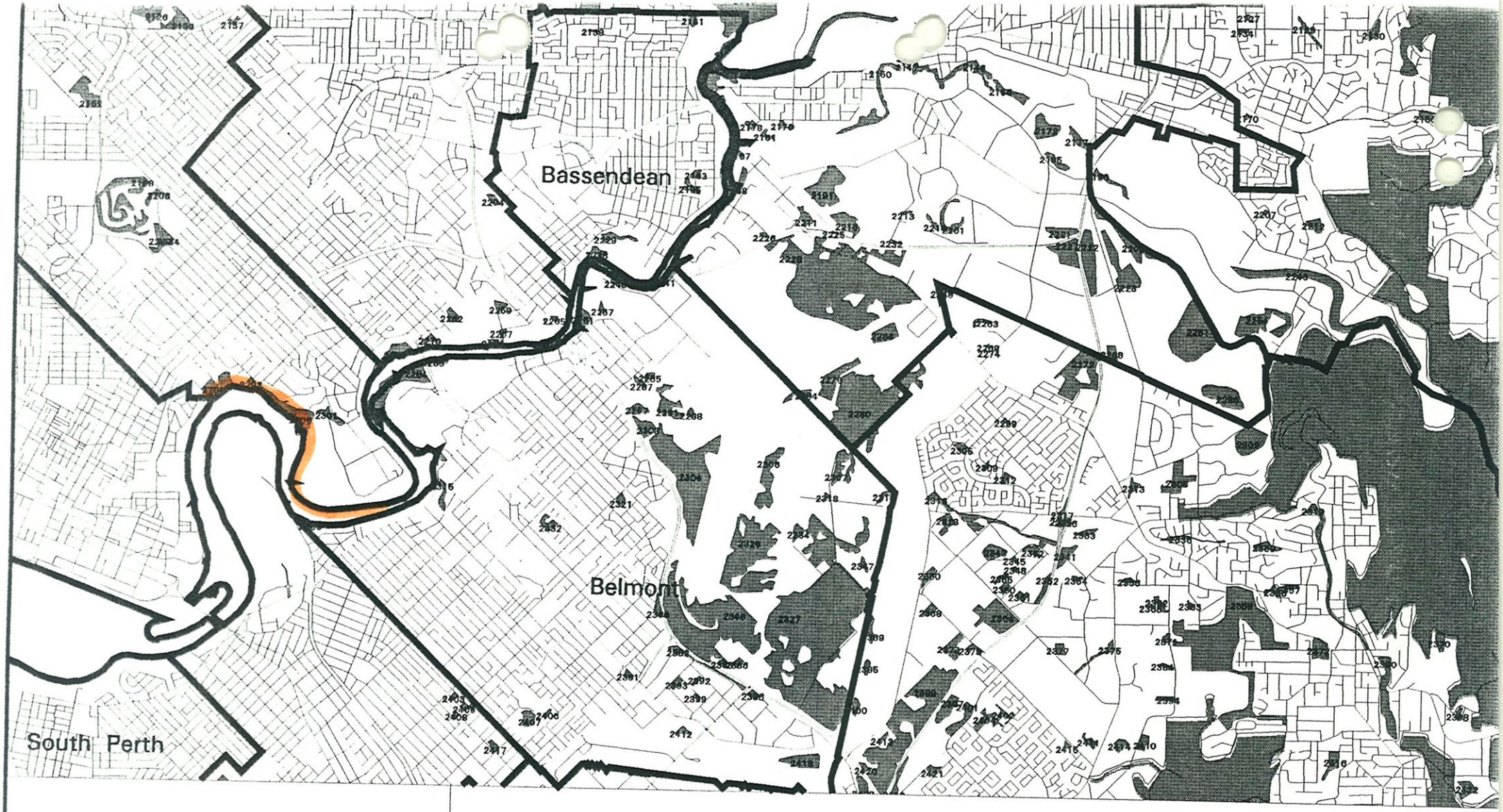
27/4/95

More systems reserve this side



4.7cm = 500m
1cm = 106.383m
1sq = 0.0115 ha

VEGETATION MAP 5: BURSWOOD ISLAND AND MAYLANDS



Road centre line data provided by Department of Land Administration, Midland, WA.

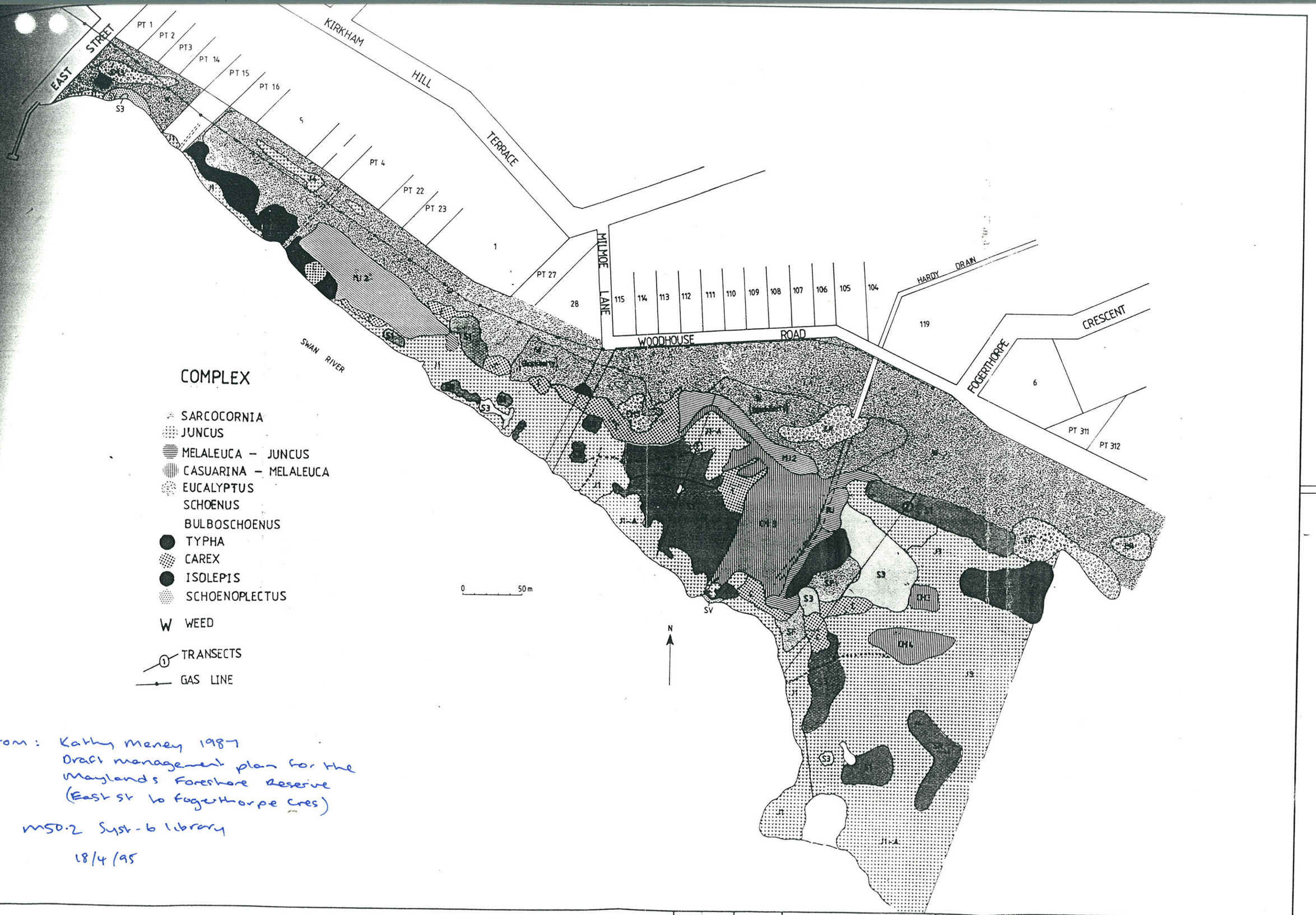
Interpretation of remnant vegetation is from January 1991 1:20000 colour aerial photography and December 1992 SPOT-LANDSAT composite image with 10 m resolution. Photographs and imagery were provided by Department of Land Administration and were interpreted by Catherine Keenan, Perth Environment Project (Jan. - June 1994). Department of Agriculture and Water Authority mapping were used in some instances to assist interpretation.

This plot has been produced for the purpose of ground truthing that interpretation. The Perth Environment Project would be pleased to receive advice as to the accuracy of the boundaries shown, and information regarding the composition and condition of each bushland entity.

The definition of bushland is that by Chambers and Walker (1994):

MS2


SWAN
RIVER
BELMONT RACECOURSE
N



from: Kathy Meney 1987
Draft management plan for the
Maylands Foreshore Reserve
(East St to Fogerthorpe Cres)

MS0.2 Syst-6 library

18/4/95

System 6 Update - Floristic Community Type Mapping Information **DRAFT ONLY**

AREA INFORMATION

System 6 Area (C or M) or Update Area (Update) M50

Conservation Area
Nature Reserve
Reserve No
National Park
Reserve No
Local Government
Reserve No
Other
Proposed Conservation Areas
Local Government City of Stirling
Reserve No A9323, C33966
Other not vested C33967, C33982, C34267

* private

Conservation Area

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

AREA

Total Area	under	hectares
Completely Degraded	under	hectares
comments:		

AREA MAPPED FLORISTIC UNITS

Boundaries: System6 CALM

Units	Site (Condition) Code NO SITES	Bound	Area (ha)	Area(ha)
Sarcocornia complex		B	8 212	
Juncus complex		B	4 241	
Halosarcia complex		B	1 845	
Casuarina - Melaleuca complex		B	0 72	
melaleuca - Juncus complex		B	0 63	
pool waters		B	0 045	
	TOTAL			

Boundaries determined by use of

aerial photograph Metro Regional Area + Ext run 11 12 3210 5256 15/12/92
orthophoto 2034 11 SE Aug 1991
vegetation map Dept Cons + Envt 1983 Regional Vegn of the Swan + Canning
~~soil map~~

BS314 (12)

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

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

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

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location

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

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

a) Bordering Roads: Guildford Road , Thirlmere Road to Swan River foreshore.

b) Nearest Corner: Guildford Road, Thirlmere Road, Mt Lawley. W.A.
and a portion of Diagram 2870

c) Lot Number: 1,2 and 22 Street Number: not known

d) Town/Suburb/Location: Mt Lawley

e) Local Council: Stirling City Council

f) Site Name (if any): Mt Lawley foreshore to Swan River

g) Approximate size of the area (ha): 8.5 acres in addition to Bardon Park

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

i) Map: 61 ~~Streetsmart~~ /~~UBD~~/ ~~Other~~: 1989 MSD

j) Map no.: 61

k) Grid Ref: 29/52

photo run 11
5256
or 5255
needed but not found.

l) Please give any other information that may help us to find the location:
Wetland foreshore area between St Annes Hospital and Bardon Park

m) Are you aware of any development proposals that are likely to affect the area?
Yes Stirling City Council Planning ammendment No PL258 seriously depletes this area as the area held by Stirling is reduced from 160 metres from foreshore to 100 metres. Suggest whole of area be reserved.

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

Please fill out those questions that you can answer

2. Who owns the area? (If owned by the person/s making the nomination please indicate) .....Lot 22 is owned by Bombara...Lots 1 and 2 by Bell...and Stirling... City Cncl own lot 7

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

4 .What is the area zoned? (please indicate whether zoning is Town Planning Scheme or Metropolitan Region Scheme) .....R 50 top end ; bottom end local reserve by Stirling City which will be reduced by PL 258

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

5. Why do you consider this area important? (Refer to Guiding Issues paper) .....Very important as fresh water wetland reserve foreshore of Swan River

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

Type: Sand/~~Clay~~/~~Gravel~~/~~Loam~~/Silt

Colour: White/~~Grey~~/~~Brown~~/~~Orange~~/~~Yellow~~/~~Red~~/Black

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

If yes, what are they? .....Narrow margin of native sedges (juncus krausii) is present - a remnant of the original Melaleuca Juncas complex.....

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

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp dampland supported by streams flowing from ground water table which collapses to river level all along this area - refer water table map ex W.A.W.A. attached. Although this flow from the escarpment is stronger in winter it is there all summer maintaining the area as freshwater wetland.

e) estuary

f) seasonally wet

g) other

9. What percentage of the wetland is open water in summer? .....not open water....

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

10. What percentage of the area is indigenous vegetation? .....small say 10%.....

11. If the area includes regions cleared of native bushland please indicate reasons for the inclusion. area was an original colonial garden cleared prior to 1840 and used as gardens for early settlers.

12. Has any previous flora or fauna survey work been done on the area? .....not known

If yes, please give details of the work .....Refer reports by Welker and others.....

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

a) pristine
b) excellent
c) very good
d) good
e) degraded degraded but easy to rehabilitate when reserved
f) completely degraded
g) don't know

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

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

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

n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

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

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

15. Does the area contain any plant species of special interest that you know of?
(eg. declared rare flora, priority taxa, outlier populations) ...not known requires survey

Do you know what they are? .....not known requires survey.....

.....

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

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

.....native water rat, water bird habitat , frogs , snakes.....

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

If yes, please name them and indicate source of information

.....as per Walker Report and others.....

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

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

.....Bardon Park adjacent to north. St Annes to S.West

If yes, how close are they ? .....adjacent Foreshore to ? previously listed System 6 M50 reserve.

.....

.....

Are they already conservation reserves? .....Yes. Bardon Park as above for System 6

What is their approximate size? .....Bardon Park 10 acres.....

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

and links around river as important river foreshore.

.....

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

This report is submitted to urge immediate protection of the area, as it is threatened by the owners of the properties who have convinced Stirling City Council to reduce the local reserved area, by threat of compensation. Because of its historic background , which supports the fact that it is permament wetland , and the fact that these areas are essential filter areas as Swan River foreshore , it should be included as System 6 reserve . Although the current System 6 listing does include the river foreshore , it is badly defined .

Although Planning Ammendment No 258 C.O.S. refers to only part of the area it is suggested that the whole of the area to the escarpment be reserved , as this is the source of the freh water streams which were mentioned by Capt Stirling as having an abundant supply of fresh water to supply early settlers. It was also a hunting area for aborigines for fresh water turtle being adjacent to the registered site No S 000696 Bardon Park.

Table 2: Vegetation Condition Scale

Modified from Trudgen 1991 by B. J. Keighery for the Swan Coastal Plain Survey 1993.

1 = 'Pristine'

Pristine or nearly so, no obvious signs disturbance.

2 = Excellent

Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species

For example damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.

3 = Very Good

Vegetation structure altered, obvious signs of disturbance.

For example disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.

4 = Good

Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it.

For example disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.

5 = Degraded

Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.

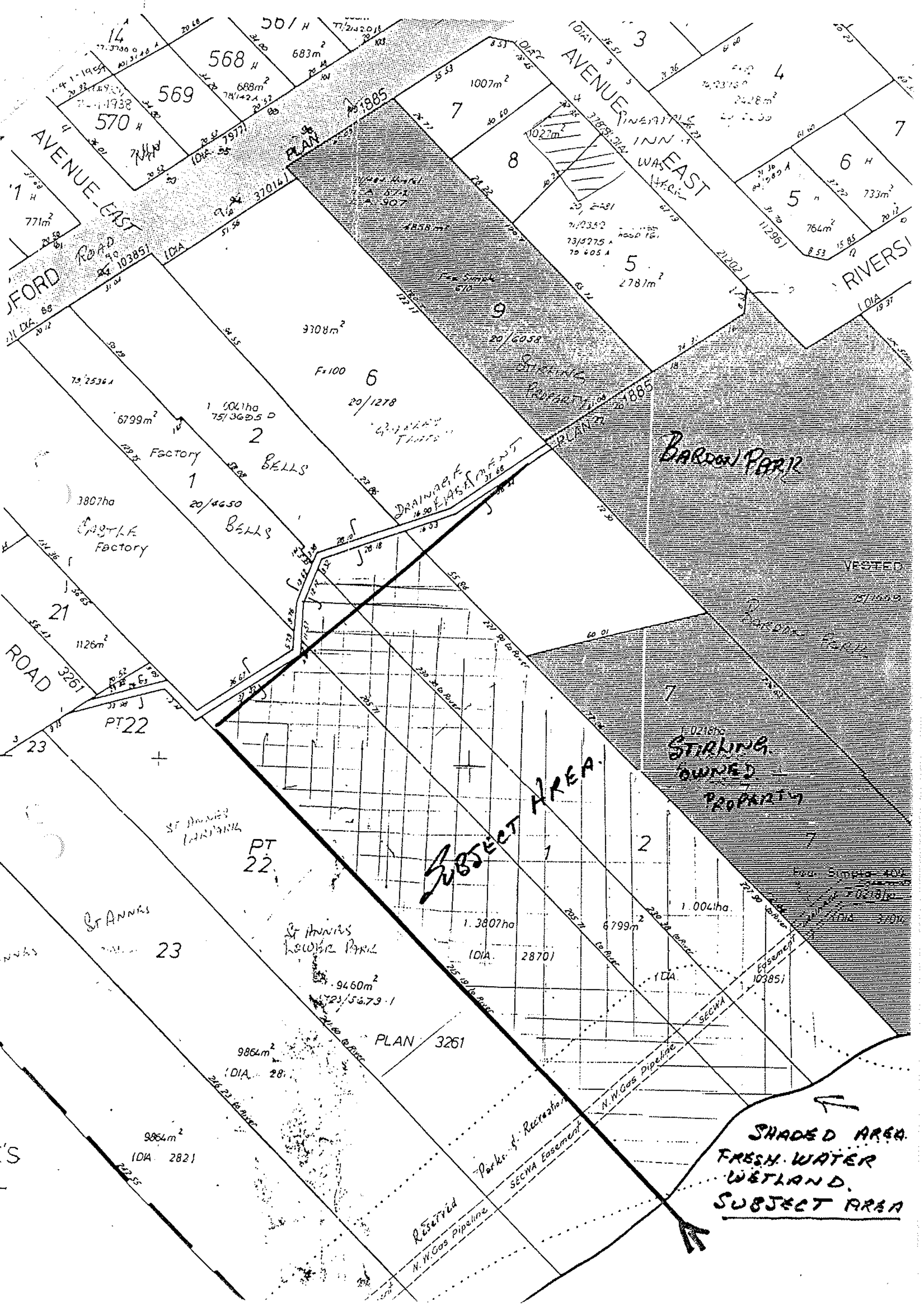
For example disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.

6 = Completely Degraded

The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

These areas are often described as 'parkland cleared' with the flora composing weed or crop species with isolated native trees or shrubs.

Source: B Keighery. Bushland Plant Survey, September 1994



AVENUE EAST
ROAD
PLAN 1885
DRAINAGE EASEMENT
Factory
CASTLE Factory
BELLS
STIRLING PROPERTY
BARDON PARK
VESTED
STIRLING OWNED PROPERTY
SUBJECT AREA
1.3807ha
6799m²
1.004ha
St ANNES LOWER PARK
9460m²
PLAN 3261
9864m²
PT 22
23
Parks & Recreation
Reserved
SECWA Easement
N.W.Gas Pipeline
SHADED AREA. FRESH WATER WETLAND. SUBJECT AREA

UNLISTED ITEM TO TOWN PLANNING AND STATUTORY SERVICES COMMITTEE - 14 MARCH 1995

ITEM: PL30 FILE: 7.7.1.258 WARD: MAYLANDS

SUBJECT DISTRICT PLANNING SCHEME NO. 2, AMENDMENT NO. 258 PUBLIC OPEN SPACE

LOCATION SWAN RIVER FORESHORE, MT. LAWLEY

REPORT Executive Manager - Community Development - 10 March 1995

RECOMMENDATIONS TO COMMITTEE

1. That District Planning Scheme No. 2, Amendment No. 258, to amend the public open space reservation in respect of Lot Pt. 22, Thirlmere Road, the adjacent lot on Diagram 2870 and Lots 1 and 2, Guildford Road, Mt. Lawley to show a reservation with a width of 100 metres from the Swan River, with the balance of the land Residential R20, be adopted, signed and forwarded to the Ministry for Planning for approval to advertise.

2. That the following matters be referred to the Works Division for investigation:-

   2.1 The need to manage the 50m foreshore reservation to encourage the restoration of the fringing estuarine vegetation.

   2.2 The management of spring waters on and near the subject land so as to:-

   2.2.1 reduce the nutrient load to the Swan River;
   2.2.2 reduce the risk of large scale pollution of the Swan River, and
   2.2.3 assist the restoration of natural vegetation within the foreshore reserve.

   2.3 The possibility of the creation of a natural wetland on Council land (principally Lot 7, adjacent to Bardon Park) which could also perform the function of retention and stripping of nutrients from drainage waters presently affecting the area.

3. That the Building Better Cities Committee in respect of the proposed foreshore dual use path be provided with a copy of the Consultants Report, and the recommendation regarding location of the proposed path brought to its attention.

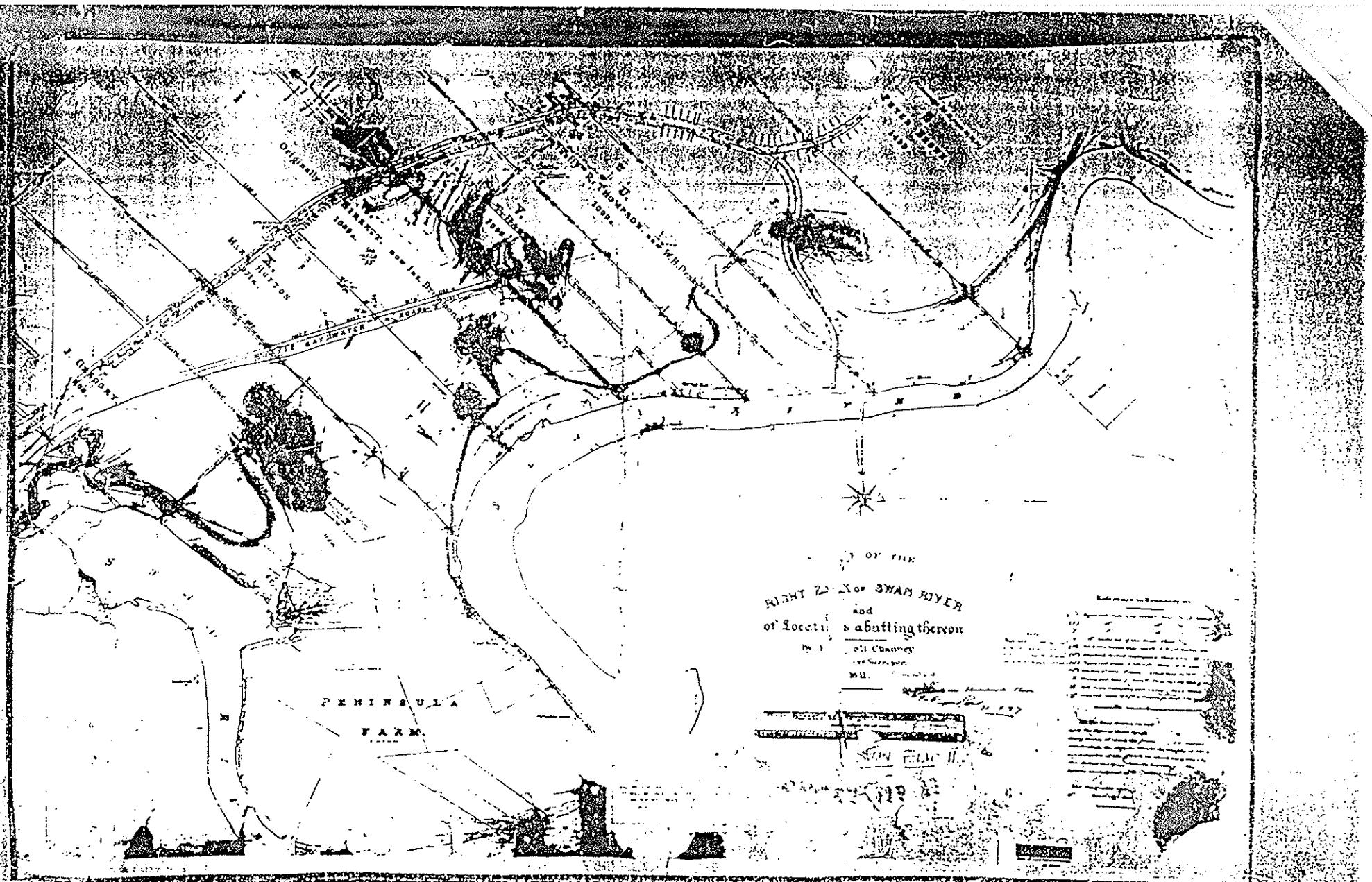
4. That landowners be informed of Council's decision.

REPORT PURPOSE

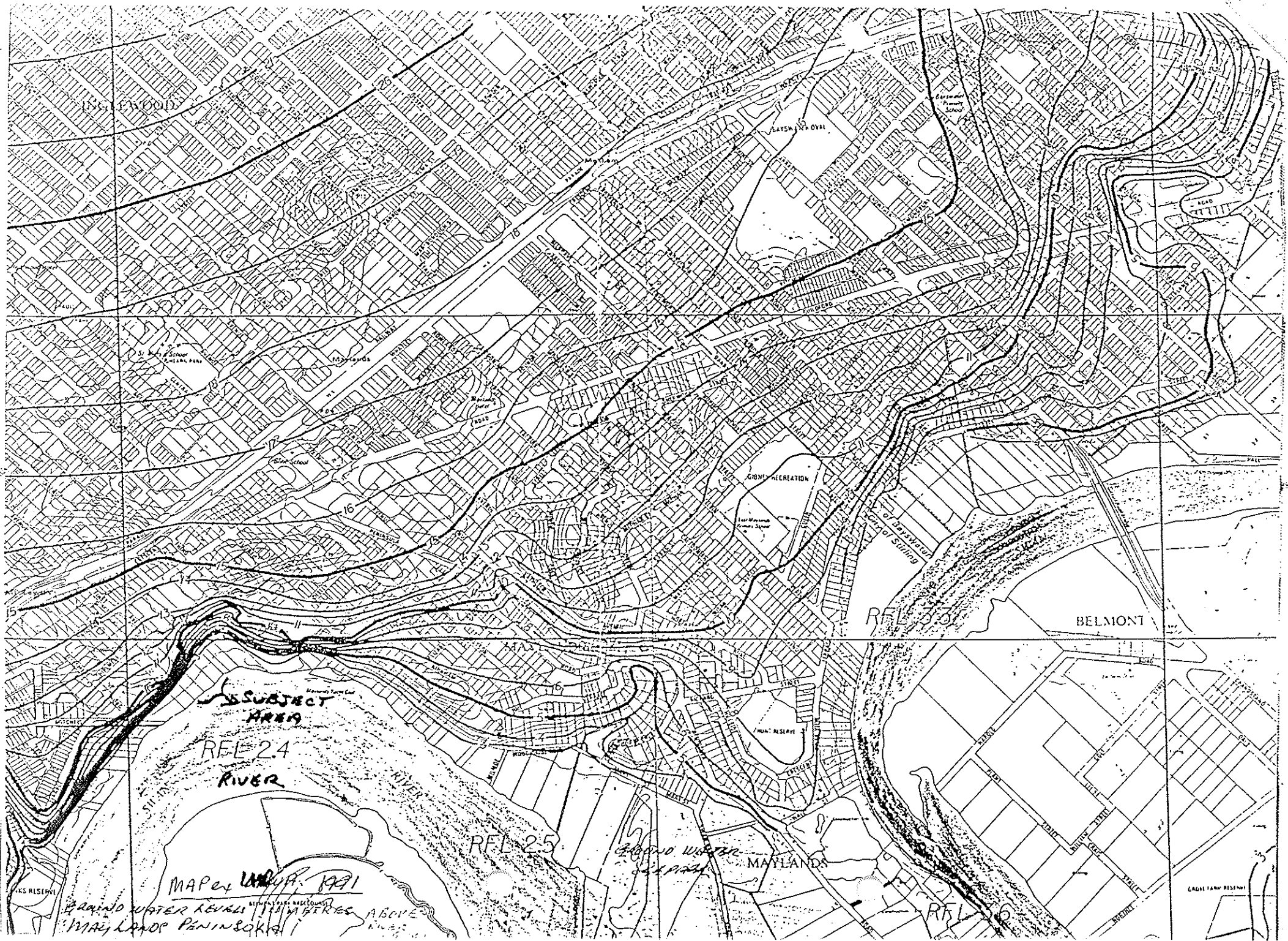
To advise Council of a consultant's report in respect of the District Planning Scheme public open space adjacent to the Swan River in Mt. Lawley.

1. BACKGROUND

   1.1 Under District Planning Scheme No. 2, portions of Lots Pt. 22, Thirlmere Road, the adjacent lot on Diagram 2870 and Lots 1 and 2, Guildford Road, Mt. Lawley are reserved for public open space and local authority purposes.



NOTED → AS GARDEN ON THIS 1841 MAP BY CHAUNCY


SUBJECT AREA
RFL 2.4
RIVER
RFL 2.5
RFL 2.3
RFL 2.6
BELMONT
MAYLANDS
MAP of UNDUR 1991
GROUND WATER LEVELS IN METRES ABOVE
MAYLANDS PENINSULA

M50 Swan Foreshore, Maylands
Bulletin 240 (Cycle path)

Friends Advocate Management

Other Names:

Specific Study/studies Miscellaneous studies

Flora

Vegetation Map	1	2	3	
Flora list	1	2	3	4
Significant Taxa	done / suitable / doubtful			

Fauna

Mammals	1	2	
Birds	1	2	RAOU
Reptiles and Amphibia	1	2	
Invertebrates	1	2	

Vegetation Condition Map Sites Comment

Disturbance Factors Comment Management

Swan Coastal Plain Floristic Survey

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

Notes

M50 Swan Foreshore, Maylands Bulletin 240 (Cycle path)		
M50.1 Regional park recommendations be applied to this area.	Unresolved Issues	The Regional Parks Task Force Report proposes that the Swan Estuary be considered analogous to a regional park managed under Swan River Trust legislation. The Swan River Management Strategy (1988) recommends that all the foreshore reserves and waterways of the Swan Canning Rivers be treated as a single entity for the purposes of planning and management. However, areas of high conservation value may be added to CALM's existing Swan Estuary Marine Park estate.
M50.2 Management plan be prepared by DPUD and Stirling City Council in consultation with local land owners.	Partially Implemented	City of Stirling has foreshore management plan for part of the area and expects to review this plan in 1993 to include the rest of the recommendation area.
M50.3 Ways and means of implementing the plan with respect to private property be sought through planning procedures.	Unresolved Issues	Some land still in private ownership.
M51 Swan River Saltmarshes, Belmont and Maylands Bulletin 240 (Cycle path)		
M51.1 Regional park recommendations be applied to this area.	Unresolved Issues	The Regional Parks Task Force Report proposes that the Swan Estuary be considered analogous to a regional park managed under Swan River Trust legislation. The Swan River Management Strategy (1988) recommends that all the foreshore reserves and waterways of the Swan Canning Rivers be treated as a single entity for the purposes of planning and management. However, areas of high conservation value may be added to CALM's existing Swan Estuary Marine Park estate.
M51.2 DPUD in consultation with EPA prepare management plan.	Unresolved Issues	Bayswater Greenwork Group is negotiating with DPUD and the local authorities to develop a management plan and assisting with management of the northern foreshore. DPUD and the City of Belmont are considering the locality and intend that a management plan for the System Six area form part of a composite strategy for the locality. Bayswater Greenwork has an interest in this area.

3. BAYSWATER SWAN RIVER FORESHORE STUDY : AN ENVIRONMENTAL APPRAISAL OF PLANNING PROBLEMS WITHIN BAYSWATER'S SWAN RIVER FORESHORE AREA. / Bayswater (W.A. : Municipality). Council. Smith, Peter. -- Western Australia. Australia. Bibliographies. Government publication, local. English. 1985.

M50

1. WATERFRONTS. 2. LAND USE URBAN. 3. BAYSWATER. 4. ENVIRONMENT. 5. SWAN RIVER VALLEY. 6. CITY PLANNING. 7. RECREATION AREAS. PEP TOPIC: 1. MISCELLANEOUS.

Location(s) : WLB Q333.917 <491174> WS:RL B 711.1 CI

EPA 908427

711.4-112(941) Sm1

SHEET 1: System 6 - REPORT Information Search Date 6/94

Please circle the appropriate response or respond in the space provided

Area M 50 Name

Title Draft Management Plan Maylands Foreshore Reserve (East 5th to Fogarthorpe Cres)

Published/Unpublished Date October 1987

Author/s K. Meney

Location of Publication

Purpose (why was the report prepared?)

Government City Stirling

Corporate

Community Group

Management Plan

Soils

Units mapped described referenced

Landscape

Features described referenced

Flora

Vegetation Map

~~Units~~ Site based (no)

Mapped

Veg Units Comparable Heddle *et al* Compared Heddle *et al* Unit not mapped by Heddle *et al*

Flora list

Timing %completion Significant Taxa

Trees Shrubs Herbs Sedges Weeds DRF CALM Priority Other

Fauna

Timing %completion Significant Taxa

Mammals Birds Sched1 Sched2 Other

Reptiles Invertebrates

Vegatation Condition

Site based Mapped Units

Disturbance Factors

Phytophthora observed Other incidental

tested itemised

Notes

Nicole Siemon

SHEET 2: System 6 - VERBAL Information Search

Date 30/5/94

Area M50	Name N Siemon		
Source	Mosquito Strategy upstream of causeway		
Purpose (why was the study done?)			
Government	~ WWC (SRT)b LGA's		
Corporate			
Community Group			
Management Plan			
Publication Planned	(Yes)	No	Date ?
Planned Location	SRT		

Soils		
Units	described	referenced

Landscape		
Features	described	referenced

Flora				
Vegetation Map				
Units	Communities		Site based (no)	
Mapped	1:10 000			
Veg Units	(Comparable Heddle *et al*)	Compared Heddle *et al.*	Unit not mapped by Heddle et *al.*	
Flora list				
Timing	%completion		Significant Taxa	
	Trees Shrubs Herbs Sedges	Weeds	DRF	CALM Priority Other

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

Vegetation Condition			
Site based	Mapped	Units	
Disturbance Factors			
Phytophthora	observed	Other	incidental
	tested		itemised

Notes
- Needs work on perennial sedges, Cyperaceae etc.

Nicole Siemon

SHEET 2: System 6 - VERBAL Information Search

Date_____

Area M50 Name				
Source	Mosquito Strategy			
Purpose (why was the study done?)				
Government				
Corporate				
Community Group				
Management Plan				
Publication Planned	(Yes)	No	Date	
Planned Location				

Soils		
Units	described	referenced

Landscape		
Features	described	referenced

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

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

Vegetation Condition		
Site based	Mapped	Units
Disturbance Factors		
Phytophthora	observed	Other Incidental
	tested	Itemised

Notes
All Mosquito veg studies mapped, described generally with species lists

SHEET 1: System 6 - REPORT Information Search Date 31/5/94

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

V EPA

not at EPA 3-10-94

Area M 56/57 Name	
Title	'East Perth Lateral Root For the Natural Gas Pipeline'
Published/Unpublished	Date 1983
Author/s	A. Weston - Domes and Moore
Location of Publication	
Purpose (why was the report prepared?)	
Government	? SEC
Corporate	
Community Group	
Management Plan	

Soils			
Units	mapped	described	referenced

Landscape		
Features	described	referenced

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

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

Vegatation Condition		
Site based	Mapped	Units
Disturbance Factors		
Phytophthora	observed	Other incidental
	tested	itemised

Notes

City of Stirling

DRAFT MAYLANDS PENINSULA LAND USE MANAGEMENT PLAN

STRUCTURE OF THE REPORT

Fringing Forest Communities

• *Casuarina - Melaleuca* Complex - fringes the foreshore area in the north-eastern section of the Peninsula in the area west of Garratt Road Bridge, and along the southern foreshore of the Peninsula.

• *Melaleuca - Juncus* Complex - occurs in small patches of the north-western and north-eastern sections of the Peninsula, with a band of *Juncus* Complex separating it from the water's edge. The complex is commonly found at elevations equal to that of the *Juncus* Complex, but where the soil water salinity is considerably less due to freshwater flushing.

In addition to the above communities, the Maylands Peninsula has areas of *Typha orientalis*, weed communities and grasses which dominate the vegetation of particular areas. The weed communities are particularly dominant in the north-west and north-east areas of the Peninsula. These communities of introduced species are linked to human disturbance to the natural ecosystem.

The Maylands foreshore is significant for fauna, particularly waterbirds. The Environmental Protection Authority's **Conservation Reserves for Western Australia - The Darling System - System 6** (1983) states that the reed beds in the north-west of the Peninsula are feeding grounds for many waterbirds, including such species as swan, coot and crake. Van Delft (1988) in his book, **Birding Sites Around Perth**, provides a list of birds regularly seen along the Maylands foreshore adjacent to Clarkson Reserve (Table 1), noting that the River, salt marsh and uncut grass along this route, provide different bird habitats. The salt marshes, trees and adjoining extensive wading areas in the north-east of the Maylands foreshore area, make up one of the few undisturbed areas along the Swan River which support a wide variety of waterbirds.

Maylands is listed as a key breeding site for ducks and rails and is a feeding area for the Great Egret (*Egretta alba*). A survey conducted in December 1986 by Rodney Vervest of the Royal Australasian Ornithologists Union (RAOU) (cited in Meney, 1987:29) tallied a list of 19 waterbird species. Two of these are JAMBA species (Great Egret and Caspian Tern). Two additional species (Dusky Moorhen and Sooty Oystercatcher) were sighted separately in early 1987.

The rushland/river margin includes sections of mudflat interrupted by small bays and islets; these were being used for roosting by pelicans, cormorants and ducks. The same areas were being used for feeding by White-faced Herons, a Great Egret, and a small group of Sacred Ibis.

The mudflats and adjacent rushland and saltmarsh provides refuge, feeding and breeding opportunities for secretive species such as the Australian and Spotless Crakes and the Buff-banded Rail. Few areas remain in the Swan-Canning Estuary that are suitable for the survival of these birds. The rushland (*Juncus* Complex) also provides extensive breeding habitat for ducks such as the Pacific Black Duck and Grey Teal. Little Grassbirds mainly occur in rushland in the Estuary and a large number of these diminutive birds was recorded at the site.

Few landbird species were encountered during the survey and those recorded were all seen in or near remnant woodland (*Melaleuca-Juncus* Complex, *Eucalyptus rudis* woodland). Brown Honeyeaters, Silver-eyes and Tree Martins were abundant.

A variety of waterbirds have taken advantage of the increase of waterbodies and environment created in the Claypits by the cessation of pumping in 1986 (See section 2.8.3). The Royal Australasian Ornithologists Union has conducted waterbird counts in the Claypits since 1987 (See Table 2). A summary of the waterbird usage provided by the RAOU forms part of the Appendix.

TABLE 1

BIRDS REGULARLY SEEN AT CLARKSON RESERVE

Australasian Grebe	Black-fronted Plover
Australian Pelican	Silver Gull
Darter	Caspian Tern
Great Cormorant	Laughing Turtle-Dove
Little Black Cormorant	Welcome Swallow
Little Pied Cormorant	Tree Martin
White-faced Heron	Richard's Pipit
Black Swan	Little Grassbird
Pacific Black Duck	Singing Honeyeater
Grey Teal	Silvereye
Buff-banded Rail	Australian Magpie-lark
Eurasian Coot	Australian Magpie
Red-kneed Dotterel	Australian Raven

SOURCE: Van Delft R.(1988,)**Birding Sites Around Perth,** *UWA Press, Perth, W.A. p-40.*

1.4 CURRENT LAND USE AND OWNERSHIP

1.4.1 LAND USE

The predominant land uses on the Peninsula are recreation and conservation which represent approximately 47% of the Study Area. This includes the Golf Course currently under construction.

A further 30% of the total site is vacant land. This includes the Claypits.

Other uses of significance are Residential (8%) and Special Use (13%). Land use is shown on Plan 5 and Table 3 gives relevant figures.

TABLE 3 - LAND USE SUMMARY

Land use	Area (ha)	% of Total
Recreation and Conservation	79.3	47.1
Special Use	21.5	12.8
Single Residential	7.5	4.5
Other Residential	5.3	3.2
Industrial	3.4	2.0
Sub Total	117.2	69.6
Vacant	51.2	30.4
TOTAL	168.4	100.0

TABLE 2: WATERBIRDS RECORDED AT THE MAYLANDS CLAYPITS February 1987 - May 1988

Species	Survey Date 4/2	1/3	22/3	4/4	11/4	24/5	19/7	29/8	11/10	14/11	27/12	30/1	28/2	24/4	22/5	Max. recorded in any survey
Hoary-headed Grebe				1								3				3
Australasian Grebe	13	7*	12	9	9*	7	13	8	8*	12*	5	7	9	14	7	14
Australian Pelican	1	2	3	6	1								1			6
Darter	1	3	5		3	1							1	2		5
Little Black Cormorant	3	2	2	1							2		4			4
Little Pied Cormorant	4	1	1			1										4
Great Cormorant	5		2							1	4	2	3			5
White-faced Heron	6			4	3	1	1	1			1	2	2		5	6
Great Egret (J)	1	1														1
Little Egret													1	2		2
Sacred Ibis	1			14		5										14
Black Swan	4		4	2	2	1	2*					15	33		4	33
Australian Shelduck		6	4	5						5*	6	18	58	10		58
Pacific Black Duck	20	130	65	49	20	35	39		52	22	200	165	162	45	3	200
Grey Teal	12	57	107	74	53	11	6	1	10	18	20	35	96	165		165
Australasian Shoveler				1				3				4	4			4
Hardhead	5						1	14	17	17	6	4		4		17
Musk Duck	17	3			3	1								1	1	17
Marsh Harrier														1		1
Purple Swamphen	2		1				1									2
Eurasian Coot	20*	30	40	23	15	22	24		22*	22	26	67	35	50	11	67
Red-kneed Dotterel											1		1			1
Red-capped Plover											1	2	4	2		4
Black-fronted Plover	16	8	7	12	8	5	5	3	1	1	2	7	5		1	16
Black-winged Stilt	15	9	16	19	8	5		9	22*	28*	14	38	8		3	38
Common Sandpiper (J)												1				1
Greenshank (J)			1	2							1					2
Sharp-tailed Sandpiper (J)											6	1	1			6
Silver Gull	8	68		37				1	120	100	60	1	56	1		120
Caspian Tern (J)			1													1
Amorous Reed-Warbler	2	4	2			1		1	8*	4		2				8
Wide Grassbird								1		1						1
Total Birds	156	331	273	259	125	96	92	42	260	231	355	374	484	297	35	
No. of Species	20	15	17	16	11	13	9	10	9	12	16	18	19	12	8	

Notes:

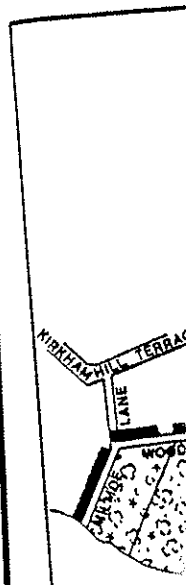
Total No. of Species recorded = 32 — Highest No. of species recorded in a survey = 20 (Feb.87)

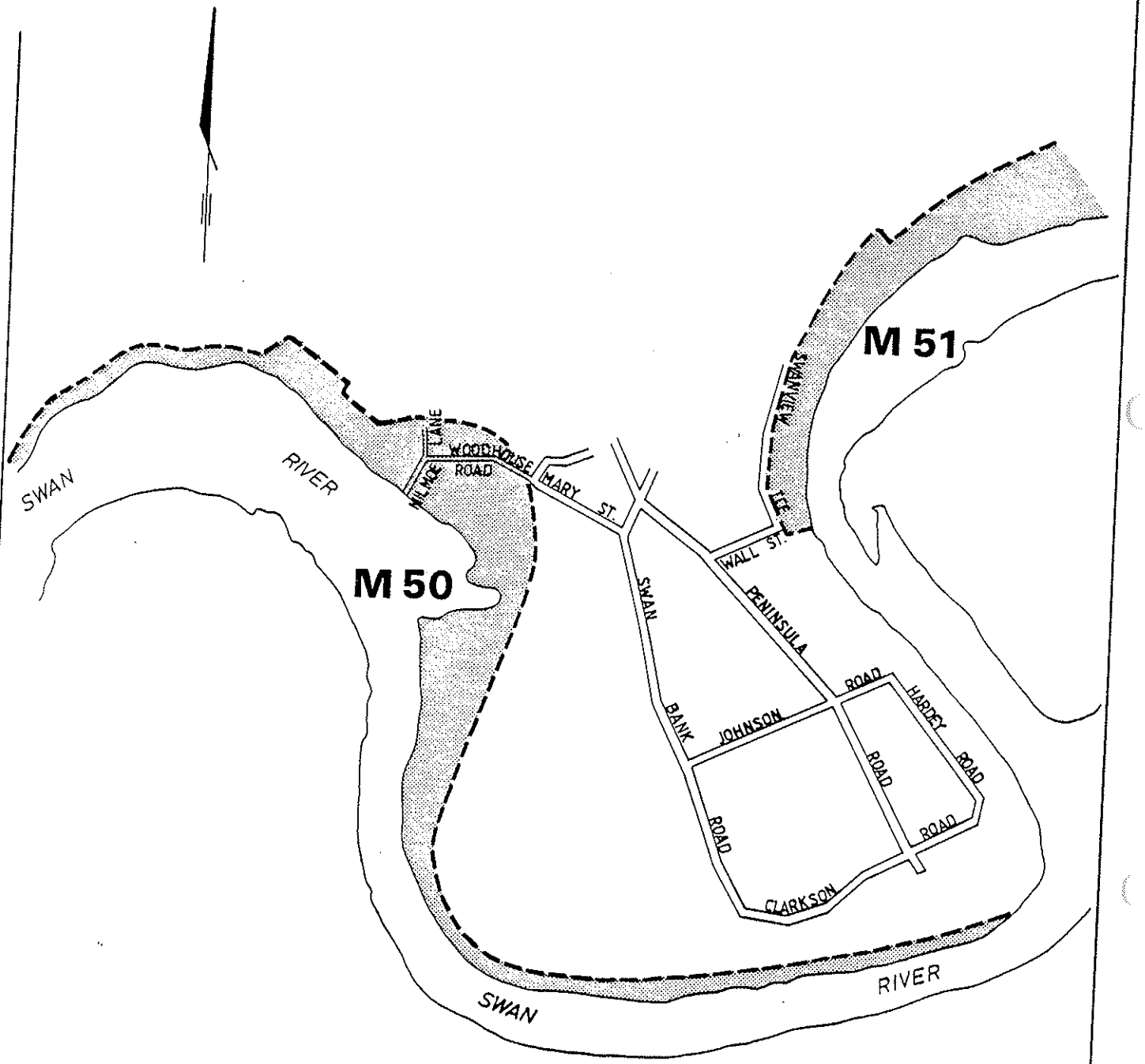
Species recorded BREEDING = 6 — Highest No. of individuals recorde in a survey = 484 (Feb 88)

* denotes breeding

Listed in the Japan Australia Migratory Birds Agreement

SOURCE: Vervest, R., (1988) **Waterbird Usage of the Maylands Claypits**, R.A.O.U. Unpublished.





SOURCE : E. P. A. SYSTEM 6 REPORT 1983

CITY OF STIRLING
TOWN PLANNING
DEPARTMENT

SYSTEM 6 CONSERVATION AREAS

SCALE	1:15,000
DATE	23/11/88
DRAWN	J.E.G.
PLAN Nº	8

City of Stirling

DRAFT MANAGEMENT PLAN

(see FINAL PLAN May 1989)

MAYLANDS FORESHORE RESERVE

(East Street to Fogerthorpe Crescent)

DRAFT MANAGEMENT PLAN
FOR THE
MAYLANDS FORESHORE RESERVE
(EAST STREET TO FOGERTHORPE CRESCENT)

KATHY MENEY
(CONSULTANT BIOLOGIST)

OCTOBER 1987

CONTENTS

PART B: MANAGEMENT

Temporal fluctuations in the environment is another factor of enormous importance at Maylands (and doubtless in other estuarine environments). Short-term changes in the environment (eg. temperature, drainage change, dry/wet year) can have considerable effects on species-balance. The seasonal trend of increasing salinities over the summer period for example, damages and kills large sections of *Bulboshoenus*, *Typha* and *Carex*, particularly if there has been an extended dry season. O other hand, a sudden increase in freshwater conditions may extensive spread of *Typha* and subsequent replacement of indig species in one season.

Although *Bulboshoenus*, *Carex* and *Typha* die off over summer, they generally highly favoured by temporal fluctuations in the enviror readily regenerating by vegetative means during the winter pe However, the indigenous *Sarcocornia* Typical Community is not favoured by compensating increases in salinity over the summer because the density of invading species limits its competitive ab Halophytes require high light intensities. (Ellenberg, 1978). while the resilience of the *Sarcocornia* Typical Community to mech disturbance is high (it will readily re-establish on saline bare patches), it should not be regarded as resilient where there are localised decreases in salinity which is the case at Maylands.

3.4 FAUNA

3.4.1 BIRDS

Introduction

Jaensch (1987) notes that approximately 10 000 waterbirds use the Swan-Canning Estuary each year. Furthermore, the diversity of waterbirds is higher than in any other wetland in south-western Australia, a phenomenon attributed to the diversity of feeding, loafing and breeding habitats in and surrounding the Estuary. This, together with the fact that 31 species are protected under the Japan-Australia Migratory Birds Agreement ('JAMBA Treaty'), and similar China-Australia Migratory Birds Agreement ('CAMBA Treaty'), makes remnant estuarine environments of enormous importance in terms of waterbird conservation.

Jaensch (1987) has identified the Maylands foreshore as a key site for waterbirds in terms of feeding and breeding. Maylands is listed as a key breeding site for ducks and rails and is a feeding area for the Great Egret (*Egretta alba*). A survey conducted in December 1986 by Rodney Vervest (RAOU) tallied a list of 19 waterbird species. Two of these are JAMBA species (Great Egret and Caspian Tern). Two additional species (Dusky Moorhen and Sooty Oystercatcher) were sighted separately in early 1987.

TABLE 2 : BIRD SPECIES LIST

Nomenclature, taxonomic order and status derived from RAOU sources.

J = listed in the Japan-Australia Migratory Birds Agreement.
R = resident - some individuals present in most years, in all or most (10-12 months).
S = seasonal - present in most years, in some (1-9 months).
O = occasional - present in some years, in several months at least.

COMMON NAME	GENUS/SPECIES	NUMBERS RECORDED 5.12.86	STATUS IN ESTUARY
WATERBIRD SPECIES			
Australian Pelican	*Pelecanus conspicillatus*	11	R
Darter	*Anhinga melanogaster*	3	R
Great Cormorant	*Phalacrocorax carbo*	3	R
Little Pied Comorant	*Phalacrocorax melanoleucos*	4	R
Little Black Cormorant	*Phalacrocorax sulcirostris*	5	R
Pied Cormorant	*Phalacrocorax varius*	1	R
White-faced Heron	*Ardea novaehollandiae*	4	R
Great Egret	*Egretta alba*	1	J R
Sacred Ibis	*Threskiornis aethiopiea*	3	R
Pacific Black Duck	*Anas superciliosa*	30	R
Grey Teal	*Anas gibberifrons*	2	R
Marsh Harrier	*Circus approximans*		O
Dusky Moorhen	*Gallinula tenebrosa*	1	R?
Eurasian Coot	*Fulica atra*	47	R
Sooty Oystercatcher	*Haematopus fuliginosus*	1	
Silver Gull	*Larus novaehollandiae*	6	S?
Caspian Tern	*Hydroprogne caspia*	1	J R
Crested Tern	*Sterna bergii*	1	R
Clamorous Reed-Warbler	*Acrocephalus stentoreus*	2	S?
Little Grassbird	*Megalurus gramineus*	6	R
unidentified Crake		1	R?
hybrid duck		1	R?
LANDBIRD SPECIES			
Laughing Turtle-Dove	*Streptopelia senegalensis*		
Tree Martin	*Cecropis nigricans*		
Richards Pipit	*Anthus novaeseelandiae*		
Brown Honeyeater	*Lichmera indistincta*		
Silvereye	*Zosterops lateralis*		
Australian Magpie	*Gymnorhina tibicean*		
Australian Raven	*Corvus coronoides*		
Laughing Kookaburra	*Dacelo gigas*		
Sacred Kingfisher	*Halycon sancta*		
Sulphur Crested Cockatoos	*Cacatua galerita*		

Black-shouldered Kite *Elanus caeruleus*
unidentified finch

A local resident observed the following landbird species: unidentifiec finches, Sacred Kingfisher, Sulphur-crested Cockatoo, Swamp Harrier, Black-Shoulder Kite.

Further surveys conducted over several seasons (ideally twelve months or longer) would reveal a greater number of species, particularly with the inclusion of migratory waders and migratory landbird species.

Habitat Conservation

Much of the wetland system has been lost to the pressures of urbar growth, and landfill continues to threaten some remnant tidal marsh. Consequently, the value of the Swan-Canning Estuary for waterbirds has diminished, and further loss of wetlands may reduce their number and diversity. Jaensch (1987) considers preventing the loss or deterioration of all remnant peripheral vegetation as the 'highest priority for action in regard to maintaining the present value of the Estuary for waterbirds.'

3.4.2 OTHER FAUNA

Introduction

No detailed survey work has been done on other fauna in the Reserve The following record of species is incomplete and inadequate and more detailed information is needed. Observations of species present were recorded during the course of the enhancement project. The specie list is not complete but rather indicative of the wetland communitie typical of the Swan-Canning Estuary. Only macrofauna was recorded.

Mammals

Mammals are particularly prone to disturbance both in loss of habitat and predatory/hunting pressure (by local dogs for example). Amongst species sighted was a water rat in the western end of the Reserve this species is uncommon in System 6 and rare elsewhere in Australia.

SPECIES SIGHTED:	Fox (2)	*Vulpes vulpes*
	Water Rat (1)	*Hydromys chrysogaster*

It is possible that the Southern Brown Bandicoot (*Isoodon obesulus*) ma occur in the Reserve although it is predated by cats which are comme in the area.

Reptiles/Amphibians

Most species recorded are common to the Perth region and not threatened in terms of diminishing habitat. One species, the Mourning Skink, was observed on a log amongst *Bulboschoenus caldwellii* and *Typha orientalis*. This reptile is found in only a few places in the metropolitan area. A large number of snakes were observed during the project period. Tiger snakes were most abundant in dense saltmarsh/typha areas and near drainage channels. Dugites were common in the drier areas of the Reserve. Snakes feed on small mammals and reptiles indicating there is probably a much wider variety of these species than was observed over the study period.

Species Sighted: (1) LIZARDS:
Mourning Skink (1) *Egernia luctuosa*
Fence Skink (4) *Cryptoblepharus plagiocephalu*
Burton's Legless Lizard (1) *Lialis burtonis*

(2) SNAKES:
Dugite (>5) *Pseudonaja affinis affinis*
Tiger Snake (>5) *Notechis scutatus occidentalis*

(3) OTHERS:
Long-necked Tortoise *Chelodina oblonga*

(4) FROGS:
Moaning Frog (3) *Heleioporous eyreii*
Froglet (>15) *Ranidella insignifera*
Western Green Frog (>10) *Litoria moorei*

Insects

Insect diversity and abundance is a good indication of the degree of disturbance of an area. Maylands has a low abundance of mosquitoes (Culicidae) which typically increase in response to wetland degradation. These are abundant in localised spots, mainly in Area 1 in association with puddling from stormwater drain outlets. Mosquitoes are an important part of wading bird diets.

Cleared areas have a high abundance of grasshoppers (Acrididae), and flies are in low-medium abundance throughout the Reserve.

The blue damsel fly occurs in low abundance in saltmarsh areas; this species depends on wetlands for its survival. Dragonflies are medium in abundance occurring mainly in least disturbed areas.

Other

The mosquito fish (*Gambusia affinis*) occurs in the Hardy Drain. Numerous yabbies were also sighted during the rehabilitation of the drain.

APPENDIX 1B: DETAILED VEGETATION DESCRIPTION
PRESENCE AND ABUNDANCE OF MOST COMMON SPECIES

A. SALTMARSH COMMUNITIES

Sarcocornia LOW CLOSED HEATH	5
Sarcocornia quinqueflora	2
Suaeda australis	+
Triglochin procera	+
Parapholis sp.	3
Samolus repens	

Peripheral species:
Bulboschoenus caldwellii
Atriplex prostrata
Carex inversa
Atriplex hypoleuca
Carpobrotus edulis
Apium prostratum

Bulboschoenus PREDOMINANT COMMUNITY	5
Bulboschoenus caldwellii	+
Apium prostratum	+
Aster subulatus	+
Suaeda australis	

Juncus kraussii CLOSED SEDGELAND	5
Juncus kraussii	2
Samolus repens	1
Suaeda australis	2
Sarcocornia quinqueflora	+
Melaleuca rhaphiophylla	

Juncus-Bulboschoenus COMMUNITY
Temporal successional stage where *Juncus* is invading degraded saltmarsh.

Samolus repens CLOSED HERBLAND	5
Samolus repens	1
Bulboschoenus caldwellii	1
Carex inversa	

Isolepis nodosa CLOSED SEDGELAND	5
Isolepis nodosa	2
Juncus kraussii	1
Apium prostratum	

Carex inversa CLOSED SEDGELAND

Carex inversa	
Samolus repens	5
Sarcocornia quinqueflora	2
Bulboschoenus caldwellii	+
Apium prostratum	+
Suaeda australis	+
Triglochin striata	+
Atriplex hypoleuca	+
	+

Schoenoplectus validus CLOSED SEDGELAND

Schoenoplectus validus	
	5

Schoenus subfasicularis CLOSED SEDGELAND

Schoenus subfasicularis	
Juncus kraussii	5
Isolepis nodosa	2
Atriplex hypoleuca	1
Sarcocornia quinqueflora	1
Suaeda australis	+
	+

B. FRINGING FOREST COMMUNITIES

Casuarina-Melaleuca LOW OPEN FOREST

Casuarina obesa	
Melaleuca rhaphiophylla	5
Typha orientalis	4
Bulboschoenus caldwellii	5
Juncus kraussii	5
Carex inversa	5
	3

Melaleuca-Juncus LOW OPEN-CLOSED FOREST

Melaleuca rhaphiophylla	
Juncus kraussii	5
Carex inversa	2
Bulboschoenus caldwellii	4
Cynodon dactylon	3
Rumex crispus	2
	1

Eucalyptus-Melaleuca LOW OPEN WOODLAND

Eucalyptus rudis	
Melaleuca rhaphiophylla	5
Juncus kraussii	3
Typha orientalis	1
Weed species	2
	4

Juncus planifolius COMMUNITY

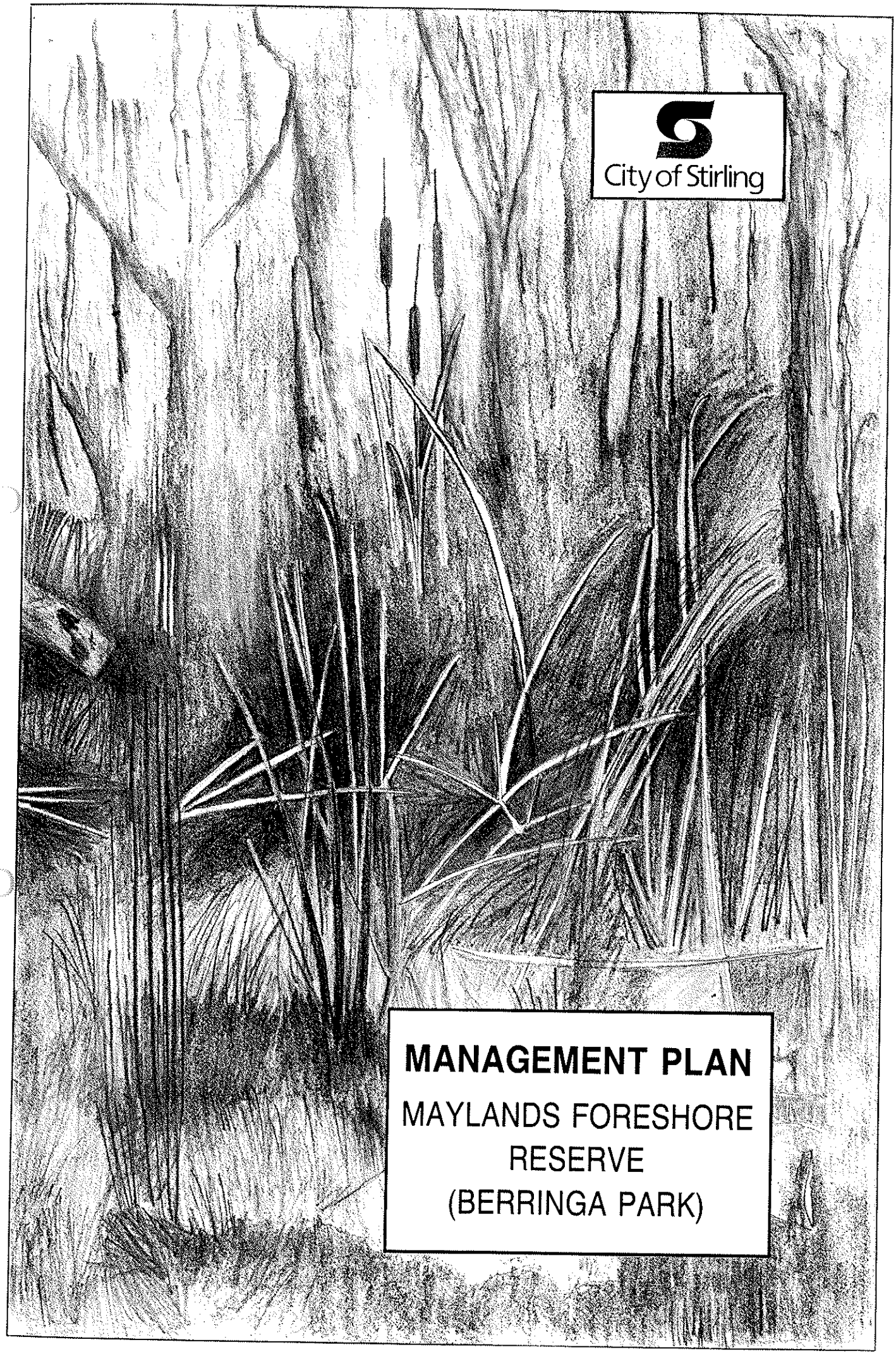
Juncus planifolius	
Typha orientalis	4
Baumea articulata	3
Weed species	2
	4

APPENDIX 2: SPECIES LIST - MAYLANDS FORESHORE

SPECIES	FAMILY	COMMON NAME
Acacia saligna	LEGUMINOSAE	Orange Wattle
Albizia lophantha	MIMOSACEAE	Cape Wattle
*Anagallis arvensis**	PRIMULACEAE	Scarlet Pimpernel
Apium prostratum	APIACEAE	
*Arctotheca calendula**	ASTERACEAE	Capeweed
*Arundo donax**	POACEAE	Giant Reed (Bamboo)
Atriplex hastata	CHENOPODIACEAE	
Atriplex hypoleuca	CHENOPODIACEAE	
Atriplex prostrata	CHENOPODIACEAE	
*Aster subulatus**	ASTERACEAE	Bushy Starwort
*Avena barbata**	POACEAE	Bearded Oat
Baumea articulata	CYPERACEAE	Jointed Twig Rush
Bulboschoenus caldwellii	CYPERACEAE	Marsh Club Rush
*Canna indica**	LILIACEAE	Cana Lily
*Carpobrotus edulis**	AIZOACEAE	Pigface
Cassytha glabella	RANUNCULACEAE	
Casuarina obesa	CASUARINACEAE	Saltwater Sheoak
Carex inversa	CYPERACEAE	Knob Sedge
Centella cordifolia	APIACEAE	Indian Pennywort
*Chasmanthe aethiopica**	IRIDACEAE	African Cornflag
*Colocasia esculenta**	LILIACEAE	Cunjeroi (Elephant Ears)
Cortaderia selloana	POACEAE	Pampas Grass
Cynodon dactylon	POACEAE	Couch
Cyperus alterniflorus	CYPERACEAE	
Dichondra sp.	CONVOLVULACEAE	
*Ehrharta calycina**	POACEAE	Perennial Veldt Grass
Epilobium billardierianum ssp. cinereum	ONOGRACEAE	Hairy Willow Herb
*Erigeron bonariensis**	ASTERACEAE	Tall Fleabane
Eucalyptus rudis	MYRTACEAE	Flooded gum
Foeniculum vulgare	APIACEAE	Fennel
*Ficus sp.**		Fig
*Gomphocarpus fruticosus**		Narrowleaf Cotton Bush
Halosarcia halocnemoides	CHENOPODIACEAE	Glasswart
*Hibiscus diversifolius**	MALVACEAE	Wild Hibiscus
*Homeria collina**	IRIDACEAE	One-leaved Cape Tulip
*Hypochaeris radiata**	ASTERACEAE	Flatweed
Isolepis nodosa	CYPERACEAE	Knotted Club Rush

Juncus kraussii	JUNCACEAE	Shore Rush
Juncus pallidus	JUNCACEAE	Giant Rush
Juncus planifolius	JUNCACEAE	Broad-leaf Rush
Lagurus ovatus	POACEAE	Hare's-tail Grass
*Lantana camara**	VERBENACEAE	Lantana
Lobelia alata	LOBELIACEAE	
*Lolium rigidum**	POACEAE	Wimmera Rye Grass
*Lupinus cosentinii**	LEGUMINOSAE	Lupin
Lupinus sp.	LEGUMINOSAE	Lupin
Marsilea drummondii	MARSILEACEAE	Nardoo
Melaleuca rhaphiophylla	MYRTACEAE	Swamp Paperbark
Melia azedarach		Cape Lilac
Melilotus indica	LEGUMINOSAE	King Island Melilot
*Nasturtium officinale**	CRUCIFERAE	Watercress
*Oxalis pes-capre**	POACEAE	Soursob
Paspalum dilatatum	POACEAE	Perennial Grass
Paspalum distichum	POACEAE	Water Couch
Pennisetum clandestinum	POACEAE	Kikuyu
Phalaris sp.	POACEAE	Canary Grass
Polygonum serrulatum	POLYGONACEAE	
*Polypogon monspeliensis**	POACEAE	Beard Grass
Pteridium esculentum	DENNSTAEDTIACEAE	Bracken Fern
*Raphanus raphanistrum**	CRUCIFERAE	Wild Radish
*Ricinus communis**	EUPHORBIACEAE	Castor Oil Bush
*Romulea rosea**	IRIDACEAE	Guildford Grass
*Rubus fruticosus**	ROSACEAE	Blackberry
*Rumex crispus**	POLYGONACEAE	Dock
Samolus repens	PRIMULACEAE	
Sarcocornia quinqueflora	CHENOPODIACEAE	Samphire
*Schinus terebinthifolius**	ANACARDIACEAE	Broadleaf Pepper Tree
Schoenoplectus validus	CYPERACEAE	
Schoenus subfasicularis	CYPERACEAE	Bog Rush
*Solanum nigrum**	SOLANACEAE	Black Nightshade
*Spathodea africana**	BIGNONIACEAE	South African Tulip
*Stenotaphrum secundatum**	POACEAE	Buffalo Grass
Suaeda australis	CHENOPOIACEAE	Seablite
*Trifolium dubium**	LEGUMINOSAE	Yellow Suckling Clover
*Trifolium fragiferum**	LEGUMINOSAE	Strawberry Clover
*Trifolium subterraneum**	LEGUMINOSAE	Subterraneum Clover
Triglochin procera	JUNCAGINACEAE	Water Ribbons
Triglochin striata	JUNCAGINACEAE	Streaked Arrow-grass
Typha orientalis	TYPHACEAE	
*Vicia sativa**	LEGUMINOSAE	Cumbungi
Viminaria juncea	LEGUMINOSAE	Common Vetch
*Watsonia bulbifera**	IRIDACEAE	
*Salix babylonica**		Wild Watsonia
*Zantedeschia aethiopica**	LILIACEAE	Arum Lily

* denotes exotic species



MANAGEMENT PLAN

MAYLANDS FORESHORE RESERVE (BERRINGA PARK)

MANAGEMENT PLAN FOR THE MAYLANDS FORESHORE RESERVE

A REPORT TO THE CITY OF STIRLING

OCTOBER 1989

K. A. Meney
Consultant Biologist

Table of Contents

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and on the frequency of disturbance (Krebs, 1978).

Temporal fluctuations in the environment is another factor of enormous importance at Maylands (and doubtless in other estuarine environments). Short-term changes in the environment (eg. temperature, drainage change, dry/wet year) can have considerable effects on species-balance. The seasonal trend of increasing salinities over the summer period for example, damages and kills large sections of *Bolboschoenus, Typha* and *Carex*, particularly if there has been an extended dry season. On the other hand, a sudden increase in freshwater conditions may cause extensive spread of *Typha* and subsequent replacement of indigenous species in one season.

Although *Bolboschoenus, Carex* and *Typha* die off over summer, they are generally highly favoured by temporal fluctuations in the environment, readily regenerating by vegetative means during the winter period. However, the indigenous *Sarcocornia* Typical Community is not well favoured by compensating increases in salinity over the summer period because the density of invading species limits its competitive ability. Halophytes require high light intensities. (Ellenberg, 1978). Hence, while the resilience of the *Sarcocornia* Typical Community to mechanical disturbance is high (it will readily re-establish on saline bare patches), it should not be regarded as resilient where there are localised decreases in salinity which is the case at Maylands.

3.4 BIRDS

3.4.1 Introduction

Jaensch (1987) notes that approximately 10 000 waterbirds use the Swan-Canning Estuary each year. Furthermore, the diversity of waterbirds is higher than in any other wetland in south-western Australia, a phenomenon attributed to the diversity of feeding, loafing and breeding habitats in and surrounding the Estuary. This, together with the fact that 31 species are protected under the Japan-Australia Migratory Birds Agreement ('JAMBA Treaty'), and similar China-Australia Migratory Birds Agreement ('CAMBA Treaty'), makes remnant estuarine environments of enormous importance in terms of waterbird conservation.

Jaensch (1987) has identified the Mayland foreshore as a key site for waterbirds in terms of feeding and breeding. Mayland is listed as a key breeding site for ducks rails and is a feeding area for the Great Egret (*Egretta alba*). A survey conducted December 1986 by Rodney Vervest (RAO tallied a list of 19 waterbird species (Tab 2). Two of these are JAMBA and CAMBA species (Great Egret and Caspian Tern). Two additional species (Dusky Moorhen and Sooty Oystercatcher) were sighted separately in early 1987.

3.4.2 Waterbird Usage

The rushland/river margin includes sections of mudflat interrupted by small bays and islets; these were being used for roosting by pelicans, cormorants and ducks. The same areas were being used for feeding by White-faced Herons, a Great Egret, and a small group of Sacred Ibises.

The mudflats and adjacent rushland and saltmarsh provides refuge, feeding and breeding opportunities for secretive species such as the Australian and Spotless Crakes and the Buff-banded Rail. Few areas remain in the Swan-Canning Estuary that are suitable for the survival of these birds. The rushland (*Juncus* Complex) also provides extensive breeding habitat for ducks such as the Pacific Black Duck a... Grey Teal. Little Grassbirds mainly occur in rushland in the Estuary and a large number of these diminutive birds was recorded at the site.

3.4.3 Landbird Usage

Few landbird species were encountered during the survey and those recorded were all seen in or near remnant woodland (*Melaleuca-Juncus* Complex, *Eucalyptus rudis* woodland). Brown Honeyeaters, Silvereyes and Tree Martins were abundant.

A local resident observed the following landbird species: unidentified finches, Sacred Kingfisher, Sulphur-crested Cockatoo, Swamp Harrier, Black-Shoulder Kite.

Further surveys conducted over several seasons (ideally twelve months or longer) are likely to reveal a greater number of species, particularly with the inclusion of migratory waders and migratory landbird species.

3.4.4 Habitat Conservation

Much of the wetland system has been lost to the pressures of urban growth, and landfill continues to threaten some remnant tidal marsh. Consequently, the value of the Swan-Canning Estuary for waterbirds has diminished, and further loss of wetlands may reduce their number and diversity. Jaensch (1987) considers preventing the loss or deterioration of all remnant peripheral vegetation as the 'highest priority for action in regard to maintaining the present value of the Estuary for waterbirds.'

TABLE 3 : Bird Species List

Nomenclature, taxonomic order and status derived from RAOU sources.

C= listed in the China-Australia Migratory Birds Agreement.

J = listed in the Japan-Australia Migratory Birds Agreement.

R = resident - some individuals present in most years, in all or most (10-12 months).

S = seasonal - present in most years, in some (1-9 months).

O = occasional - present in some years, in several months at least.

COMMON NAME	GENUS/SPECIES	NUMBERS RECORDED 5.12.86	STATUS IN ESTUARY
WATERBIRD SPECIES			
Australian Pelican	*Pelecanus conspicillatus*	11	R
Darter	*Anhinga melanogaster*	3	R
Great Cormorant	*Phalacrocorax carbo*	3	R
Little Pied Comorant	*Phalacrocorax melanoleucos*	4	R
Little Black Cormorant	*Phalacrocorax sulcirostris*	5	R
Pied Cormorant	*Phalacrocorax varius*	1	R
White-faced Heron	*Ardea novaehollandiae*	4	R
Great Egret	*Egretta alba*	1	C J R

Sacred Ibis	*Threskiornis aethiopiea*	3	R
Pacific Black Duck	*Anas superciliosa*	30	R
Grey Teal	*Anas gibberifrons*	2	R
Marsh Harrier	*Circus approximans*		O
Dusky Moorhen	*Gallinula tenebrosa*	1	R?
Eurasian Coot	*Fulica atra*	47	R
Sooty Oystercatcher	*Haematopus fuliginosus*	1	
Silver Gull	*Larus novaehollandiae*	6	S?
Caspian Tern	*Hydroprogne caspia*	1	C J R
Crested Tern	*Sterna bergii*	1	R
Clamorous Reed-Warbler	*Acrocephalus stentoreus*	2	S?
Little Grassbird	*Megalurus gramineus*	6	R
unidentified Crake		1	R?
hybrid duck		1	R?

LANDBIRD SPECIES	
Laughing Turtle-Dove	*Streptopelia senegalensis*
Tree Martin	*Cecropis nigricans*
Richards Pipit	*Anthus novaeseelandiae*
Brown Honeyeater	*Lichmera indistincta*
Silvereye	*Zosterops lateralis*
Australian Magpie	*Gymnorhina tibicean*
Australian Raven	*Corvus coronoides*
Laughing Kookaburra	*Dacelo gigas*
Sacred Kingfisher	*Halycon sancta*
Sulphur Crested Cockatoo	*Cacatua galerita*
Black-shouldered Kite	*Elanus caeruleus*
unidentified finch	

3.5 OTHER FAUNA

3.5.1 Introduction

No detailed survey work has been done on other fauna in the Reserve. The following record of species is incomplete and inadequate and more detailed information is needed. Observations of species present were recorded during the course of the enhancement project. The species list is indicative of the wetland communities typical of the Swan-Canning Estuary. Only macrofauna was recorded; number of individuals sighted is in brackets.

3.5.2 Mammals

Mammals are particularly prone to disturbance both in loss of habitats and predatory/hunting pressure (by local dogs for example). Amongst species sighted was a water rat in the western end of the Reserve - this species is uncommon in System 6 and rare elsewhere in Australia.

Species Present:

Fox (2)	*Vulpes vulpes*
Water Rat (1)	*Hydromys chrysogaster*

It is possible that the Southern Brown Bandicoot (*Isoodon obesulus)* may occur in the Reserve although it is predated by cats which are common in the area.

3.5.3 Reptiles/Amphibians

Most species recorded are common to the Perth region and not threatened in terms of diminishing habitat. One species, the Mourning Skink, was observed on a log amongst *Bolboschoenus caldwellii* and *Typha orientalis*. This reptile is found in only a few places in the metropolitan area. A large number of snakes was observed during the project period. Tiger snakes were most abundant in dense saltmarsh/typha areas and near drainage channels. Dugites were common in the drier areas of the Reserve. Snakes feed on small mammals and reptiles indicating there is probably a much wider variety of these species than was observed over the study period.

Species Sighted:

(1) Lizards:

Mourning Skink (1)	*Egernia luctuosa*
Fence Skink (4)	*Cryptoblepharus plagiocephalus*
Burton's Legless Lizard (1)	*Lialis burtonis*

(2) Snakes:

Dugite (>5)	*Pseudonaja affinis affinis*
Tiger Snake (>5)	*Notechis scutatus occidentalis*

(3) Others:

Long-necked Tortoise	*Chelodina oblonga*

(4) Frogs:

Moaning Frog (3)	*Heleioporous eyreii*
Froglet (>15)	*Ranidella insignifera*
Western Green Frog (>10)	*Litoria moorei*

3.5.4 Insects

Insect diversity and abundance is a good indication of the degree of disturbance of an area. Maylands has a low abundance of mosquitoes (Culicidae) which typically increase in response to wetland degradation. These are abundant in localised spots, mainly in Area 1 in association with puddling from stormwater drain outlets. Mosquitoes are an important part of wading bird diets.

Cleared areas have a high abundance of grasshoppers (Acrididae), and flies are in low-medium abundance throughout the Reserve.

The blue damsel fly occurs in low abundance in saltmarsh areas; this species depends on wetlands for its survival. Dragonflies are medium in abundance occurring mainly in least disturbed areas.

3.5.5 Other

The mosquito fish (*Gambusia affinis*) occurs in the Hardy Drain. Numerous yabbies were also sighted during the rehabilitation of the drain.

APPENDIX 3: SPECIES LIST - MAYLANDS FORESHORE

	SPECIES		FAMILY	COMMON NAME
1	*Acacia saligna*		LEGUMINOSAE	Orange Wattle
2	*Anagallis arvensis**	38	PRIMULACEAE	Scarlet Pimpernel
3	*Apium prostratum*		APIACEAE	
4	*Arctotheca calendula**	37	ASTERACEAE	Capeweed
5	*Arundo donax**	36	POACEAE	Giant Reed (Bamboo)
6	*Atriplex hastata*		CHENOPODIACEAE	
7	*Atriplex hypoleuca*		CHENOPODIACEAE	
8	*Atriplex prostrata*		CHENOPODIACEAE	
9	*Aster subulatus**	35	ASTERACEAE	Bushy Starwort
10	*Avena barbata**	34	POACEAE	Bearded Oat
11	*Baumea articulata*		CYPERACEAE	Jointed Twig Rush
12	*Bolboschoenus caldwellii*		CYPERACEAE	Marsh Club Rush
13	*Canna indica**	33	LILIACEAE	Cana Lily
14	*Carpobrotus edulis**	32	AIZOACEAE	Pigface
15	*Cassytha glabella*		RANUNCULACEAE	
16	*Casuarina obesa*		CASUARINACEAE	Saltwater Sheoak
17	*Carex inversa*		CYPERACEAE	Knob Sedge
18	*Centella cordifolia*		APIACEAE	Indian Pennywort
19	*Chasmanthe aethiopica**	31	IRIDACEAE	African Cornflag
20	*Colocasia esculenta**	30	LILIACEAE	Cunjeroi (Elephant Ears)
1	*Cortaderia selloana*		POACEAE	Pampas Grass
2	*Cynodon dactylon*		POACEAE	Couch
3	*Cyperus alterniflorus*		CYPERACEAE	
4	*Dichondra sp.*		CONVOLVULACEAE	
5	*Ehrharta calycina**	29	POACEAE	Perennial Veld Grass
6	*Epilobium billardierianum ssp. cinereum*		ONAGRACEAE	Hairy Willow Herb
7	*Erigeron bonariensis**	28	ASTERACEAE	Tall Fleabane
9	*Eucalyptus rudis*		MYRTACEAE	Flooded gum
30	*Foeniculum vulgare*		APIACEAE	Fennel
	*Ficus sp.**	27		Fig
2	*Gomphocarpus fruticosus** Bush	26		Narrowleaf Cotton
3	*Halosarcia halocnemoides*		CHENOPODIACEAE	Glasswart

*Hibiscus diversifolius**		MALVACEAE	Wild Hibiscus
*Homeria collina**		IRIDACEAE	One-leaved Cape Tulip
*Hypochaeris radiata**		ASTERACEAE	Flatweed
Isolepis nodosa		CYPERACEAE	Knotted Club Rush
Juncus kraussii		JUNCACEAE	Shore Rush
Juncus pallidus		JUNCACEAE	Giant Rush
Juncus planifolius		JUNCACEAE	Broad-leaf Rush
Lagurus ovatus		POACEAE	Hare's-tail Grass
*Lantana camara**		VERBENACEAE	Lantana
Lobelia alata		LOBELIACEAE	
*Lolium rigidum**		POACEAE	Wimmera Rye Grass
*Lupinus cosentinii**		LEGUMINOSAE	Lupin
Lupinus sp.		LEGUMINOSAE	Lupin
Marsilea drummondii		MARSILEACEAE	Nardoo
Melaleuca rhaphiophylla		MYRTACEAE	Swamp Paperbark
Melia azedarach			Cape Lilac
Melilotus indica		LEGUMINOSAE	King Island Melilot
*Nasturtium officinale**		CRUCIFERAE	Watercress
*Oxalis pes-capre**		POACEAE	Soursob
Paraserianthes lophantha		MIMOSACEAE	Cape Wattle
Paspalum dilatatum		POACEAE	Perennial Grass
Paspalum distichum		POACEAE	Water Couch
Pennisetum clandestinum		POACEAE	Kikuyu
Phalaris sp.		POACEAE	Canary Grass
Polygonum serrulatum		POLYGONACEAE	
*Polypogon monspeliensis**		POACEAE	Beard Grass
Pteridium esculentum		DENNSTAEDTIACEAE	Bracken Fern
*Raphanus raphanistrum**		CRUCIFERAE	Wild Radish
*Ricinus communis**		EUPHORBIACEAE	Castor Oil Bush
*Romulea rosea**		IRIDACEAE	Guildford Grass
*Rubus fruticosus**		ROSACEAE	Blackberry
*Rumex crispus**		POLYGONACEAE	Dock
Samolus repens		PRIMULACEAE	
Sarcocornia quinqueflora		CHENOPODIACEAE	Samphire
*Schinus terebinthifolius**		ANACARDIACEAE	Broadleaf Pepper Tree
Schoenoplectus validus		CYPERACEAE	
Schoenus subfasicularis		CYPERACEAE	Bog Rush
*Solanum nigrum**		SOLANACEAE	Black Nightshade
*Spathodea africana**		BIGNONIACEAE	South African Tulip
*Stenotaphrum secundatum**		POACEAE	Buffalo Grass

4	*Suaeda australis*		CHENOPOIACEAE	Seablite
5	*Trifolium dubium**	7	LEGUMINOSAE	Yellow Suckling Clover
6	*Trifolium fragiferum**	6	LEGUMINOSAE	Strawberry Clover
7	*Trifolium subterraneum**	5	LEGUMINOSAE	Subterraneum Clover
8	*Triglochin procera*		JUNCAGINACEAE	Water Ribbons
9	*Triglochin striata*		JUNCAGINACEAE	Streaked Arrow-grass
80	*Typha orientalis*		TYPHACEAE	Cumbungi
1	*Vicia sativa**	4	LEGUMINOSAE	Common Vetch
2	*Viminaria juncea*		LEGUMINOSAE	
3	*Watsonia bulbifera**	3	IRIDACEAE	Wild Watsonia
4	*Salix babylonica**	2		
5	*Zantedeschia aethiopica**	1	LILIACEAE	Arum Lily

* denotes exotic species

85 total ~~native~~

85 - 38 weeds

47 natives

Proposed Cyclepath on the Swan River Foreshore (Milne Street, Bayswater to Mitchell Street, Mount Lawley)

Department of Local Government

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Department of Conservation and Environment
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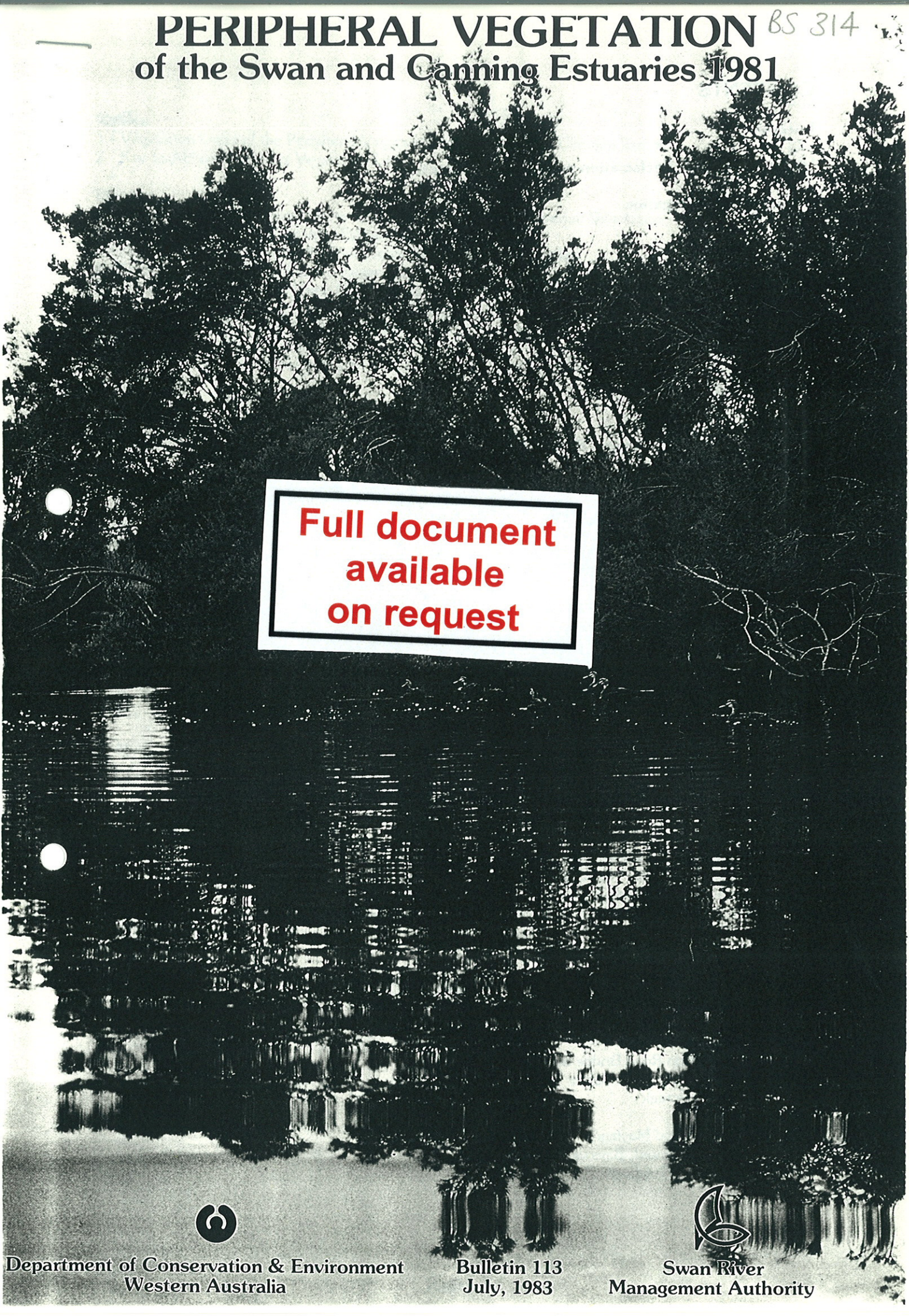

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