

## LAKE PINJAR AND ADJACENT BUSHLAND, PINJAR

**Boundary Definition:** Conservation wetland/protected area/bushland (part taken to cadastre)/bushland group 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.** 382

**Area (ha):** bushland 735.4 (Site also includes open water.)

**Map no.** 15, 21

**Map sheet series ref. no.** 2034–I NW, 2034–I SW

**Other Names:** Part Submission Area 233, part of Wanneroo Wetlands Eastern chain

**Local Authorities (Suburb):** Shire of Wanneroo (Pinjar, Neerabup)

**System 6 (1983):** Part M8 part System area bushland, only bushland described

### SECTION 2: REGIONAL INFORMATION

#### LANDFORMS AND SOILS

##### Bassendean Dunes

Bassendean Sands (Qpb: S8)

##### Bassendean Dunes/Pinjarra Plain

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

##### Spearwood Dunes

Sands derived from Tamala Limestone (Qts: S7)

##### Wetlands (within the Spearwood and Bassendean Dune interface)

Holocene Swamp Deposits (Qhw: Cps, S4)

#### VEGETATION AND FLORA

##### Vegetation Complexes

###### Bassendean Dunes

Bassendean Complex — North

###### Spearwood Dunes

Karrakatta Complex — Central and South

###### Wetlands

Pinjar Complex (restricted complex, largest intact area; boundaries modified from Heddle *et al.* (1980) in McArthur and Mattiske (1985); area reduced south but is an occurrence in RAAF land to the east, most northern occurrence)

##### Floristic Community Types

###### Supergroup 2: Seasonal Wetlands

5 Mixed shrub damplands

10a Shrublands on dry clay flats (most northerly and only sampled occurrence off the Pinjarra Plain)

12 *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands (most northerly occurrence)

S1 *Astartea* aff. *fascicularis*/*Melaleuca* species dense shrublands (most northerly occurrence)

S2 Northern *Pericalymma ellipticum* dense low shrublands

S3 Wet sedgeland on sandy clays

###### Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

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

22 *Banksia ilicifolia* woodlands

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

#### WETLANDS

**Wetland Types:** sumpland, creek, artificial channel

##### Natural Wetland Groups

###### Bassendean Dunes

Pinjar (B.1)

Jandakot (B.3)

**Wetland Management Objectives:** Conservation (1107.5ha), Multiple Use

**Swan Coastal Plain Lakes EPP:** 3ha + 160ha = 163ha (total)

#### THREATENED ECOLOGICAL COMMUNITIES

Not determined

### SECTION 3: SPECIFIC SITE DETAIL

**Landscape Features:** open water, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (DEP 1996 (Pinj 01–13, 15), DEP 1999, McArthur and Mattiske 1985, Trudgen 1993a)

**Structural Units:** mapping (McArthur and Mattiske 1983, Trudgen 1993a)

Uplands: *Eucalyptus marginata* Woodland; *Banksia attenuata* and *B. menziesii* Low Open Forest to Low Woodland with scattered *Eucalyptus todtiana* and *E. marginata*; *Banksia attenuata* and *B. ilicifolia* Low Open Woodland

Wetlands: *Eucalyptus rudis* Open Forest to Open Woodland; *Acacia saligna*, *Exocarpos sparteus* and *Viminaria juncea* Low Open Woodland; *Melaleuca preissiana* and *Banksia ilicifolia* Low Woodland to Low Open Forest; Open Scrub to Tall Open Shrublands dominated by *Melaleuca teretifolia* or *Hakea varia*; Closed Heath to Low Open Heath dominated by *Hypocalymma angustifolium*, *Pericalymma ellipticum*; *Kunzea ericifolia* Open Scrub to Closed Scrub; Herblands dominated by *Stylidium* species; Closed to Open Sedgeland dominated by *Chaethanthus aristatus*, *Lepidosperma longitudinale* and combinations of *Baumea articulata*, *Lepyrodia muirii* and *Meeboldinia scariosa*

**Scattered Native Plants:** not assessed

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

**Total Flora:** 170 native taxa, 15 weed taxa (plot-generated list only, DEP 1996)

**Significant Flora:** *Tripterococcus paniculatus* (1), *Stylidium longitubum* (3), *Anthotium junciforme* (4); *Stylidium utricularioides*, *Burchardia bairdiae*, *Boronia purdieana*, *Hensmania turbinata*, *Stylidium crossocephalum*, *Verticordia nitens*, *Epiblema grandiflora* (large populations in wetlands)

**Fauna:** Significant mammal species: Quenda (Friend 1996 D)

**Linkage:** adjacent bushland to the north (Site 380), east (Sites 380 and 398) and south (Site 295); part of Greenways 16, 36 (Tingay, Alan & Associates 1998a); part of a regionally significant contiguous and fragmented bushland/wetland linkage (Part A, Map 7)

**Other Special Attributes:** majority recommended for protection in study of City of Wanneroo bushland (Trudgen, 1996); contains nine floristic community types in a unique combination; contains plant communities representative of the eastern side of the Swan Coastal Plain

#### **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, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation

**Recommendation:** Part A: Site with Some Existing Protection; existing Parks and Recreation Reserve, may become National/ Conservation/ Regional Park or Nature Reserve. Part B: Proposed Parks and Recreation Reservation (see Table 3, Volume 1).



**LAKE PINJAR AND ADJACENT BUSHLAND, PINJAR**

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**SECTION 1: CADASTRAL INFORMATION**

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

**Bushplan Site no.** 382 **Map no.** 19, 20, 26, 27 **Map sheet series ref. no.** 2034-I NW, 2034-I SW  
**System 6 (1983):** Part M8 part System area bushland, only bushland described

**Other Names**

Part Submission Area 233

**Local Authorities (Suburb)**

Shire of Wanneroo (Pinjar, Neerabup)

**Ownership Categories**

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

**Area (ha):** total 1285.4 (includes open water); bushland 735.4

**Zoning**

**MRS:** Parks and Recreation, Rural

**TPS:** Rural, Landscape

**Lot/Location/Reserve numbers (Purpose),**

**Street name**

3, 4, 1896, 1897, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1981, 2493, 2494 Perry Rd; 5, 1747, 1978, 1979 Anderson Rd; 101, 102 Ziatas Rd; 2698, 2702 Old Yanchepp Rd; 1, 23, 2692, 2694, 2704, 10823 Pinjar Rd; 2703, 5455 Nisa Rd; 22 street not identified  
 Crown Reserve

**SECTION 2: REGIONAL INFORMATION**

**LANDFORMS AND SOILS**

**Bassendean Dunes**

Bassendean Sands (Qpb: S8)

**Bassendean Dunes/Pinjarra Plain**

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

**Spearwood Dunes**

Sands derived from Tamala Limestone (Qts: S7)

**Wetlands (within the Spearwood and Bassendean Dune interface)**

Holocene Swamp Deposits (Qhw: Cps, S4)

**VEGETATION AND FLORA**

**Vegetation Complexes**

**Bassendean Dunes**

Bassendean Complex — North

**Spearwood Dunes**

Karrakatta Complex — Central and South

**Wetlands**

Pinjar Complex (restricted complex, largest intact area; boundaries modified from Heddlé *et al.* 1980 in McArthur and Mattiske 1985; area reduced south but is an occurrence in RAAF land to the east, most northern occurrence)

**Floristic Community Types**

**Supergroup 2: Seasonal Wetlands**

- 5 Mixed shrub damplands
- 10a Shrublands on dry clay flats (most northerly and only sampled occurrence off the Pinjarra Plain)
- 12 *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands (most northerly occurrence)
- S1 *Astartea* aff. *fascicularis*/*Melaleuca* species dense shrublands (most northerly occurrence)
- S2 Northern *Pericalymma ellipticum* dense low shrublands
- S3 Wet sedgeland on sandy clays

**Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau**

- 21a Central *Banksia attenuata* — *Eucalyptus marginata* woodlands
- 22 *Banksia ilicifolia* woodlands
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**WETLANDS**

**Wetland Types:** sumpland, creek, artificial channel

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Pinjar (B.1)

Jandakot (B.3)

**Wetland Management Objectives:** Conservation (1107.5ha)

**Swan Coastal Plain Lakes EPP:** 3ha + 160ha = 163ha (total)

**THREATENED ECOLOGICAL COMMUNITIES**

Not determined

**SECTION 3: SPECIFIC SITE DETAIL**

**Landscape Features:** open water, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (DEP 1996 (Pinj 01-13, 15), McArthur and Mattiske 1985, Trudgen 1993a)

**Structural Units:** mapping (McArthur and Mattiske 1985, Trudgen 1993a)

Uplands: *Eucalyptus marginata* Woodland; *Banksia attenuata* and *B. menziesii* Low Open Forest to Low Woodland with scattered *Eucalyptus tottiana* and *E. marginata*; *Banksia attenuata* and *B. ilicifolia* Low Open Woodland

Wetlands: *Eucalyptus rudis* Open Forest to Open Woodland; *Acacia saligna*, *Exocarpos sparteus* and *Viminaria juncea* Low Open Woodland; *Melaleuca preissiana* and *Banksia ilicifolia* Low Woodland to Low Open Forest; Open Scrub to Tall Open Shrublands dominated by *Melaleuca teretifolia* or *Hakea varia*; Closed Heath to Low Open Heath dominated by *Hypocalymma angustifolium*, *Pericalymma ellipticum*; *Kunzea ericifolia* Open Scrub to Closed Scrub; Herblands dominated by *Stylidium* species; Closed to Open Sedgeland dominated by *Leptocarpus aristatus*, *Lepidosperma longitudinale* and combinations of *Baumea articulata*, *Lepyrodia muirii* and *Leptocarpus scariosus*

**Scattered Native Plants:** not assessed

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

**Total Flora:** 170 native taxa, 15 weed species (plot-generated list only, DEP 1996)

**Significant Flora:** *Tripterococcus paniculatus* (1), *Stylidium longitubum* (3), *Anthotium junciforme* (4); *Stylidium utricularioides*, *Burchardia bairdiae*, *Boronia purdieana*, *Hensmania turbinata*, *Stylidium crossocephalum*, *Verticordia nitens*, *Epiblema grandiflora* (large populations in wetlands)

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

**Linkage:** adjacent bushland to the north (BS380), east (BS380 and BS398) and south (BS295); part of proposed Greenway 17 (Tingay, Alan & Associates 1997a); part of a regionally significant contiguous and fragmented bushland/wetland linkage (Volume 2A, Map 8)

**Other Special Attributes:** majority recommended for protection in study of City of Wanneroo bushland (Trudgen 1996); contains nine floristic community types in a unique combination; contains plant communities representative of the eastern side of the Swan Coastal Plain

**SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE**

Not listed; Indicative Place of the Register of the National Estate

**SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS**

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

**Opportunities and/or Constraints**

**Opportunities:** Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP; location of conservation category wetlands; under MRS Parks and Recreation Reservation and TPS Landscape Zoning, Planning Control Area No. 29, Crown Reserve

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

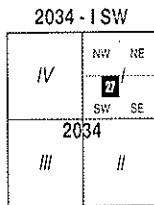
**Recommendation:** The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the land owner(s). Parts of the Bushplan Site are already reserved for Parks and Recreation in the Metropolitan Region Scheme and may become National Park, Conservation Park, Nature Reserve or Regional Park.





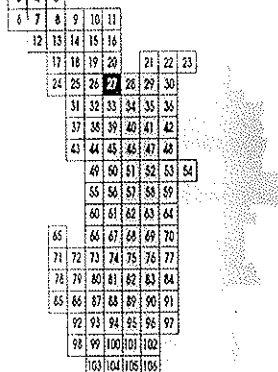
LEGEND

- 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

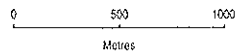


1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

PERTH'S BUSHPLAN MAP INDEX










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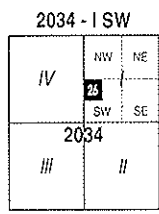


Produced by Project Mapping Section  
 Land Information Branch, Ministry for  
 Planning, Perth W.A. November 1998  
 ntw-map11/environ/bushplan/bushv2\_27.dgn  
 Cadastral Data supplied by Department  
 of Land Administration, W.A.  
 Wetlands Data supplied by  
 Water and Rivers Commission  
 Native Vegetation Extent for Study Area  
 supplied by Agriculture Western Australia



**LEGEND**

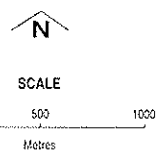
-  Bushplan Sites With Regionally Significant Bushland
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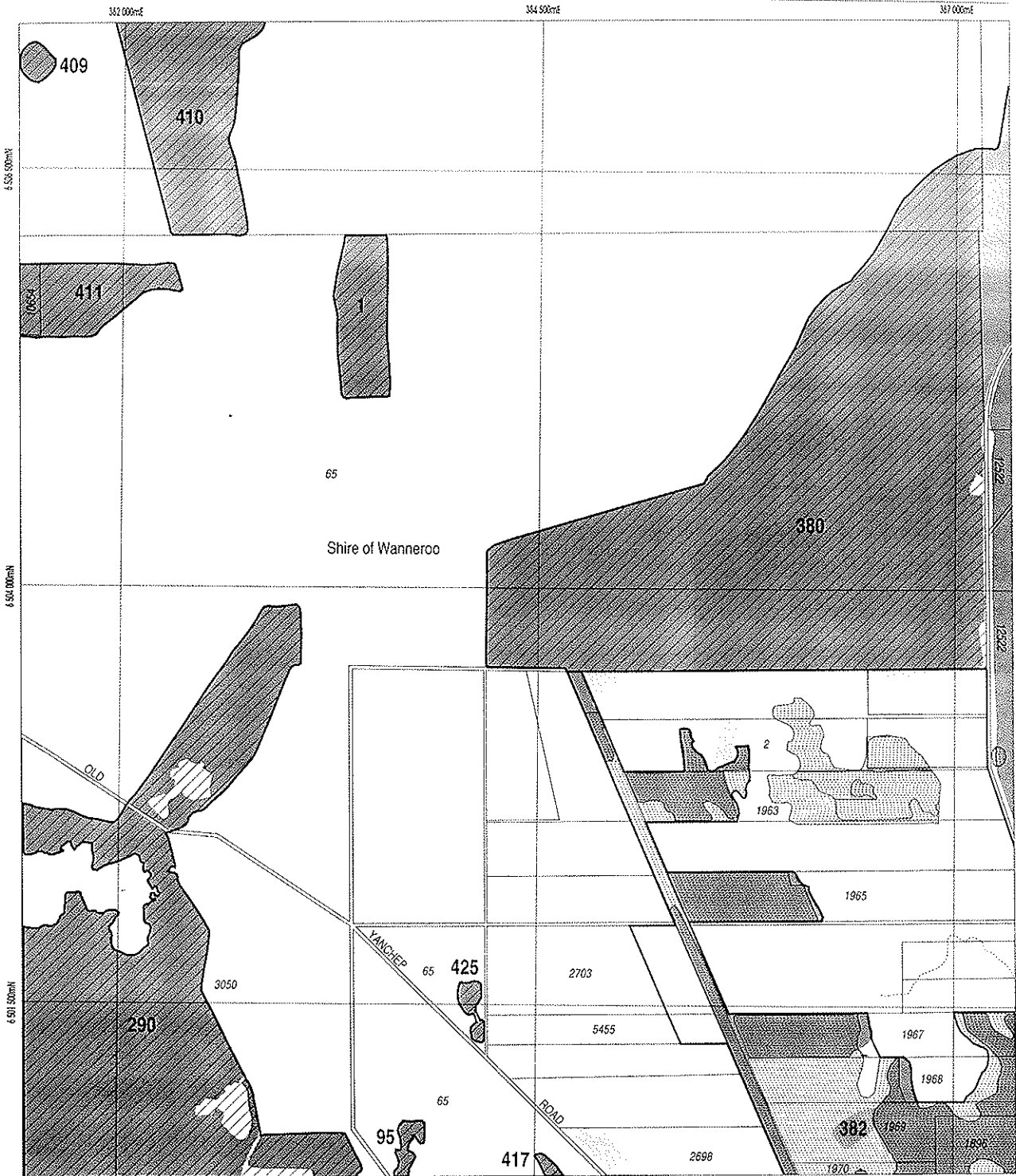
1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

**PERTH'S BUSHPLAN MAP INDEX**








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Produced by Project Mapping Section  
Land Information Branch, Ministry for  
Planning, Perth W.A. November 1998  
ntw-map11\enviro\busplan\buslv2\_26.dgn  
Cadastral Data supplied by Department  
of Land Administration, W.A.  
Wetlands Data supplied by  
Water and Rivers Commission  
Native Vegetation Extent for Study Area  
supplied by Agriculture Western Australia



**LEGEND**

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

**2034 - I NW**

	NW	NE
IV	<b>19</b>	
	SW	SE

**2034**

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

**PERTH'S BUSHPLAN MAP INDEX**

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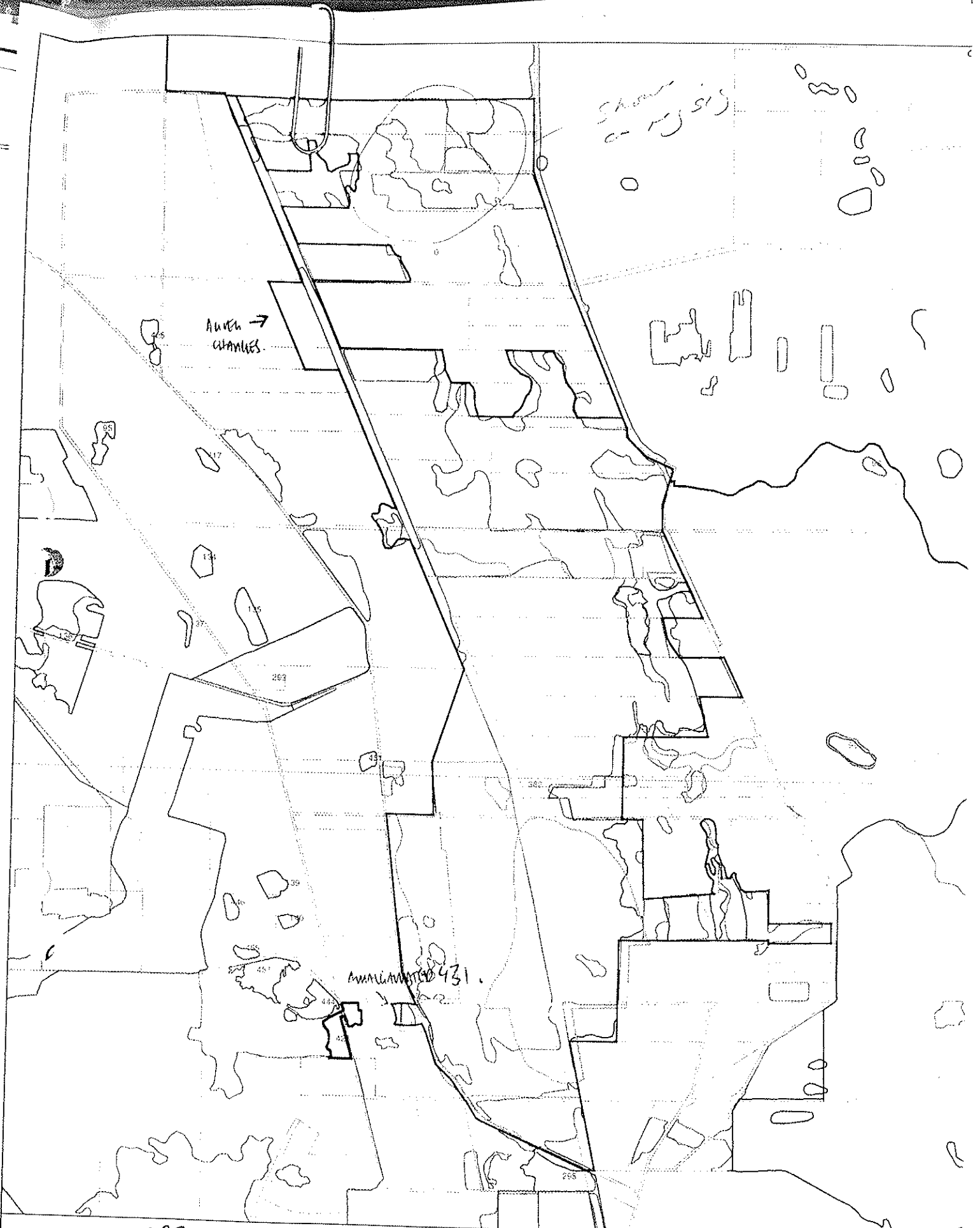
**SCALE**

0 500 1000

Metres

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

nbv-map77\environ\bushplan\bushv2\_19.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



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**BUSHPLAN SITES CORRECTED**



**WESTERN AUSTRALIAN PLANNING COMMISSION**



**CUSTOMER FOCUS**  
WESTERN AUSTRALIA

B 24/10/98





90M, 900M NOT AVAILABLE FROM UPWARDS (NORTH)

"STAND ABOVE"  
Paya not 100% issue  
OUT

NOT  
VEGETATED

Not  
Please  
mark in  
suggested  
boundary with  
best

IN ✓ BJK  
28/9

CONTIGUOUS  
- no new landowners  
AFFECTED  
- PREVIOUSLY MAPPED AS BUSHLAND

507 INCLUDE

BJK 28/9  
More veg. than  
mapped

IN 516/517

(Potential whole  
lot in view of  
residual pattern  
view 526 13 include? in the middle)

Port boundary

IN

BJK  
check recent data

OUT

EXTENT OF  
MANGROVE

NOT PREVIOUSLY  
MAPPED AS  
BUSHLAND

IN ✓ BJK  
28/9

CLEARED?  
WHAT TYPE OF WETLAND IS THIS?  
Excuse

Cutt  
564 IN EPP/CCW ABUTTING  
PART OF SYSTEM IN  
CROWN RESERVE. Per

NEED TO  
CHECK  
WHAT  
RECENT  
PROPOSALS

EXISTING  
WETLAND  
VALUES

EXISTING  
P/R?  
WHY  
EXCLUDED?  
NOT  
VEGETATED?






EXISTING  
P/R?  
PARTLY  
VEGETATED

WHY  
EXCLUDED?  
EXISTING  
WETLAND  
VALUES

P/R

bp site 382

THIS AREA IN GENERAL IS RECOMMENDED  
FOR RESERVATION AS P/R. (TACLETTERED  
ACQUISITION MECHANISM EXISTS.)

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

514 - MANGROVE RECENTLY CLEARED  
- EXCLUDE (WETLAND VALUES) } BJK FOR  
INCLUDE

[EPP LIVES POOL]?

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

0 1.25 Km

24/9 H2O + vegetation







## System 6 Update - Floristic Community Types

B. J. Keighery 14/5/96

Within the System 6 Update area regional floristic groupings have been identified on the Swan Coastal Plain (Gibson *et al.* 1994), representing the most recent and detailed analysis of the patterning of plant communities on the Swan Coastal Plain south of the Gingin. Just over five hundred 10X10m sites were located in bushland areas across the study area. Sites were confined to public lands and located so as to sample

- the geomorphological/soil units (determined from 1:25 000 scale by Chuchward and McArthur 1980, the more detailed maps land capability studies at eg 1: 50 000 scale of King and Wells 1990, Tille and Lantzke 1991 and the Environmental Geology Series, Geological Survey 1986)
- plant communities patterning identified by previous studies (from structural units to floristic units, for example in Speck 1952 and 1958, Beard, 1979b and 1981, Heddle *et al.* 1980, Trudgen, Keighery and Trudgen, Keighery and Keighery 1992). Within the more widespread communities quadrats were located to sample the east - west and north - south floristic variation.
- bushland in the best condition.

The classification of these sites using PATN identified 30 groups some of which could be divided to give 43 floristic community types at the regional level. The 43 floristic community types identified in this study are being used as the basis to compare the regional variation in plant communities in the System 6 Update area on the Swan Coastal Plain (Plain sections of System 6 and System 1).

### Method

#### (i) Gibson *et al.* 1994

Five hundred and nine 10 m x 10 m quadrats (plots, sites) were established in remnant vegetation in the study area. These sites were located on public land and on the 'Lowlands' property. As a result, not all the geographical or geomorphological variation could be covered. In particular the Ridge Hill Shelf, Pinjarra Plain and Quindalup land systems were under sampled. In the case of the former two they have largely been cleared (and hence the chance to study them lost) while few reserves occur on the latter land system. Care was taken to locate sites in the least disturbed vegetation available (best condition) in the area being sampled. It was not possible to cover fully the estuarine and riverine vegetation in the time available for this study; these restricted habitat types have been documented elsewhere (Pen 1980, 1993; Siemon *et al.* 1993).

Some 190 of the sites were established with the aid of volunteers through a Wildflower Society /CALM volunteer participation project.

Within each site all vascular plants were recorded. Most sites (>95%) were visited on at least two occasions. The seasonally wet clay pans were visited up to four times to ensure that the extended period of recruitment of annual and geophytic taxa that occurs as these pools dry was fully covered. Data on slope, aspect, vegetation structure and condition were collected from each site. Slope was scored on a one to three scale from flat to steep. Aspect was recorded as one of 16 cardinal directions. Vegetation structure was recorded using Muir's (1977) classification. Vegetation condition was scored on a five point scale with a score of one indicating vegetation in near natural condition and five indicating highly disturbed sites with significant weed invasion (after Trudgen 1991). Standard recording sheets originally developed for a similar study on the sandplain north of the Gingin Brook were used and further developed through this study (Keighery and Keighery 1991, Keighery 1994).

#### (ii) System 6 Update Sites 1994

The DEP field programme for 1994 was designed to sample those System areas not sampled by Gibson *et al.* (1994) or described by Griffin (1994). Data was collected as for Gibson *et al.*

However time constraints did not permit the location of sites in all System areas and it was necessary to prioritise areas. Areas considered to be floristically similar and within the same geographic area to areas already sampled were not sampled.

Fifteen sites located in the area of Lake Pinjar. Mapping by Trudgen (1992) was used as a basis for locating the sites, sites being located in each of the major units mapped in the area.

### Floristic Community Types at Lake Pinjar

Seven wetland (super group 2, Gibson *et al.* 1994) and three woodland (super group 3, Gibson *et al.* 1994) floristic community types were identified in the area of Lake Pinjar (Table 1). Six of the wetland groups and two of the woodland groups were sampled in the transect from the Lake bed east through Lot 1974.

**Table 1. Generalised description of the 30 community types and most frequent landforms on which they occur.**

Floristic community type (sites no)	Generalised description	Predominant landform type (as mapped by Churchward and McArthur 1980)
4 (5*)	<i>Melaleuca preissiana</i> damplands	Bassendean
5 (9*)	Mixed shrub damplands	Bassendean / Pinjarra
10a (10*)	Shrublands on dry clay flats	Bassendean / Pinjarra
12 (7*)	<i>M. teretifolia</i> and / or <i>Astartea</i> aff. <i>fascicularis</i> shrublands	Bassendean
21c (6*)	Low lying <i>Banksia attenuata</i> woodlands or shrublands	Bassendean
22 (12)	<i>Banksia ilicifolia</i> woodlands	Bassendean
23a (8*, 14)	Central <i>Banksia attenuata</i> - <i>B. menziesii</i> woodlands	Bassendean
	Preliminary# System 6 Update 1994 "Wetland Groups"	
A2 (13)	<i>Melaleuca preissiana</i> damplands type A"#	not available
K2 (1*, 2*, 3*, 15)	"Wet Tall Sedgeland"#	not available
M2 (4*, 11)	" <i>Melaleuca preissiana</i> damplands type M"#	not available

\* Sites on transect from Lake centre east to dunes, Map 1  
# preliminary groupings yet to be finalised

The Lake supports a combination of a series of wetland floristic community types from both the Bassendean Dunes and the Pinjarra Plain (Table 1). While these wetland types occur elsewhere on the Plain the combination at Lake Pinjar is of interest (Table 2).

**Table 2: Comments on reservation status and distribution after Gibson *et al.* 1994**  
 (System 6 Update work is in a preliminary stage and this information is not yet available).

Floristic community type (sites no)	Generalised description	Reservation status and distribution, Gibson <i>et al.</i> 1994
4 (5*)	<i>Melaleuca preissiana</i> damplands	Present in two or more Cons. Reserves, widespread, west (N)
5 (9*)	Mixed shrub damplands	Present in two or more Cons. Reserves, widespread
10a (10*)	Shrublands on dry clay flats	Present in two or more Cons. Reserves
12 (7*)	<i>M. teretifolia</i> and / or <i>Astartea</i> aff. <i>fascicularis</i> shrublands	Present in two or more Cons. Reserves, only record N of Forrestdale Lake
21c (6*)	Low lying <i>Banksia attenuata</i> woodlands or shrublands	Present in two or more Cons. Reserves, Pinjar to Kemerton most westerly north of the Swan
22 (12)	<i>Banksia ilicifolia</i> woodlands	Present in one Cons. Reserve
23a (8*, 14)	Central <i>Banksia attenuata</i> - <i>B. menziesii</i> woodlands	Present in two or more Cons. Reserves
	Preliminary# System 6 Update 1994 "Wetland Groups"	
A2 (13)	<i>Melaleuca preissiana</i> damplands type A"#	9 areas
K2 (1*, 2*, 3*, 15)	"Wet Tall Sedgeland"#	3 areas
M2 (4*, 11)	" <i>Melaleuca preissiana</i> damplands type M"#	?5 areas

**Department of Environmental Protection System 6 Update: Site Based Flora  
List M8 Wanneroo Wetlands - Eastern Chain (Lake Pinjar)**  
(185 taxa: Pinj sites 1-15, B.J. Keighery, 4/4/95)

Anthericaceae

Arnocrinum preissii  
Chamaescilla corymbosa  
Corynotheca micrantha  
Hensmania turbinata  
Johnsonia pubescens  
Laxmannia squarrosa  
Thysanotus arenarius  
Thysanotus multiflorus  
Thysanotus patersonii  
Thysanotus triandrus  
Tricoryne tenella

Apiaceae

Actinotus glomeratus  
Homalosciadium homalocarpum  
Trachymene pilosa  
Xanthosia huegelii

Asteraceae

Gnephosis tenuissima  
\* Hypochaeris glabra  
Lagenifera huegelii  
Millotia tenuifolia  
Podolepis gracilis swamp (GJK 13126)  
Senecio lautus subsp. maritimus  
Siloxerus humifusus  
\* Ursinia anthemoides

Campanulaceae

\* Wahlenbergia capensis  
Wahlenbergia preissii

Centrolepidaceae

Aphelia cyperoides  
Centrolepis aristata  
Centrolepis mutica  
Centrolepis polygyna

Colchicaceae

Burchardia bairdiae  
Burchardia umbellata

Cyperaceae

Baumea articulata  
Baumea juncea  
Baumea vaginalis  
Cyathochaeta avenacea  
\* Cyperus tenellus  
Lepidosperma angustatum  
Lepidosperma longitudinale  
Schoenus aff. brevisetis scps  
Schoenus curvifolius

Schoenus discifer  
Schoenus odontocarpus  
Schoenus rodwayanus

Dasygongonaceae

Dasygongon bromeliifolius  
Lomandra caespitosa  
Lomandra hermaphrodita

Dilleniaceae

Hibbertia aurea  
Hibbertia racemosa  
Hibbertia stellaris  
Hibbertia subvaginata

Droseraceae

Drosera erythrorhiza  
Drosera gigantea  
Drosera glanduligera  
Drosera nitidula  
Drosera paleacea  
Drosera pallida  
Drosera pulchella  
Drosera rosulata  
Drosera sp. scps

Epacridaceae

Conostephium pendulum  
Conostephium preissii  
Leucopogon conostephioides  
Leucopogon polymorphus  
Leucopogon propinquus  
Leucopogon sp. scps  
Lysinema ciliatum

Euphorbiaceae

Monotaxis grandiflora

Gentianaceae

\* Centaurium erythraea

Goodeniaceae

Anthotium junciforme  
Dampiera linearis  
Goodenia pulchella  
Lechenaultia floribunda

Haemodoraceae

Anigozanthos humilis  
Conostylis aculeata  
Phlebocarya ciliata

Haloragaceae

Gonocarpus pithyoides

Iridaceae

\* Gladiolus caryophyllaceus

Site Based Flora List M8 Wanneroo Wetlands -- Eastern Chain (Lake Pinjar)  
(185 taxa: Pinj sites 1-15, B.J. Keighery, 4/4/95)

Patersonia occidentalis  
Patersonia occidentalis (swamp form) sthst  
\* Romulea rosea

Lamiaceae

Hemiandra pungens

Lauraceae

Cassytha flava  
Cassytha racemosa

Lobeliaceae

Lobelia alata  
Lobelia tenuior

Loganiaceae

Mitrasacme paradoxa

Menyanthaceae

Villarsia albiflora

Mimosaceae

Acacia huegelii  
Acacia pulchella  
Acacia saligna

Myrtaceae

Agonis linearifolia  
Astartea aff. fascicularis sthst  
Beaufortia elegans  
Calothamnus lateralis  
Calytrix flavescens  
Calytrix fraseri  
Eremaea pauciflora  
Eucalyptus marginata  
Eucalyptus rudis  
Eucalyptus todtiana  
Hypocalymma angustifolium  
Melaleuca lateritia  
Melaleuca preissiana  
Melaleuca raphiophylla  
Melaleuca teretifolia  
Melaleuca trichophylla  
Pericalymma ellipticum  
Regelia inops  
Scholtzia involucrata  
Verticordia densiflora  
Verticordia nitens

Orchidaceae

Caladenia flava  
Epiblema grandiflorum  
Microtis unifolia  
Prasophyllum sp. scps  
Pterostylis vittata  
Thelymitra crinita  
Thelymitra flexuosa

Papilionaceae

- Aotus gracillima
- Bossiaea eriocarpa
- Daviesia physodes
- Euchilopsis linearis
- Eutaxia virgata
- Gompholobium tomentosum
- Hovea pungens
- Hovea trisperma var. trisperma
- Jacksonia densiflora
- Jacksonia furcellata
- Jacksonia sternbergiana
- Oxylobium lineare
- Sphaerolobium vimineum
- \* Trifolium arvense
- \* Trifolium campestre
- Viminaria juncea

Philydraceae

- Philydrella pygmaea

Phormiaceae

- Dianella revoluta var. divaricata

Poaceae

- Agrostis avenacea
- Agrostis preissii
- \* Aira caryophyllea
- Amphipogon laguroides
- Amphipogon turbinatus
- \* Briza maxima
- \* Briza minor
- Danthonia occidentalis
- Deyeuxia quadriseta
- Hemarthria uncinata
- \* Lolium rigidum
- Stipa compressa
- \* Vulpia sp. scps

Polygalaceae

- Comesperma calymega
- Comesperma flavum

Primulaceae

- \* Anagallis arvensis var. arvensis FPR

Proteaceae

- Adenanthos cygnorum
- Banksia attenuata
- Banksia ilicifolia
- Banksia menziesii
- Conospermum incurvum
- Hakea varia
- Persoonia comata
- Petrophile linearis
- Stirlingia latifolia

Restionaceae

Alexgeorgea nitens  
Hypolaena exsulca  
Leptocarpus aristatus  
Leptocarpus scariosus  
Lepyrodia muirii  
Loxocarya flexuosa  
Lyginia barbata  
Restio microcodon scps  
Restio stenostachyus

Rubiaceae

Opercularia vaginata

Rutaceae

Boronia purdieana  
Eriostemon spicatus

Stackhousiaceae

Stackhousia monogyna

Stylidiaceae

Stylidium brunonianum  
Stylidium calcaratum  
Stylidium crossocephalum  
Stylidium divaricatum  
Stylidium junceum  
Stylidium longitubum  
Stylidium macrocarpum  
Stylidium repens  
Stylidium utricularioides

Xanthorrhoeaceae

Xanthorrhoea preissii

Zamiaceae

Macrozamia riedlei



CONTACT DR N. GIBSON CALM WOODVALE for further information.

Flora list for M8 (extracted from Swan Coastal Plain database, Pinj sites 1 - 15, 2/1995).

**Department of Environmental Protection System 6 Update: Site Based Flora List M8 Wanneroo Wetlands - Eastern Chain (Lake Pinjar)**

(extracted from the CALM Swan Coastal Plain database, 185 Taxa, Pinj sites 1-15, 2/95)

## Anthericaceae

Arnocrinum preissii  
 Chamaescilla corymbosa  
 Corynotheca micrantha  
 Hensmania turbinata  
 Johnsonia pubescens  
 Laxmannia squarrosa  
 Thysanotus arenarius  
 Thysanotus multiflorus  
 Thysanotus patersonii  
 Thysanotus triandrus  
 Tricoryne tenella

170 native  
 15 exotics

## Apiaceae

Actinotus glomeratus  
 Homalosciadium homalocarpum  
 Trachymene pilosa  
 Xanthosia huegelii

## Asteraceae

Gnephis tenuissima  
 \* Hypochaeris glabra  
 Lagenifera huegelii  
 Millotia tenuifolia  
 Podolepis gracilis swamp (GJK 13126)  
 Senecio lautus subsp. maritimus  
 Siloxerus humifusus  
 \* Ursinia anthemoides

## Campanulaceae

\* Wahlenbergia capensis  
 Wahlenbergia preissii

## Centrolepidaceae

Aphelia cyperoides  
 Centrolepis aristata  
 Centrolepis mutica  
 Centrolepis polygyna

## Colchicaceae

Burchardia bairdiae  
 Burchardia umbellata

## Cyperaceae

Baumea articulata  
 Baumea juncea  
 Baumea vaginalis  
 Cyathochaeta avenacea  
 \* Cyperus tenellus  
 Lepidosperma angustatum  
 Lepidosperma longitudinale  
 Schoenus aff. brevisetis scps

CONTACT DR N. GIBSON CALM WOODVALE for further information.

Flora list for M8 (extracted from Swan Coastal Plain database, Pinj sites 1 - 15, 2/1995).

Schoenus curvifolius  
Schoenus discifer  
Schoenus odontocarpus  
Schoenus rodwayanus

## Dasypogonaceae

Dasypogon bromeliifolius  
Lomandra caespitosa  
Lomandra hermaphrodita

## Dilleniaceae

Hibbertia aurea  
Hibbertia racemosa  
Hibbertia stellaris  
Hibbertia subvaginata

## Droseraceae

Drosera erythrorhiza  
Drosera gigantea  
Drosera glanduligera  
Drosera nitidula  
Drosera paleacea  
Drosera pallida  
Drosera pulchella  
Drosera rosulata  
Drosera sp. scps

## Epacridaceae

Conostephium pendulum  
Conostephium preissii  
Leucopogon conostephioides  
Leucopogon polymorphus  
Leucopogon propinquus  
Leucopogon sp. scps  
Lysinema ciliatum

## Euphorbiaceae

Monotaxis grandiflora

## Gentianaceae

\* Centaurium erythraea

## Goodeniaceae

Anthotium junciforme  
Dampiera linearis  
Goodenia pulchella  
Lechenaultia floribunda

## Haemodoraceae

Anigozanthos humilis  
Conostylis aculeata  
Phlebocarya ciliata

## Haloragaceae

Gonocarpus pithyoides

CONTACT DR N. GIBSON CALM WOODVALE for further information.

Flora list for M8 (extracted from Swan Coastal Plain database, Pinj sites 1 - 15, 2/1995).

## Iridaceae

- \* *Gladiolus caryophyllaceus*
- Patersonia occidentalis*
- Patersonia occidentalis* (swamp form) sthest
- \* *Romulea rosea*

## Lamiaceae

- Hemiandra pungens*

## Lauraceae

- Cassytha flava*
- Cassytha racemosa*

## Lobeliaceae

- Lobelia alata*
- Lobelia tenuior*

## Loganiaceae

- Mitrasacme paradoxa*

## Menyanthaceae

- Villarsia albiflora*

## Mimosaceae

- Acacia huegelii*
- Acacia pulchella*
- Acacia saligna*

## Myrtaceae

- Agonis linearifolia*
- Astartea aff. fascicularis* sthest
- Beaufortia elegans*
- Calothamnus lateralis*
- Calytrix flavescens*
- Calytrix fraseri*
- Eremaea pauciflora*
- Eucalyptus marginata*
- Eucalyptus rudis*
- Eucalyptus todtiana*
- Hypocalymma angustifolium*
- Melaleuca lateritia*
- Melaleuca preissiana*
- Melaleuca raphiophylla*
- Melaleuca teretifolia*
- Melaleuca trichophylla*
- Pericalymma ellipticum*
- Regelia inops*
- Scholtzia involucrata*
- Verticordia densiflora*
- Verticordia nitens*

## Orchidaceae

- Caladenia flava*
- Epiblema grandiflorum*
- Microtis unifolia*
- Prasophyllum sp. scps*

CONTACT DR N. GIBSON CALM WOODVALE for further information.

Flora list for M8 (extracted from Swan Coastal Plain database, Pinj sites 1 - 15, 2/1995).

Pterostylis vittata  
Thelymitra crinita  
Thelymitra flexuosa

## Papilionaceae

Aotus gracillima  
Bossiaea eriocarpa  
Daviesia physodes  
Euchilopsis linearis  
Eutaxia virgata  
Gompholobium tomentosum  
Hovea pungens  
Hovea trisperma var. trisperma  
Jacksonia densiflora  
Jacksonia furcellata  
Jacksonia sternbergiana  
Oxylobium lineare  
Sphaerolobium vimineum  
\* Trifolium arvense  
\* Trifolium campestre  
Viminaria juncea

## Philydraceae

Philydrella pygmaea

## Phormiaceae

Dianella revoluta var. divaricata

## Poaceae

Agrostis avenacea  
Agrostis preissii  
\* Aira caryophyllea  
Amphipogon laguroides  
Amphipogon turbinatus  
\* Briza maxima  
\* Briza minor  
Danthonia occidentalis  
Deyeuxia quadriseta  
Hemarthria uncinata  
\* Lolium rigidum  
Stipa compressa  
\* Vulpia sp. scps

## Polygalaceae

Comesperma calymega  
Comesperma flavum

## Primulaceae

\* Anagallis arvensis var. arvensis FPR

## Proteaceae

Adenanthos cygnorum  
Banksia attenuata  
Banksia ilicifolia  
Banksia menziesii  
Conospermum incurvum

CONTACT DR N. GIBSON CALM WOODVALE for further information.

Flora list for M8 (extracted from Swan Coastal Plain database, Pinj sites 1 - 15, 2/1995).

Hakea varia  
Persoonia comata  
Petrophile linearis  
Stirlingia latifolia

Restionaceae

Alexgeorgea nitens  
Hypolaena exsulca  
Leptocarpus aristatus  
Leptocarpus scariosus  
Lepyrodia muiirii  
Loxocarya flexuosa  
Lyginia barbata  
Restio microcodon scps  
Restio stenostachyus

Rubiaceae

Opercularia vaginata

Rutaceae

Boronia purdieana  
Eriostemon spicatus

Stackhousiaceae

Stackhousia monogyna

Stylidiaceae

Stylidium brunonianum  
Stylidium calcaratum  
Stylidium crossocephalum  
Stylidium divaricatum  
Stylidium junceum  
Stylidium longitubum  
Stylidium macrocarpum  
Stylidium repens  
Stylidium utricularioides

Xanthorrhoeaceae

Xanthorrhoea preissii

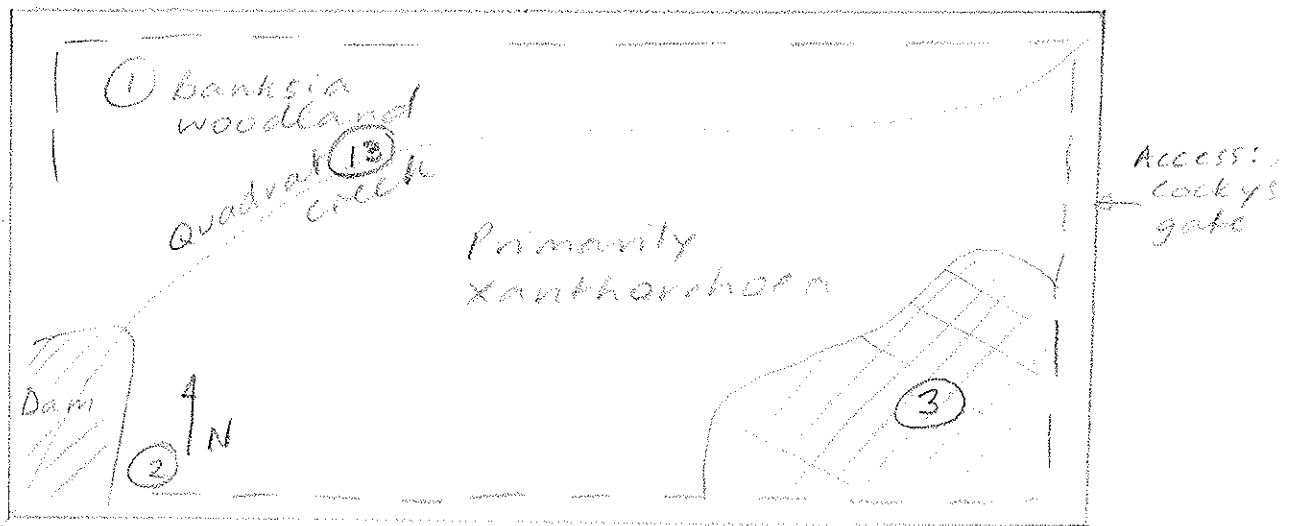
Zamiaceae

Macrozamia riedlei

## SYLVAN'S PROPERTY LAKE PINJAR SYSTEM 6 AREA

Traversed southern boundary- degraded area north of fence has been recently dammed.

- ① Has been burnt too frequently and may have been chained. Virtually no understory other than *Macrozamia* and *Xanthorrhoea*. Few live, adult *Banksia* remain ? dieback/drought. Damage has occurred during dam construction. Photos 14, 16 (no understory). Photo 15 of dam.
- ② *Banksia* woodland in much better condition than ① but still degraded. Many dead *Banksias* and lots of \**Briza* and bare ground.



dam

-- track

③ is mainly now cleared (since 1991 photography)

whole property quite degraded

## ROAD RESERVE- LAKE PINJAR SYSTEM 6 AREA

This road reserve (Spence Road) runs north-south, starting as a limestone private property access road from Pinjar Road and becoming sandy/clay surfaced.

Vegetation from Pinjar Road to 400m north, shrubland in excellent condition, *Kunzea ericifolia* with some *Eucalyptus rudis* (Quadrat PINJ 11 in this vegetation type).

400m to 800m north of Pinjar Road sandy area which is degraded, heavily disturbed but with lots of seedling *Eucalyptus ?rudis*. ?old dumping area

800m to 1200 m N of Pinjar Road: *Melaleuca teretifolia* shrubland and sedges as in northern part of road reserve- excellent vegetation.

1200 1250 m N of Pinjar Road- clump of *Eucalyptus rudis* on bend away from fence.

1250- 1450 m N of Pinjar Road- *Melaleuca- teretifolia* with dense sedgeland. Excellent condition *Baumea articulata* to 2-3 m tall.

At 1450 m N of Pinjar road a fenceline prevents access.

BJK 24/9 - 26/9

A • AS I understand Lake Pinjar is a PCA, does this mean that it is 'intended' (now) to make the entire area P&R eventually?

If it is to be P&R should it not have the PCA boundary and all mapped bushland then be included (this will need a note to comment on veg)

B • Ag Vegetation is not mapped correctly <sup>without ground work</sup> very difficult area to map as it contains extensive clay flats with patches of sand. I've used a combination of field knowledge and 1973 and 1977 aerial photography to update mapping

C • I have suggested an alternative to (A) if there is a problem. - see Map. Rough Veg map done for (B) can be viewed at DEP (copy attached but will be poor reproduction





# 330 MW GAS-FIRED POWER STATION NEERABUP

## PROJECT REFERRAL

August 2007

To file: BFS 380  
(PB179 Biol)

with note: also  
refers to BFS 382  
(PB 181 Biol)

**RYAN Rebecca**

---

**From:** PATON Andrew  
**Sent:** Tuesday, 22 May 2007 11:43 AM  
**To:** RYAN Rebecca  
**Cc:** HARDING Carolyn; McGUIRE Megan; ROWLING Renee  
**Subject:** RE: question  
**Attachments:** Pinjar Hakea.ppt; Lake Pinjar tree deaths.pdf

Thanks Bec,

Attached is a map and some photos. The first piccy is a healthy one, the rest are not. Note also the last photo of a fox hanging in a tree! ( Fox nearly made the journey back to Atrium to find a home in Mike's desk. I thought better of it in the end.)

Here's the actual MGAs:

Patch 1: 0386864, 6499166 extends to 3866772, 6499361 (roughly). Scattered unhealthy or dead *Hakea varia* either side of track running north (parallel to fenceline). Some healthy *E. rudis*.

Patch 2: 386720, 6499494 extends to 386569, 6499840 (roughly). As above.

Lindsay Jones (0427 994 150) , seed collector, also mentioned some unique occurrences of *Hakea undulata* in the area that were also suffering, near some *Melaleucas* - but we didn't find these.

Will forward to Kevin as well.

Thanks mate!

Andrew

---

**From:** RYAN Rebecca  
**Sent:** Tuesday, 22 May 2007 11:21 AM  
**To:** PATON Andrew  
**Subject:** RE: question

yikes. bummer, that place is already pretty devo'd from all the clearing.

yeah it would be good to pass info on, try Kevin Vear, hes the Dieback Coordinator for Nature Cons at Kensington.

[kevin.vear@dec.wa.gov.au](mailto:kevin.vear@dec.wa.gov.au) or phone 9334 0408

If you have any notes/photos etc that you could send on I'll put copies in the Bush Forever site file.

cheers

bec

---

**From:** PATON Andrew  
**Sent:** Tuesday, 22 May 2007 11:13 AM  
**To:** RYAN Rebecca; HARDING Carolyn  
**Subject:** question

Hey there,

22/05/2007

Need your guidance. Found a few patches of *Hakea varia* in the middle of Lake Pinjar that look pretty crook, or are completely dead. Was tipped by a seed collector. They're on the edge of a small track and groundwater levels have been going down for ages on that Lake. Reckon it's dieback, spread by track and groundwater decline/movement.

Do you guys know of any dieback type people who I should be telling? Kind of out of the scope of what we do.

Cheers  
Andrew

22/05/2007

























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## LAKE PINJAR

The wetlands of a transect across this region have been the subject of detailed assessment for their environmental quality (Western Australian Water Resources Council, 1987).

Evaporation from free water surfaces and transpiration from dense wetland vegetation result in high fluxes of groundwater to the atmosphere. All intensive farming activities in the area have high water requirements and availability of groundwater has a strong influence upon land values. Thus, the wetlands and agriculture are competitors for a finite groundwater resource. The Gngangara Mound is also an important resource for public water supply (Water Authority of Western Australia, 1986). The extensive pine plantations to the east of the main lake chain also contribute significantly to the complex of land use pressures on the wetlands.

### 6.1.1 REFERENCES

Environmental Protection Authority (1983), Conservation reserves for Western Australia: The Darling System. Part II. Report 13, Department of Conservation and Environment, Western Australia, pp 168-173.

Gozzard, J R (1982), Muchea Sheet 2034 I and Part of 2134 IV, Perth Metropolitan Region, Environmental Geology Series, Geological Survey of Western Australia.

Gozzard, J R (1982a), Yanchep Sheet 2034 IV, Perth Metropolitan Region, Environmental Geology Series. Geological Survey of Western Australia.

How, R A (editor) (1978), Faunal studies of the northern Swan Coastal Plain. Report prepared by the Western Australian Museum for the Department of Conservation and Environment, Western Australia.

Metropolitan  
Authority  
86. Ave  
Authority

Water Auth  
resource  
for the

Western Au  
resources Council (1987), Environmental  
significance of wetlands in the Perth to Bunbury Region. Water Authority  
of Western Australia, Leederville.

the Environmental Protection  
blic Water Supply Area 1977-  
he Environmental Protection

Gngangara Mound groundwater  
Programme. Dames and Moore

**Full document  
available  
on request**

### 6.2 LAKE PINJAR 35382

#### 6.2.1 GENERAL INFORMATION

LOCAL AUTHORITY: City of Wanneroo

MRS ZONE: Rural

RESERVE NUMBERS: 11598, C20432

MANAGEMENT: private; City of Wanneroo

SYSTEM 6 RECOMMENDATION: M8

WAC CLASSIFICATION: LE.f.l.se. modified

WATER RESERVE: Wanneroo Groundwater Areas

DRAINAGE: landowners have attempted to drain properties



**Proposed subdivision of Swan Location 2703 Nisa  
Road, Pinjar, City of Wanneroo**


---

**Mirreen Nominees**

**Position statement and report and recommendations  
of the Environmental Protection Authority**

**Full document  
available  
on request**

**Environmental Protection Authority  
Perth, Western Australia  
Bulletin 728  
December 1993**

A wide-angle photograph of a grassy field with a yellow sticky note in the foreground. The field is filled with tall grasses and small white flowers. In the background, there is a line of trees and a clear sky. The sticky note is bright yellow and has handwritten text on it.

AREA OF  
PINT  $\phi$  1









PINJ 01



PINJ 02



PINJ 03





PINS 04

No photo 05  
see photo 34

PINS 06



PINS 06





PINJ 07



PINJ 08

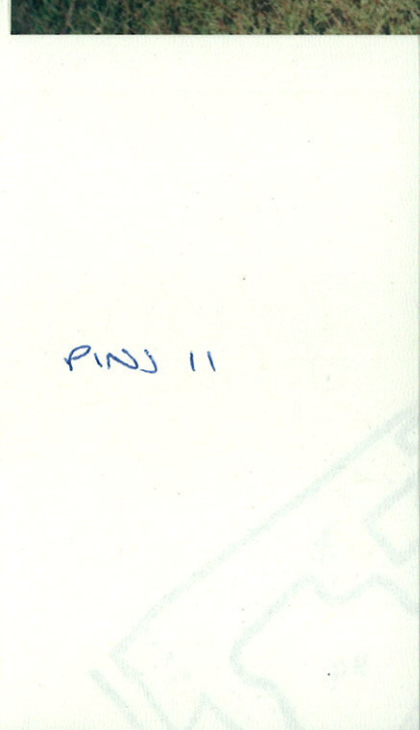


PINJ 09





PINJ 10



PINJ 11



PINJ 12





PINJ 13

PINJ 14







photo 20.



photo 27



photo 28.





photo 30.



photo 34



photo 1





photo 2



photo 3.



photo 6





photo 7



photo 11



photo 14  
Degraded  
vegetation (2)  
Sylvan's  
property





photo 15  
Sylvan's  
property  
dam



photo 16.

Banksia  
woodland ①  
Sylvan's  
property



Photo 36  
from 12.12.94  
Nth<sup>n</sup> boundary  
of Lake  
Pinjar





Photo 27  
PINT 1φ  
looking  
SW



Photo 28  
Astantca



Photo 29  
close up  
of Bron.  
(she kept)  
PINT  
φ9

Photo  
3φ





Photo 31

12.12.94

see note  
book



Photo 32  
discarded  
(blurred)

Photo 33  
Sedgeland  
on road  
reserve  
see Bron's  
note book



Photo  
36

Note  
Photo 35  
Jeni kept  
(close up)

Photo 34  
see  
next  
page



WILD 1574 UAGA  
Nr 13037 152.72

000076

- 5022 - 1 268 - 56 100 0200 0300 56 -

000000 003124 21 0125 60 1905





WILD 1574 UAGA  
Nº 13037 152.72

000023

- 5022 - 1 268 - 56 100 0200 0300 56 -

000000 003137 21012560 1903



WILD 1574 UAGA  
Nr 13037 152.72

000024

- 5022 - 1 268 - 56 100 0200 0280 56 -

000000 003137 20012560 1903



WILD 15740AGA  
Nr 13037 152.72

000026

-5022-1 268 -57 100 0200 0300 56-

000000 003137 21012560 1904



WILD 1574 UAGA  
Nº 13037 152,72

000027

- 5022 - 1 267 - 57 100 0200 0280 56 -

000000 003137 210125 60 1904



WILD 15740A6A  
Nr. 13037 15272

000029

- 5 0 2 2 - 1 2 6 7 - 5 6 1 0 0 0 2 0 0 0 2 8 0 5 6 -

0 0 0 0 0 0 0 3 1 3 3 2 0 0 1 2 5 6 0 1 9 3 2