

REID HIGHWAY BUSHLAND, MIRRABOOKA/MALAGA

Boundary Definition: protected area boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 385

Area (ha): bushland 96.1

Map no. 35, 41

Map sheet series ref. no. 2034-II NE, 2034-II NW

Other Names: not known

Local Authorities (Suburb): City of Stirling (Mirrabooka, Malaga), Shire of Swan (Malaga)

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 Dunes)

Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes

Bassendean Complex — Central and South

Spearwood Dunes

Karrakatta Complex — Central and South

Floristic Community Types: not sampled, types not inferred

Supergroup 2: Seasonal Wetlands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau AND/OR

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes

WETLANDS

Wetland Types: sumpland, dampland

Natural Wetland Groups

Bassendean Dunes

Jandakot (B.3)

Wetland Management Objectives: Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Connell 1995; part Site — DEP 1996)

Structural Units

Uplands: Low Woodland dominated by *Banksia attenuata* and *B. menziesii* with scattered *Eucalyptus todtiana*

Wetlands: not known

Scattered Native Plants: not assessed

Vegetation Condition: Very Good (Connell 1995)

Total Flora: not known

Significant Flora: *Gyrostemon ramulosus* (uncommon in the PMR)

Fauna: not known

Linkage: adjacent bushland to the north (Site 201, across road) and south (across road); part of Greenways 13, 38 (Tingay, Alan & Associates 1998a); part of fragmented and potential bushland/wetland linkages (Part A, Map 7)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

Recommendation: Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

REID HIGHWAY BUSHLAND, MIRRABOOKA/MALAGA

Boundary Definition: protected area boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 385 **Map no.** 45, 46 **Map sheet series ref. no.** 2034-II NE, 2034-II NW

Other Names: not known

Local Authorities (Suburb)

City of Stirling (Mirrabooka, Malaga), Shire of Swan (Malaga)

Ownership Categories

State Government, Local Government, Not identified

Area (ha): total 130.5; bushland 96.1

Zoning

MRS: Urban, Controlled Access Highways, Parks and Recreation, Important Regional Roads

TPS: Landscape, Private Institutions

Lot/Location/Reserve numbers (Purpose), Street name

0, 1, 41, 48, 90, 112, 302, 499, 4779, 9251, 11591
 Alexander Dr; 1, 13, 16, 17, 60, 303, 1000 Camboon Rd; 7553 Truganina Rd; 1, 4, 5, 12, 13, 91 Agett Rd; 3, 4, 5, 194, 195, 196, 197, 198, 199, 214, 239, 240, 245, 246, 247, 248, 249, 250, 251, 252, 4773 Victoria Rd; 0 Boyare Ave; 3, 200, 243, 244, 4775, 8904 Northwood Dr; 253, 8902 Mirrabooka Ave; 207, 208, 209, 210, 211, 212, 213, 241, 242, 985 Australis Ave; 197, 205, 206, Rheingold Pl; 0, 1, 34, 35 Reid Hwy; 498 Woodbine Tce; 0 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

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Bassendean Complex — Central and South

Spearwood Dunes

Karrakatta Complex — Central and South

Floristic Community Types: not sampled, types not inferred

Supergroup 2: Seasonal Wetlands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau AND/OR

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WETLANDS

Wetland Types: sumpland, dampland

Natural Wetland Groups

Bassendean Dunes

Jandakot (B.3)

Wetland Management Objectives: Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not determined

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Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (part Bushplan Site — DEP 1996)

Structural Units

Uplands: Low Woodland dominated by *Banksia attenuata* and *B. menziesii* with scattered *Eucalyptus totidiana*

Wetlands: not known

Scattered Native Plants: not assessed

Vegetation Condition: Very Good (Connell 1995)



Total Flora: not known

Significant Flora: *Gyrostemon ramulosus* (uncommon in the PMR)

Fauna: no known information

Linkage: adjacent bushland to the north (BS201, across road) and south (across road); part of proposed Greenways 14, 39 (Tingay, Alan & Associates 1997a); part of fragmented and potential bushland/wetland linkages (Volume 2A, Map 8)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Criteria not relevant to determination of conservation value, but which may be applied when evaluating areas having similar values

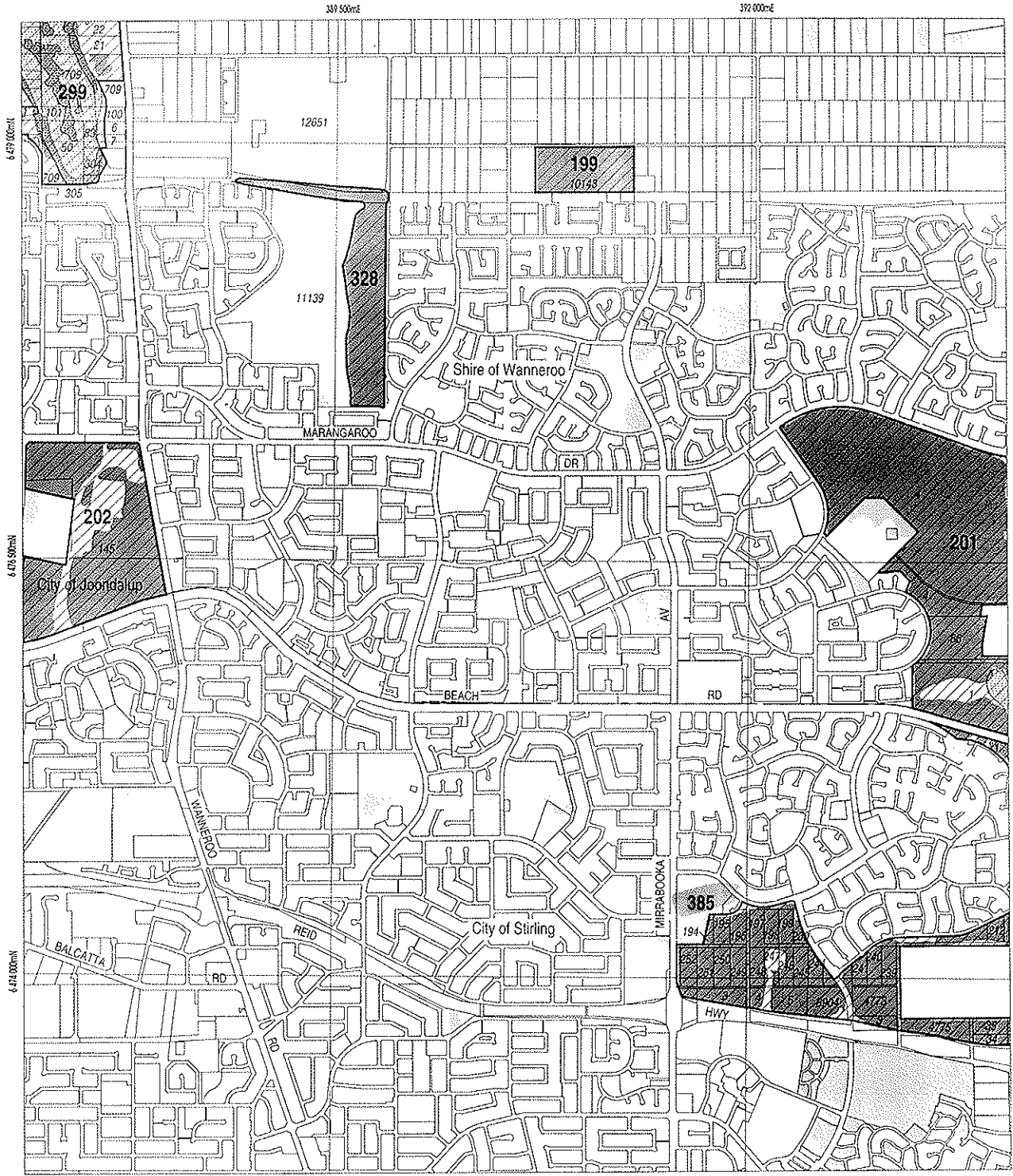
Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan and Canning Rivers EPP; under MRS Parks and Recreation Reservation and TPS Landscape Zoning, Crown Reserve








Constraints: under MRS Urban Zoning, MRD regional road requirements

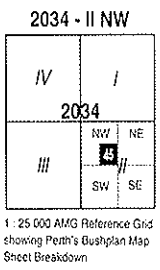
Recommendation: The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the land owner(s). This may include — The existing care, control and management intent of the reserve is endorsed. Long-term security and support for conservation management of the Bushplan Site to be enhanced by: amending the purpose of the reserve to include conservation; and applying appropriate mechanisms in consultation with the reserve management body.





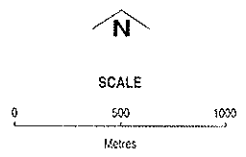
LEGEND

-  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



PERTH'S BUSHPLAN MAP INDEX

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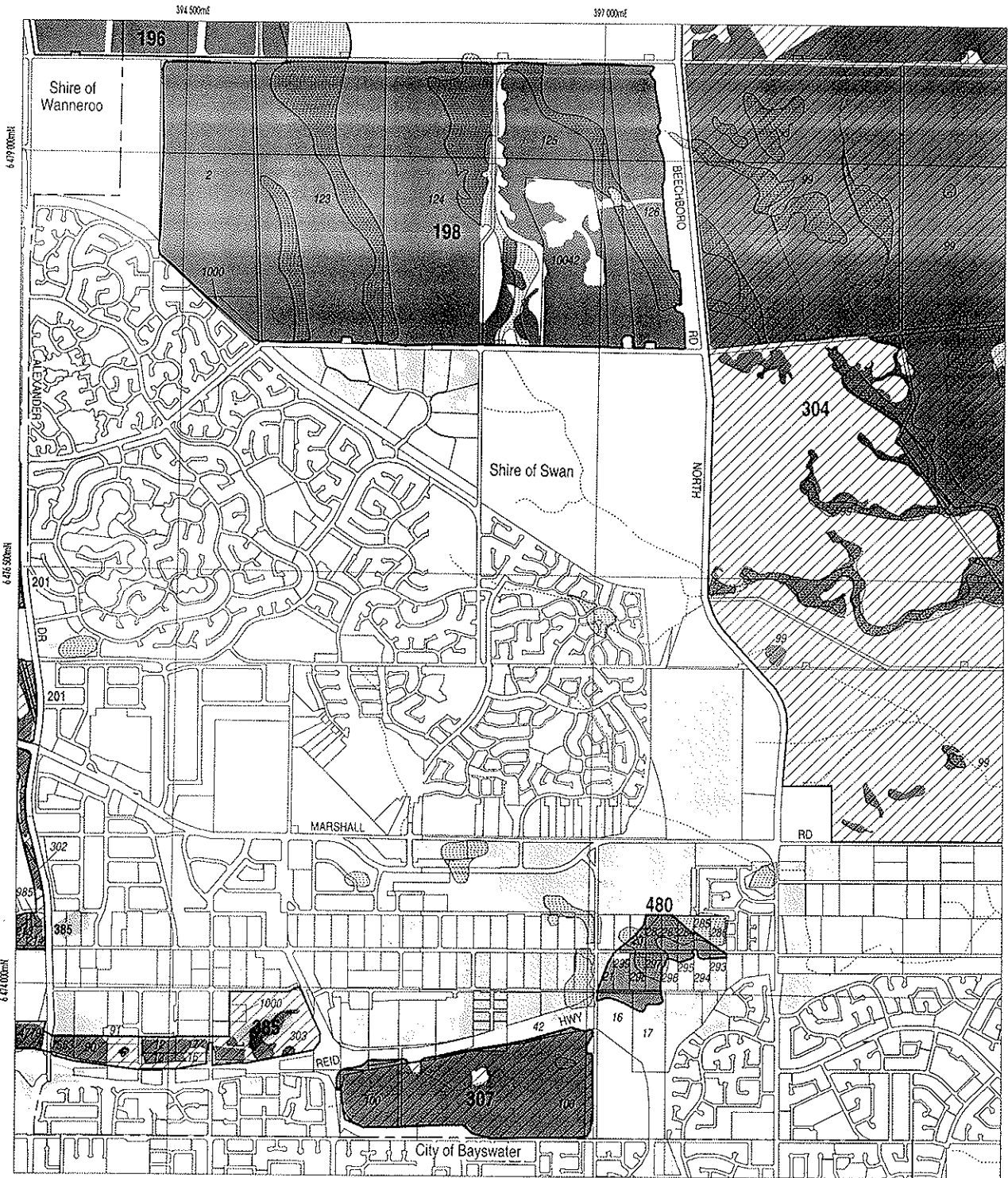


Produced by Project Mapping Section
 Land Information Branch, Ministry for
 Planning, Perth W.A. November 1998
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



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 of Land Administration, W.A.

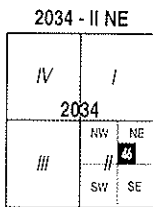
Wetlands Data supplied by
 Water and Rivers Commission

Native Vegetation Extent for Study Area
 supplied by Agriculture Western Australia



LEGEND

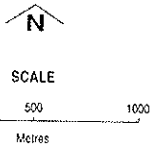
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-  Other Native Vegetation
-  Conservation Category Wetlands
-  Bushplan Sites With Some Existing Protection
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1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

PERTH'S BUSHPLAN MAP INDEX

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103	104	105	106													



Produced by Project Mapping Section
Land Information Branch, Ministry for
Planning, Perth W.A. November 1998
ntw-map11/environ/bushplan/bushv2_46.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 SITES CORRECTED






WESTERN
AUSTRALIAN
PLANNING
COMMISSION



CUSTOMER
FOCUS
WESTERN AUSTRALIA

B ec/r6 22/10/98



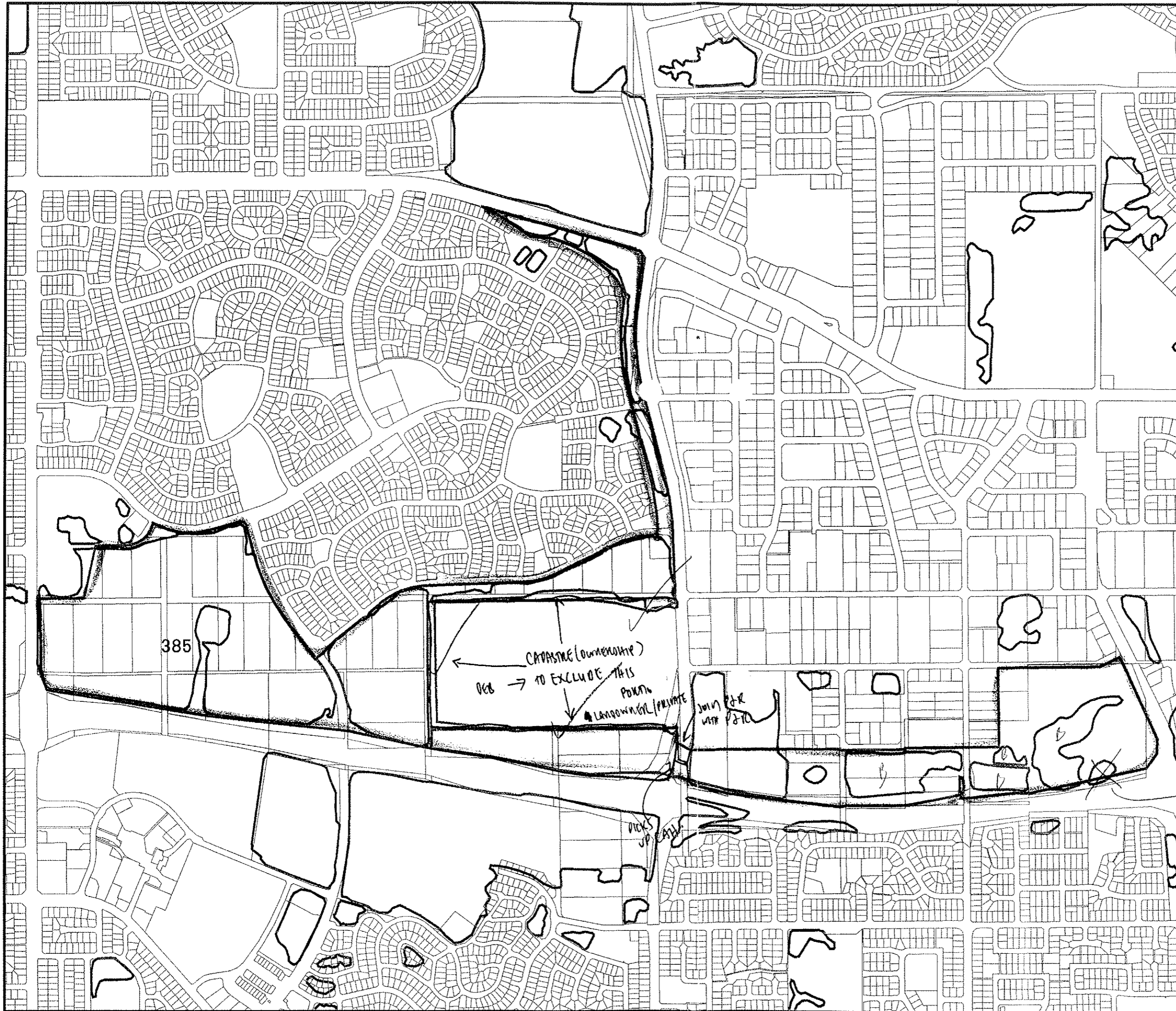
-  AG VEG 1998 BOUNDARY THEME
-  Cadastre
-  Bushplan sites refno 1-500 SCP BOUNDARY


*As is
Cadastre changes
to park line*

*This is a classic
case to illustrate that
there was no clearing
of 'bushland' that
was covered by
'some level of
protection'*

*No detailed field
check of veg; patches
inspected not to
be bushland.*

*Degraded
vegetation
in a wetland*



Map Ident: plot980604_1
 Prepared By: Andrea Zappacosta
 Prepared For:
 Date: 04 Jun 98
 Scale 1:12388

 MFP INTERNAL USE ONLY

5. *Bushplan and the City of Stirling*

5.1 *Bushplan sites identified in the City*

Listed Bushplan sites relevant to the City of Stirling are indicated on the attached maps and table.

5.2 *Implications of these sites*

With the exception of Site 322 (Tamala Park Bushland and Waste Disposal Site) and Site 385 (Reid Highway Bushland, Mirrabooka) all the other eight Bushplan sites are already reserved as Parks and Recreation under the Metropolitan Region Scheme (MRS).

The eight sites are also reserved under the local scheme either as (i) Conservation and Recreation or (ii) Recreation. As all eight sites are to be dedicated as conservation sites under Bushplan those that have been reserved only as "Recreation" under the local scheme will require amendment to their reservation status to include "Conservation".

Council may also wish to note that all eight sites were included as prime conservation sites under the City's Green Plan of 1992 and seven of the eight are already the subject of comprehensive conservation programs under site specific Environmental Management Plans.

In regard to all the above sites, Bushplan endorses the existing care, control and management intent of the City and other management bodies.

5.3 *Implications of Site [redacted] (Tamala Park Bushland and Waste Disposal Site)*

Bushplan recommends that the parts of Site 322 already reserved as Parks and Recreation under the MRS be made National Park, Conservation Park, Nature Reserve or Regional Park.

Bushplan recommends that protection of the remainder of Site 322 (ie. the Waste Disposal Site) be considered in consultation with the Cities of Joondalup, Stirling and Perth because there are areas of bushland with regional significant qualities. Bushplan also seeks amendment of the sites current MRS zoning from rural to some other that would be more appropriate to the current land use and future conservation intent of bushland elements.

The Waste Disposal Site is jointly owned by the above three local authorities. The City of Stirling's involvement in this matter is therefore a land owner and manager to negotiate its interest particularly if conflict is envisaged between waste disposal site operations and conservation demands. It is recommended that the City request further information and to be included in any pending discussions regarding Site 322. It is further recommended that a submission be made collectively by all three owner Councils opposing Bushplan proposals in respect of the Waste Disposal Site (Mindarie Holdings).

5.4 *Implications of Site [redacted] (Reid Highway Bushland, Mirrabooka)*

Bushplan recommends that the most appropriate mechanism for the protection of extensive bushland areas within this site is through consultation with the current land owners (ie. principally Homeswest and Ministry for Planning) during the public comments period.

Site 385 is currently reserved Park and Recreation under the MRS. Bushplan recommends that management of the site be enhanced by amending its purpose to include conservation and applying the appropriate regulatory mechanisms.

The City of Stirling's interest in this site is mainly in terms of recent expressions to develop a public golf course. It is recommended therefore that the City request further information on pending discussions relating to Site 385 and attempt to reach a negotiated agreement regarding use of this land.

4. Bushplan site 385: Reid Hwy Bushland

Recently *Eleocharis sphacelata* was discovered at this site, the most southerly distribution of this species known, with the next population at Gin Gin. Vesting for this area needs to be established so that appropriate management for conservation can occur. The Bennett Brook Catchment group will be active in the eastern end of the reserve in the near future, as the RSPCA are establishing a centre there, and have requested the assistance of the catchment group in implementing a rehabilitation plan.

5. Bushplan site 207: Koondoola Open Space

The area needs to be zoned for conservation, and the local councils need to take an active management role in the reserve

6. Bushplan site 107: Lightning Swamp

A Management Plan was prepared for this area by Murdoch University in 1996, however it is difficult for management to occur until a local council accepts vesting. At present the boundaries of Swan and Bayswater Councils may change, and neither council will accept vesting until this is determined. This needs to be resolved immediately, as the eastern section is not fenced, and four wheel drive vehicles are rapidly degrading the perched wetland.

7. Bushplan site 480: Victoria Rd Bushland

The zoning of this site needs to urgently be changed to conservation, and a management body appointed.

8. Bushplan site 200: Caversham Airbase

A report on vegetation and fauna was published in 1998 Final Report: Henley Brook and West Swan Landcare Project, Bevan Carter. This area is under threat from housing from Homeswest, and requires immediate protection. It contains the priority 3 species *Restio stenostachyus*.

9. Bushplan site 102: Swan River Bassendean to Upper Swan

The catchment group have recently enlarged their boundaries to include this area, and are keen to work with landholders to extend the riparian vegetation buffer

10. Bushplan site 205: Bennett Brook

The catchment group has 3 restoration areas along the brook, which is an extremely important wildlife corridor between Whiteman Park and the Swan River. It is under threat from new subdivisions which are too close to the brook, allowing only a 30m buffer. Often these are opposed by the Shire and won on appeal to the Minister. It is vital that buffers on all wetland systems are increased to 100m. Other pressures include proposed developments at Whiteman Park on the edge of the brook, pumping from the Gnangara mound leading to decreased flow in the headwaters and increased polluted stormwater flow carrying sediment from council and Water Corporation drains into the Brook. Apart from the Quenda, Bennett Brook supports freshwater mussels as well as many species of native fish (Report from Murdoch University 1998)



11/14
BS 385

FB184

Mr Gary Prattley
Chief Executive Officer
Ministry for Planning
409 Wellington Street
PERTH WA 6000

Dear Gary

PERTH'S BUSHPLAN – PARENT SUBMISSION

In the context of the ongoing discussions between our agencies on Bushplan and the formal release of the Bushplan documents, I write to confirm Homeswest's current position in this matter.

1. GENERAL IMPLEMENTATION ISSUES

Homeswest has previously expressed its support for the proposed implementation mechanisms on the basis of achieving a balance between protecting regionally significant bushland of the highest quality and providing certainty for the viable development of urban communities. It is recognised that a whole of government approach is necessary and as such Homeswest supports Recommendation 4 which proposes an inter-agency Memorandum of Understanding (MOU).

It is submitted that such an agreement should be contained to the nominated agencies and framed on the basis of the Ministry for Planning being the lead agency to implement Bushplan. Suggestions that the MOU should cover a broader range of government instrumentalities including Local Government would, in Homeswest's view unduly complicate the implementation process. The finalization of the MOU should be given a high priority.

Homeswest concurs with the Recommendation 5.3 which proposes that a Statement of Planning Policy be developed in consultation with local government to deal with local bushland. Areas of perceived local significance rightfully lie outside of the framework of Bushplan and should become the responsibility of local government in terms of both acquisition and management.

SUBMISSION NO. 99



Western Australian Government

STATE HOUSING COMMISSION

MINISTRY FOR
PLANNING

16 APR 1999

805-2-1-32 pt1a
FILE

3.3 Parmelia (Site 272)

Homeswest agrees with the designation of an area of approximately 30ha on Sicklemore Road as a regional reserve on the understanding that the matter of compensation will be the subject of further negotiation.

3.4 Southern River (Site 275)

Homeswest accepts the inclusion of Lot 1602 Balfour Street as part of a regional reserve on the basis of obtaining compensation. In the knowledge that the Bushplan recommendation for this site recognises that consultation with multiple landowners should occur during the public comment period, Homeswest would be prepared to enter into further discussions regarding the future of the land.

3.5 Mirrabooka (Site 276)

Homeswest is aware of the submission which has been lodged by the Minister for Housing in respect to this site and is in agreement with the proposed modification aimed at facilitating the development of a golf course.

4. THIRD PARTY SUBMISSIONS

Homeswest has recently become aware that Bushplan is likely to attract submissions from local groups and Councils seeking the inclusion of additional bushland over and above that identified in Bushplan. For example Homeswest has been advised by the City of Cockburn that it will seek the inclusion of various parcels of land owned by Homeswest at Banjup, Beeliar and Coolbellup.

Homeswest is clearly concerned about such third party submissions and requests that the Ministry establish a clear process for dealing with such which involves eliminating unsubstantiated claims and providing affected landowners with a reasonable time to respond.

I look forward to our agencies maintaining a continuing dialogue on Bushplan issues during the forthcoming submission assessment period. If you have any queries on the Homeswest positions presented above, please contact Mr Richard Elliot, Manager Strategic land Planning at Homeswest on 9222 4832.

Yours sincerely



GREG JOYCE
EXECUTIVE DIRECTOR

13 March 1999



MINISTER FOR HOUSING; ABORIGINAL AFFAIRS;
WATER RESOURCES

267
BS 385

PB184

Our Ref: 06358

Chief Executive
Ministry for Planning
469 Wellington Street
PERTH WA 6000

MINISTRY FOR
PLANNING
1 APR 1999
805-2-1-32 p. 1/2
FILE

Attention: Mr David Nunn

Dear Mr Nunn

PERTH'S BUSHPLAN – SUBMISSION ON SITE 385 MIRRABOOKA

I wish to support the views of the Stirling City Council and the Mirrabooka Action Group in seeking the modification of a portion of the above bushplan site to facilitate the development of a golf course.

SUBJECT LAND

This Bushplan site predominantly comprises land in the southern portion of the Mirrabooka locality which is classified as 'Parks and Recreation Reserve' under the Metropolitan Region Scheme. Homeswest owns approximately 80.0ha of the site. The particular portion of the site which provides opportunity for a golf course lies adjacent to Australis Drive and interfaces between the Mirrabooka residential area and the Atlas site (refer to Plan 1).

RATIONALE FOR GOLF COURSE

The provision of a 9-hole golf course is based upon the following considerations:

- It is a needed recreational facility in the locality and would meet a long held expectation by local residents that the land will be utilised for an active recreational use;
- It utilises land which is potentially available in the short term;
- It would be complementary to the longer-term redevelopment of the Atlas site for recreational use including an expanded golf course;
- It is a facility which the City of Stirling is prepared to develop;

SUBMISSION NO 420

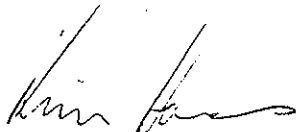
- It will provide a suitably managed interface with the residential area while retaining an element of the existing vegetation;
- It will assist in eliminating a haven for antisocial activities which are a source of nuisance to nearby residents;
- It is a use which is consistent with the current rezoning.

ENVIRONMENTAL CONSIDERATIONS

In the context of Site 385, which altogether contains around 96ha of the same vegetation type, it is likely that the golf course would occupy less than 20ha. A site inspection of the area adjacent to Australis Drive indicates that it is of variable bushland quality having been significantly degraded in parts. The golf course therefore presents as a use which is capable of being integrated with the protection of existing bushland. Degraded portions of the site and tracks could be incorporated into fairways with vegetation retained in between. I consider that the conservation objective of retaining an east-west vegetation corridor through the area can be maintained by not impinging upon the bushland of higher quality which abuts the Reid Highway reserve. This is reflected in Plan 1.

In summary, the golf course provides social and recreational benefits and is capable of co-existing with bushland protection objectives. I commend this proposal to the Reference Group as being worthy of consideration in terms of overall trade offs under Bushplan.

Yours sincerely



Dr Kim Hames MLA
MINISTER FOR HOUSING

31 MAR 1999

10/12/2002

**BUSH FOREVER VEGETATION & FLORA
ASSESSMENT**

PART BUSH FOREVER SITE 385

REID HWY BUSHLAND, MIRRABOOKA/MALAGA



Sally Madden, Department for Planning and Infrastructure
November 2002

SUMMARY

The bushland within part Bush Forever Site 385 (Reid Highway Bushland, Mirrabooka/Malaga) is regionally significant and has high conservation value as it:

- is representative of the Karrakatta Complex – Central and South which is poorly conserved in Bush Forever
- is largely in Excellent to Very Good condition
- is floristically diverse
- is most likely representative of floristic community types poorly represented on the Swan Coastal Plain (FCT 23a only occurs in the Perth Metropolitan Region and FCT 20a is a Threatened Ecological Community)
- forms part of a significant bushland linkage
- reserved as Parks and Recreation and is recognised as having “some existing protection”, with a presumption against the clearing of Regionally Significant Vegetation

BACKGROUND

Only the southern portion of the Bush Forever Site was surveyed in this study, from Mirrabooka Avenue in the west to Alexander Drive in the east, bounded by Reid Highway to the south and Australis Avenue, Northwood Drive and Boyare Avenue to the north (approximately 80 hectares). The Site Description (Appendix 1) summarises the conservation values of this Bush Forever Site. This portion of the Bush Forever site is all upland.

Bush Forever Site 385 forms part of a regionally significant fragmented bushland/wetland linkage (see Map 7, Government of Western Australia 2000b). The bushland surveyed in this study is an integral part of this linkage as it connects the bushland within Site 385 to the adjacent bushland to the north in Bush Forever Site 201 – Koondoola Regional Bushland and to the east in Bush Forever Site 307 – Lightning Swamp and Adjacent Bushland. Part Bush Forever Site 385 encompasses regionally significant vegetation of only one vegetation complex, the Karrakatta Complex – Central and South.

This bushland has previously been identified as containing regionally significant remnant bushland (Government of Western Australia 2000a&b). The area of the Karrakatta Complex - Central and South proposed for protection under Bush Forever is 8% (Government of Western Australia 2000a). Based on international criteria for conservation, Bush Forever aims to protect ‘at least 10% of the original extent’ of each of the Heddle *et al.* (1980) vegetation complexes (Government of Western Australia 2000a).

METHODOLOGY

Field Inspections of Bush Forever Site 385 were made on 27/9/2002, and the 2, 4 and 15/10/2002 by Sally Madden (DPI). Approximately 12 hours was spent traversing the bushland on foot and by vehicle. Each unit of vegetation was described using the standard procedures documented in Bush Forever (Government of Western Australia 2002b), two 10x10m vegetation plots were established and

surveyed once (not permanently marked). Condition ratings were based on Keighery (1994).

RESULTS

Structural Units

Four upland vegetation units were recorded within Bush Forever Site 385 and are as follows:

Eucalyptus marginata, *Banksia attenuata*, *B.menziesii* Low Open Woodland over *Xanthorrhoea preissii*, *Stirlingia latifolia* Open Shrubland over *Dasypogon bromeliifolius*, *Leucopogon conostephioides* Low Open Shrubland over *Mesomelaena pseudostygia*, *Hypolaena exsulca* Very Open Sedgeland in Excellent to Very Good condition (Fig 1).

Eucalyptus marginata, *Banksia attenuata*, *B.menziesii* Low Open Woodland over *Eremaea pauciflora*, *Xanthorrhoea preissii* Shrubland over *Calytrix fraseri*, *Astroloma macrocalyx* Low Open Shrubland over *Briza maxima* Very Open Grassland over *Ursinia anthemoides* Very Open Herbland in Excellent condition (Fig 2).

Banksia attenuata, *B.menziesii*, Low Woodland with occasional *Eucalyptus marginata* and *Allocasuarina fraseriana* over *Allocasuarina humilis*, *Jacksonia floribunda* Open Shrubland over *Hibbertia hypericoides*, *Leucopogon conostephioides*, *Calothamnus sanguineus* Low Shrubland over *Hybanthus calycinus* Very Open Herbland over *Desmocladius flexuosus* Very Open Sedgeland in Excellent condition (Fig 3).

Banksia attenuata, *B.menziesii* Low Open Woodland over *Stirlingia latifolia* Shrubland over *Daviesia nudiflora*, *Hibbertia hypericoides* Low Shrubland over *Gladiolus caryophyllaceous*, *Ursinia anthemoides* Open Herbland in Very Good Condition.

These vegetation units are shown in Map 1. The boundaries are indicative only as the units intergrade. Variations in the units mapped can be mostly attributed to differing fire histories influencing the understorey species composition.



Fig 1 *Eucalyptus marginata*, *Banksia attenuata*, *B.menziesii* Low Open Woodland over *Xanthorrhoea preissii*, *Stirlingia latifolia* Open Shrubland over *Dasypogon bromeliifolius*, *Leucopogon conostephioides* Low Open Shrubland over *Mesomelaena pseudostygia*, *Hypolaena exsulca* Very Open Sedgeland (Plot 1)



Fig 2 *Eucalyptus marginata*, *Banksia attenuata*, *B.menziesii* Low Open Woodland over *Eremaea pauciflora*, *Xanthorrhoea preissii* Shrubland over *Calytrix fraseri*, *Astroloma macrocalyx* Low Open Shrubland over *Briza maxima* Very Open Grassland over *Ursinia anthemoides* Very Open Herbland (Plot 2)



Fig 3 *Banksia attenuata*, *B.menziesii*, *Allocasuarina fraseriana* Low Woodland with occasional *Eucalyptus marginata* over *Allocasuarina humilis*, *Jacksonia floribunda* Open Shrubland over *Hibbertia hypericoides*, *Leucopogon conostephioides*, *Calothamnus sanguineus* Low Shrubland over *Hybanthus calycinus* Very Open Herbland over *Desmocladius flexuosus* Very Open Sedgeland.

Total Flora

A total of 131 plant taxa, representing 41 families were recorded in part Bush Forever Site 385. Of these species, only 22 were weeds and the remaining 109 were native species.

Significant Flora.

One Significant species, *Astroloma macrocalyx* was recorded in the bushland.

Floristic Community Types

Supergroups 3 or 4 (not determined). Plot based species lists show affinities with three floristic community types, 20a, 23a and 28. 20a is a threatened ecological community and 23a is confined to the Perth Metropolitan Region. Further fieldwork in spring would be required to accurately determine floristic community types present in the bushland, should this be considered necessary.

Threatened Ecological Communities

The vegetation within part Bush Forever Site 385 shows some affinity to floristic community type 20a, which is a threatened ecological community, listed in Western Australia as Endangered.

Vegetation Condition

Almost half of the bushland to the west of Northwood Drive has been burnt, possibly in a late summer 2002 fire (See Map 2). It is regenerating well, although the abundance of *Gladiolus caryophyllaceous* (a bulbous weed) is of concern (Fig 4). Other forms of degradation include dumping of car bodies and other rubbish, and excessive tracks/firebreaks. There is also a compensating basin located within the bushland, and even though this area is fenced off it contains a large number of

weeds. The area cleared for the pipeline, which drains into the basin is extremely wide and completely degraded (it appears that no attempt to rehabilitate this area has been made) (Fig 5). Overall, this portion of bushland is in Excellent-Very Good condition. East of Northwood Drive there appears to be more dumping of garden and other waste and more weeds (especially Veldt grass on the edges of the bushland). The bushland in this section is in Very Good Condition. The two strips of vegetation to the north and south of the Atlas site are very narrow and subject to pressures from edge effects. While the southern 'arm' is in Excellent condition, the northern arm has suffered disturbance from weeds, fire, very recent clearing for a transmission line (Fig 6) and planting of non-local native species.



Fig 4 Gladiolus resprouting after fire



Fig 5 Disturbance along pipeline, where no attempt at rehabilitation has been made.



Fig 6 Recently constructed transmission line.

DISCUSSION AND MANAGEMENT RECOMMENDATIONS

Part Bush Forever Site 385 (Reid Highway Bushland) is a large, consolidated block of bushland representative of the Karrakatta – Central and South vegetation complex that is largely in Excellent to Very Good condition. It has a high species diversity of plant species, few weeds and several structural units represented.

Degradation within the bushland has occurred through the introduction of weeds (principally Gladioli and Veldt grass), frequent fires and the dumping of rubbish (building rubble, garden waste, cars, household refuse). Numerous tracks and firebreaks also dissect the bushland.

Fire Response Plan

It is recommended that a fire response plan be developed for the Reid Highway bushland where firebreaks/access tracks are clearly defined, fire mitigation activities are outlined (especially weed control) and existing tracks are consolidated and revegetated where necessary.

Weed Control

The Reid Highway bushland has relatively few serious weed issues. At present, Veldt Grass is restricted to the edges of the bushland and some of the tracks. With minimal effort, controlling this weed in the short-term could save resources (time and money) in the future and may even prevent the weed from moving throughout the bushland. Veldt grass and other weeds are particularly at risk of invading bushland after a fire. The completely degraded area south of the compensating basin is a large source of veldt grass (and other weed) seed, which could rapidly invade bushland following fire or other disturbance, and is itself a fire hazard. Weed control in this area should be a high priority. Gladiolus (a bulbous weed) is prolific in areas burnt in last summers fire and can probably only be controlled by hand removal/spraying. Weeds need to be controlled, including Australian natives not endemic to Karrakatta dunes, and endemic species planted.

*W co section over AT105 - Retain
for connection*

Revegetation

Restoration of the pipeline area and compensating basin, and the narrow strip of vegetation north of the Atlas site (using endemic species) would enhance the existing values of the bushland, improve the bushland linkage value and reduce the risk of weed invasion.

Fencing

Fencing of the entire bushland would assist in preventing the dumping of rubbish, vehicle access, and potentially reduce the risk of fires due to arson.

ACKNOWLEDGEMENTS

Bronwen Keighery (Department of Environmental Protection) assisted with identifications and the determination of an inferred Floristic Community Type.

REFERENCES

- Government of Western Australia 2000a, *Bush Forever, Volume 1 – Policies, Principles and Processes*, Department of Environmental Protection, Perth, Western Australia
- Government of Western Australia 2000b, *Bush Forever, Volume 2 – Directory of Bush Forever Sites*, Department of Environmental Protection, Perth, Western Australia
- Department of Conservation and Land Management, 2002, Western Australian Herbarium, Max Version 2.

KEY TO MAPS

MAP 1

Vegetation Units

BaBmLOW – *Banksia attenuata*, *Banksia menziesii* Low Open Woodland

EmBaBm – *Eucalyptus marginata*, *Banksia attenuata*, *Banksia menziesii* Low Open Woodland

BaBmLW - *Banksia attenuata*, *Banksia menziesii* Low Woodland

X – burnt areas

- Vegetation Plot

CD – Completely Degraded

X – burnt summer 2001/2002 (not mapped)

MAP 2

Bushland Condition

EX – Excellent




EX-VG- Excellent to Very good

VG – Very Good


G – Good

CD – Completely Degraded

Vegetation Units Bush Forever 385

-  Bush Forever 2000 - Site Boundaries
-  Cadastre with Lot Numbers
-  Vegetation Units - BFS 385




Map Ident: plot021202_2
 Prepared By: Andrea Zappacosta
 Prepared For: SALLY MADDEN - DPI
 Date: 03 Dec 2002
 Scale 1:7500

DPI INTERNAL USE ONLY

Bushland Condition Bush Forever 385

-  Bush Forever 2000 - Site Boundaries
-  Cadastre with Lot Numbers
-  Bushland Condition - BFS 385
-  Fire 2-3 years ago
-  Summer 2001/2002 Fire



Map Ident: plot021202_3
 Prepared By: Andrea Zappacosta
 Prepared For: SALLY MADDEN - DPI
 Date: 04 Dec 2002
 Scale 1:7500

DPI INTERNAL USE ONLY

Appendix 1
Bush Forever Site Description

REID HIGHWAY BUSHLAND, MIRRABOOKA/MALAGA

Boundary Definition: protected area boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 385

Area (ha): bushland 96.1

Map no. 35, 41
2034-II NW

Map sheet series ref. no. 2034-II NE,

Other Names: not known

Local Authorities (Suburb): City of Stirling (Mirrabooka, Malaga), Shire of Swan (Malaga)

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 Dunes)

Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes

Bassendean Complex — Central and South

Spearwood Dunes

Karrakatta Complex — Central and South

Floristic Community Types: not sampled, types not inferred

Supergroup 2: Seasonal Wetlands

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

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes

WETLANDS

Wetland Types: sumpland, dampland

Natural Wetland Groups

Bassendean Dunes

Jandakot (B.3)

Wetland Management Objectives: Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Connell 1995; part Site — DEP 1996)

Structural Units

Uplands: Low Woodland dominated by *Banksia attenuata* and *B. menziesii* with scattered *Eucalyptus todtiana*

Wetlands: not known

Scattered Native Plants: not assessed

Vegetation Condition: Very Good (Connell 1995)

Total Flora: not known

Significant Flora: *Gyrostemon ramulosus* (uncommon in the PMR)

Fauna: not known

Linkage: adjacent bushland to the north (Site 201, across road) and south (across road); part of Greenways 13, 38 (Tingay, Alan & Associates 1998a); part of fragmented and potential bushland/wetland linkages (Part A, Map 7)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

Recommendation: Site with Some Existing Protection; the existing care, control and management intent of the reserve is endorsed. The purpose of the reserve should be amended to include conservation and appropriate mechanisms applied in consultation with the management body (see Table 3, Volume 1).

Appendix 2
Species List for Bush Forever Site 385, Reid Highway Bushland

* Indicates non-native species

Family: Aizoaceae

* *Carpobrotus edulis*

Family: Amaranthaceae

Ptilotus drummondii

Family: Anthericaceae

Johnsonia acaulis

Sowerbaea laxiflora

Thysanotus manglesianus

Tricoryne elatior

Family: Apiaceae

Trachymene pilosa

Family: Asteraceae

* *Arctotheca calendula*

* *Hypochaeris glabra*

Podotheca angustifolia

Podotheca chrysantha

* *Ursinia anthemoides*

Waitzia suaveolens

Family: Brassicaceae

* *Brassica barrelieri* subsp. *oxyrrhina*

* *Heliophila pusilla*

Family: Campanulaceae

Wahlenbergia preissii

Family: Casuarinaceae

Allocasuarina fraseriana

Allocasuarina humilis

Family: Colchicaceae

Burchardia umbellata

Family: Cyperaceae

* *Isolepis marginata*

Lepidosperma scabrum

Mesomelaena pseudostygia

Schoenus curvifolius

Tetraria octandra

Family: Dasypogonaceae

Calectasia narragara

Dasypogon bromeliifolius

Lomandra caespitosa

Lomandra hermaphrodita

Lomandra sericea

Lomandra suaveolens

Family: Dilleniaceae

Hibbertia huegelii
Hibbertia hypericoides
Hibbertia racemosa

Family: Droseraceae

Drosera erythrorhiza
Drosera menziesii

Family: Epacridaceae

Astroloma macrocalyx
Conostephium pendulum
Leucopogon conostephioides
Lysinema ciliatum

Family: Euphorbiaceae

Monotaxis grandiflora

Family: Geraniaceae

* *Erodium botrys*
* *Pelargonium capitatum*
* *Pelargonium capitatum*

Family: Goodeniaceae

Dampiera linearis
Lechenaultia floribunda
Scaevola paludosa
Scaevola repens

Family: Haemodoraceae

Anigozanthos humilis
Anigozanthos manglesii
Conostylis aculeata
Conostylis setigera
Haemodorum laxum
Haemodorum spicatum
Phlebocarya ciliata

Family: Iridaceae

* *Gladiolus caryophyllaceus*
Patersonia occidentalis
* *Romulea rosea*

Family: Loganiaceae

Phyllangium paradoxum

Family: Loranthaceae

Nuytsia floribunda

Family: Mimosaceae

Acacia huegelii
Acacia pulchella
Acacia stenoptera
Acacia willdenowiana

Family: Molluginaceae

Macarthuria apetala

Family: Myrtaceae

Calothamnus sanguineus
Calytrix fraseri
Eremaea pauciflora
Eucalyptus marginata
Eucalyptus todtiana
Hypocalymma robustum
Scholtzia involucrata

Family: Orchidaceae

Caladenia georgei
Diuris longifolia
Elythranthera brunonis
Prasophyllum brownii
Pterostylis sp.
Thelymitra crinita

Family: Oxalidaceae

* *Oxalis pes-caprae*

Family: Papilionaceae

Bossiaea eriocarpa
Daviesia divaricata
Daviesia nudiflora
Gompholobium tomentosum
Jacksonia floribunda
Jacksonia furcellata
Jacksonia sternbergiana
Kennedia prostrata
Nemcia capitata
* *Trifolium dubium*

Family: Poaceae

* *Aira cupaniana*
Amphipogon turbinatus
Austrodanthonia occidentalis
Austrostipa compressa
* *Avena barbata*
* *Briza maxima*
* *Briza minor*
* *Ehrharta calycina*
* *Ehrharta longiflora*
* *Eragrostis curvula*
Neurachne alopecuroidea
* *Vulpia myuros*

Family: Portulacaceae

Calandrinia corrigioloides

Family: Proteaceae

Adenanthos cygnorum
Banksia attenuata
Banksia grandis
Banksia ilicifolia
Banksia menziesii
Conospermum stoechadis

Dryandra lindleyana
Hakea prostrata
Hakea ruscifolia
Petrophile linearis
Petrophile macrostachya
Stirlingia latifolia
Synaphea spinulosa

Family: Restionaceae

Desmocladius fasciculatus
Desmocladius flexuosus
Hypolaena exsulca
Lyginia barbata

Family: Rhamnaceae

Stenanthemum tridentatum

Family: Rubiaceae

Opercularia vaginata

Family: Rutaceae

Philotheca spicata

Family: Solanaceae

* *Solanum americanum*

Family: Stylidiaceae

Stylidium brunonianum
Stylidium calcaratum
Stylidium carnosum
Stylidium piliferum
Stylidium repens
Stylidium schoenoides

Family: Thymelaeaceae

Pimelea sulphurea

Family: Tremandraceae

Tetrateca hirsuta

Family: Violaceae

Hybanthus calycinus

Family: Xanthorrhoeaceae

Xanthorrhoea preissii

Family: Zamiaceae

Macrozamia riedlei

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