BROWNMAN SWAMP, MT BROWN LAKE AND ADJACENT BUSHLAND, HENDERSON/NAVAL BASE

Boundary Definition: protected area/bushland (part taken to cadastre)/conservation wetland 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. 346 **Area (ha):** bushland 558.3 (Site also includes open water.)
Map no. 57, 58, 63, 64 **Map sheet series ref. no.** 2033–I SW
Other Names: Henderson Regional Open Space, Lake Mt Brown and Brownman Swamp part of Beeliar Regional Park
Local Authorities (Suburb): City of Cockburn (Henderson), Town of Kwinana (Naval Base)
System 6 (1983): M91 and part M92 Part System area bushland and part scattered native plants (canopy), all vegetation described

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
Quindalup Dunes (Holocene dunes)
Safety Bay Sands (Qhs: S13)
Wetlands (within the Spearwood Dunes)
Holocene Swamp Deposits (Qhw: M6)

VEGETATION AND FLORA
Vegetation Complexes
Spearwood Dunes
Cottesloe Complex — Central and South
Quindalup Dunes
Becher (Qu.2)
Floristic Community Types
Supergroup 2: Seasonal Wetlands
16 Highly saline seasonal wetlands (Open Low Heath dominated by *Grevillea vestita*, *Frankenia pauciflora* or *Acanthocarpus preissii* on Coastal Limestone Cliff)
17 *Melaleuca rhaphiophylla — Gahnia trifida* seasonal wetlands (in area of most northerly occurrence)
Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
29a Coastal shrublands on shallow sands

WETLANDS
Wetland Types: sumpland
Natural Wetland Groups
Spearwood Dunes
Coogee (S.3)
Stakehill (S.4)
Wetland Management Objectives: Conservation (95ha)
Swan Coastal Plain Lakes EPP: 26.6ha + 17.5ha + 17.4ha = 61.5 (total)

THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: limestone ridge, tall dune, open water, vegetated wetland, vegetated uplands, ocean — limestone cliff
Vegetation and Flora: limited survey (part Site — Cockburn Wetlands Committee 1976, EPA and WAWA 1990, Gibson *et al*. 1994 (MTB 01–05) (Navb 01–04), Semeniuk, V&C Research Group 1997b); detailed survey (part Site — Keighery, GJ, and Keighery 1993c (M91))
Structural Units: mapping (part Site — EPA and WAWA 1990, Semeniuk, V&C Research Group 1997b)

Uplands — Sands derived from Tamala Limestone: Mixed Open Woodland of *Eucalyptus gomphocephala, E. marginata* and *E. calophylla*; *E. marginata* Low Woodland over *Banksia attenuata* Low Open Woodland; *Banksia attenuata, B. menziesii* and *B. grandis* Low Woodland to Low Open Forest; *Acacia pulchella* and *Jacksonia furcellata* Open Shrubland to Tall Open Scrub
Uplands — Tamala Limestone: Tree Mallee dominated by *Eucalyptus foecunda* or *E. decipiens*; Shrublands dominated by *Acacia rostellifera* or *A. cyclops*; Tall Open Scrub to Closed Tall Scrub dominated by *Melaleuca*
huegelii and/or *Dryandra sessilis* var. *cygnorum; Melaleuca systena, Hibbertia hypericoides* and *Acacia cochlearis* Open Heath; Mixed Closed Low Heath; Open Low Heath dominated by *Grevillea vestita, Frankenia pauciflora* or *Acanthocarpus preissii*; *Lepidosperma gladiatum* Sedgeland
Wetlands: *Melaleuca rhaphiophylla* Low Woodland to Low Closed Forest; *Melaleuca teretifolia* Low Open Forest; *Frankenia pauciflora* and *Sarcocornia quinqueflora* Closed Low Heath; Sedgelands dominated by *Gahnia trifida* or *Baumea juncea*
Scattered Native Plants: *Eucalyptus gomphocephala* Open Woodland
Vegetation Condition: >80% Very Good, <20% Good to Degraded, with areas of severe localised disturbance (Weston 1993)
Total Flora: 145 native taxa, 74 weed taxa (compiled Keighery, GJ, and Keighery 1993c, Semeniuk, V&C Research Group 1997b) (estimated >75% of expected flora)
Significant Flora: Keighery, GJ and Keighery 1993c— *Wilsonia backhousei* and *Lawrencia spicata* (normally associated with saline wetlands), *Lavatera plebeia* var. *tomentosa* and *Wilsonia humilis* (normally confined to offshore islands; *Lavatera plebeia* var. *tomentosa* is the only mainland record), *Kennedia coccinea* (becoming increasingly uncommon on the western margins of the Plain), *Hemigenia barbata* (uncommon on the Plain, associated with Tamala Limestones, most southern population known); typical Tamala Limestone taxa — *Melaleuca huegelii, Grevillea preissii, Eucalyptus foecunda, Pimelea calcicola, Trymalium ledifolium* subsp. *ledifolium, Hibbertia spicata* subsp. *leptotheca*

Fauna: limited survey for birds (AHC 2000 D) including species of trans-equatorial wading birds protected under JAMBA/ CAMBA treaties. Significant mammal species: Quenda (Friend 1996 D)
Linkage: adjacent bushland to the south, east (across road) and west; part of Greenways 74, 87 (Tingay Alan & Associates, 1998a); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)
Other Special Attributes: majority included in Beeliar Regional Park Proposal (DPUD 1992a); BJ Keighery (1996) in an assessment of the Beeliar Wetlands recognised the importance of the Site in containing landscape, vegetation, flora and wetlands typical of the Spearwood Dunes in a contiguous sequence from the coast inland to the wetlands, the presence of vegetated limestone cliffs in this sequence being unique in the PMR; V&C Semeniuk Research Group (1997b) in a study of 22 bushland reserves in the City of Cockburn found in relation to this Site that the value of the four reserves (Coastal Reserve M91, Henderson Regional Open Space, Brownman Swamps, Lake Mt Brown) outweighed the value of the other separate reserves. Together the four reserves stand as an uncommon example of diversity of landforms and vegetation in the Spearwood Dunes — they illustrate the graduation of habitats in the Spearwood System from swale to ridge crest and from hinterland to coast, they provide a viable fauna refuge, the upland areas provide a buffer to the wetlands, and the two wetlands remain hydrologically linked; Brownman Swamp and Mt Brown Lake contain significant invertebrate fauna, Mt Brown Lake being the best example of its type (J. Davis pers. comm.)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Entered in the Interim List of the Register of the National Estate; location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing 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; the care, control and management of this portion of this Site for conservation purposes within Beeliar Regional Park is endorsed. Part B: Proposed Parks and Recreation Reservation (see Table 3, Volume 1).