Department of
Sustainability and
Environment

Sites of Zoological Significance of South East Melbourne and the Mornington Peninsula

- a compendium of information collected between 1987 and 1991

R. Brereton, M. Schulz, I. Mansergh,
K. Sandiford and S. Bennett

Edited by P.V. Macak and R.H. Loyn

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Front cover photo of Banyule Flats Reserve, Heidelberg by P.V. Macak

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SITES OF ZOOLOGICAL SIGNIFICANCE OF SOUTH EAST MELBOURNE AND THE MORNINGTON PENINSULA – A COMPENDIUM OF INFORMATION COLLECTED BETWEEN 1987 AND 1991.

Brereton, R., Schulz, M., Mansergh, I., Sandiford, K. and Bennett, S.

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PREFACE

In the late 1980's and early 1990's a series of studies were carried out by the then named Department of Conservation Forests and Lands, to identify areas of zoological significance in the Greater Melbourne area. The region was divided into four areas: Western Region, North East Region, Upper Yarra Region (includes the Dandenong Ranges) and South East Melbourne and Mornington Peninsula Region. Fauna data were collected by field survey, literature search and consultation with relevant personnel (including staff and local naturalists). Published reports were produced covering two of the four areas (Upper Yarra Region and North East Region) (Mansergh *et al.* 1989, Beardsell 1997). The South East Melbourne and Mornington Peninsula Region was surveyed between 1987 and 1989 and all fauna records collected were entered into the Atlas of Victorian Wildlife database (Department of Sustainability and Environment; DSE). Thirty-three sites of zoological significance were identified. No official report was published at the time; however, a draft report including descriptions of 26 of the 33 significant sites was produced in 1991.

In 2000 the Department of Natural Resources and Environment (NRE, now DSE) initiated a project to upgrade its BioSites database. The database contains information on sites of biological or conservation significance within Victoria with the emphasis in assisting Department staff in the identification and management of these sites. This has highlighted a need for the historical information presented in the 1991 draft to be available in an accessible form. This document is an edited version of that draft. Note that information presented in this document was accurate at time of writing (1991) and may not reflect the situation at time of publication. However, some attempt has been made to update information, drawing upon knowledge of certain staff at the Arthur Rylah Institute for Environmental Research and selected external people, as available to the editors in 2003. It was not possible to validate all information presented, especially in regard to fauna records, and Editors' Notes have been inserted where new information was available from those sources. In 1991 the status of threatened fauna in Victoria was defined by Baker-Gabb (1991): these have been revised according to classification that were current at the time of editing (DSE 2003a). Where species had threatened status in 1991 but are not considered threatened in 2003 their names have been left in the text and the transition noted. It is expected that significant sites identified in the 1991 draft will be reassessed periodically through the ongoing BioSites database process.

SUMMARY

Sites of zoological significance within the South East Melbourne and Mornington Peninsula region of the Greater Melbourne study area were determined and delineated on the basis of historical records and a field survey from 1987 to 1991. Thirty-three significant sites were identified, of which one was deemed to be significant at the National level, three at the State level, 17 as "Regional A" (significant for Greater Melbourne) and 12 as "Regional B" (significant in the context of South East Melbourne and the Mornington Peninsula). Twelve sites have additionally been classified as having International Treaty Significance status.

Twenty-six sites are described in terms of locality, land tenure, environmental and wildlife attributes. Management issues of importance to the wildlife are discussed. A number of threatening process to fauna were identified: habitat destruction, modification or fragmentation; predation by introduced animals; competition with introduced species or other native species; pollution; disturbance; and interruption to natural drainage and stream flow.

The most significant habitats for fauna in the region include extensive areas of native vegetation along the Yarra River and on parts of the Mornington Peninsula, and a range of wetlands in the Yarra River floodplain and along the coastal strips (e.g. the Edithvale-Seaford wetlands, a remnant of the former Carrum Carrum Swamp). The Yarra River system acts as a corridor, helping wildlife access a range of natural and artificial habitats within the urban area of Melbourne. Some artificial habitats add to the diversity of habitats available for wildlife in the region: these include golf courses (notably Woodlands at Mordialloc), water storages (notably Devil Bend and Cardinia Reservoirs), piers and jetties (notably St Kilda Pier) and sewage treatment works (notably the Melbourne Water Eastern Treatment Plant, formally the South-eastern Purification Plant).

The report has been produced as a historical record of the work done in 1987-91. In editing the report, notes have been added providing links to up-to-date sources of information (2003). Site maps were compiled in 2003 using information from the DSE Corporate Geospatial Data Library. The report is intended for use by land planners and managers in the region, in conjunction with up-to-date sources of information. It will serve as a resource for a larger electronic compendium of information, continuously being compiled by DSE as part of the BioSites database.

ACKNOWLEDGEMENTS

The authors and editors wish to thank Cam Beardsell for his involvement in the initial fieldwork and a large number of individuals who have contributed to fieldwork and provided information at various times, including Hans Brunner, Mike Carter, Peter Chance, Chris Chandler, Paul Chick, R W Cross, Paul Gullan, Sally Hughes, Mark Hutchinson, Peter Kadwell, Bette Mitchell, Lindy Lumsden, Michael Norris, Rob Pyne, Tarmo Raadik, Peter Robertson, Doug Robinson, Stephen Saddlier and Alan Webster. David Cameron provided advice on current flora taxonomy. Barb Baxter and Andrew Corrick (Atlas of Victorian Wildlife) were helpful in answering requests about specific records. Dale Tonkinson commented on an earlier draft of the report. The DSE Corporate Geospatial Data Library and BioSites database are acknowledged as major sources of information used during the construction of site maps. Fiona Ferwerda and Kerri Northey are thanked for their assistance in providing access to and advice on this information.

The editors wish to thank Ian Mansergh for his interest in seeing this project through to publication, and our colleagues at Arthur Rylah Institute for Environmental Research for support.

ABBREVIATIONS

BOCA: Bird Observers Club of Australia

CAMBA: Agreement between the Government of Australia and Government of the People's Republic of China for the protection of migratory birds and their environment. (=CAMBA: China Australia Migratory Bird Agreement)

CFL: Department of Conservation, Forests and Lands (later known as NRE, now DSE)

DPI: Department of Primary Industries

DSE: Department of Sustainability and Environment

FIS: Flora Information System

JAMBA: Agreement between the Government of Australia and Government of Japan for the protection of migratory birds in danger of extinction and their environment. (=JAMBA: Japan Australia Migratory Bird Agreement)

MMBW: Melbourne and Metropolitan Board of Works (now known as Melbourne Water)

NRE: Victorian Department of Natural Resources and Environment (now subdivided as DSE and DPI)

PMA: Port of Melbourne Authority

RAOU: Royal Australian Ornithological Union (now known as Birds Australia)

UYVDRA: Upper Yarra Valley and Dandenong Ranges Regional Authority

1. INTRODUCTION

This report was the result a program undertaken by the then Wildlife Management Branch, National Parks and Wildlife Division, to identify sites of zoological significance in the Greater Melbourne area. The sites were identified by computer analysis of data compiled by field surveys, literature, museum records, Wildlife Atlas records, and lists from local naturalists.

This report aims to help planners in State and Local Government agencies make decisions about land use and development based on the best information available. The report identifies sites of significance and species requiring special attention within the study area.

2. AIMS OF THE STUDY

(a) To identify, define and describe sites of zoological significance, and identify management issues.

(b) To categorise the conservation value of these sites on a national, state, regional and local level using defined assessment criteria.

(c) To identify threatening processes to the fauna of the region and make recommendations to alleviate and restrict the impact of such processes.

(d) To identify fauna that are threatened and restricted within the region and make recommendations for their management to ensure their survival.

3. SURVEY AREA

The survey area includes the Yarra River and the urban area south of the river and east to the border of the UYVDR Region at the base of the Dandenong Ranges (Figure 1). It also includes the Mornington Peninsula, except for a section on the eastern side that falls within the former Westernport Region. The south-eastern boundary is the border of the Westernport Planning Region.

The survey area is mostly urban and includes the eastern and south-eastern suburbs of Melbourne, a city of about 4 million people. The Port Phillip Bay side of the Mornington Peninsula is an almost continuous urban strip from Frankston to Portsea. Areas between Frankston, Cranbourne and Baxter at the north end of the Mornington Peninsula will also become more urbanised with the proposal of the Frankston growth corridor. There is also a proposed growth corridor in the east of the survey area along the Princes Highway around Hallam, Narre Warren and Berwick.

Other land use changes are occurring, especially on the Mornington Peninsula, which has the largest remaining areas of bushland and rural land in the survey area. Increasing urbanisation of the seaside towns is threatening areas of native vegetation such as Wattle Tea-tree Scrub, especially behind the shoreline between Cape Schanck and Point Nepean. Country Club developments, Golf Courses and Time Share Resorts provide some new artificial habitats but also affect natural habitats. Farming practices are changing with a general move from stock grazing to more intensive forms such as market gardens, vineyards and the subdivision of farms into hobby farms. At the time of the survey, the area was covered by 30 municipal bodies, comprised of 27 city councils and 4 shires (Table 1).

Prior to European settlement the Greater Melbourne survey area supported a diverse range of natural environments. Since European settlement land use changes such as clearing for grazing have created more botanical variants, often depauperate or weed infested remnants of former communities or completely new communities such as introduced pastureland.

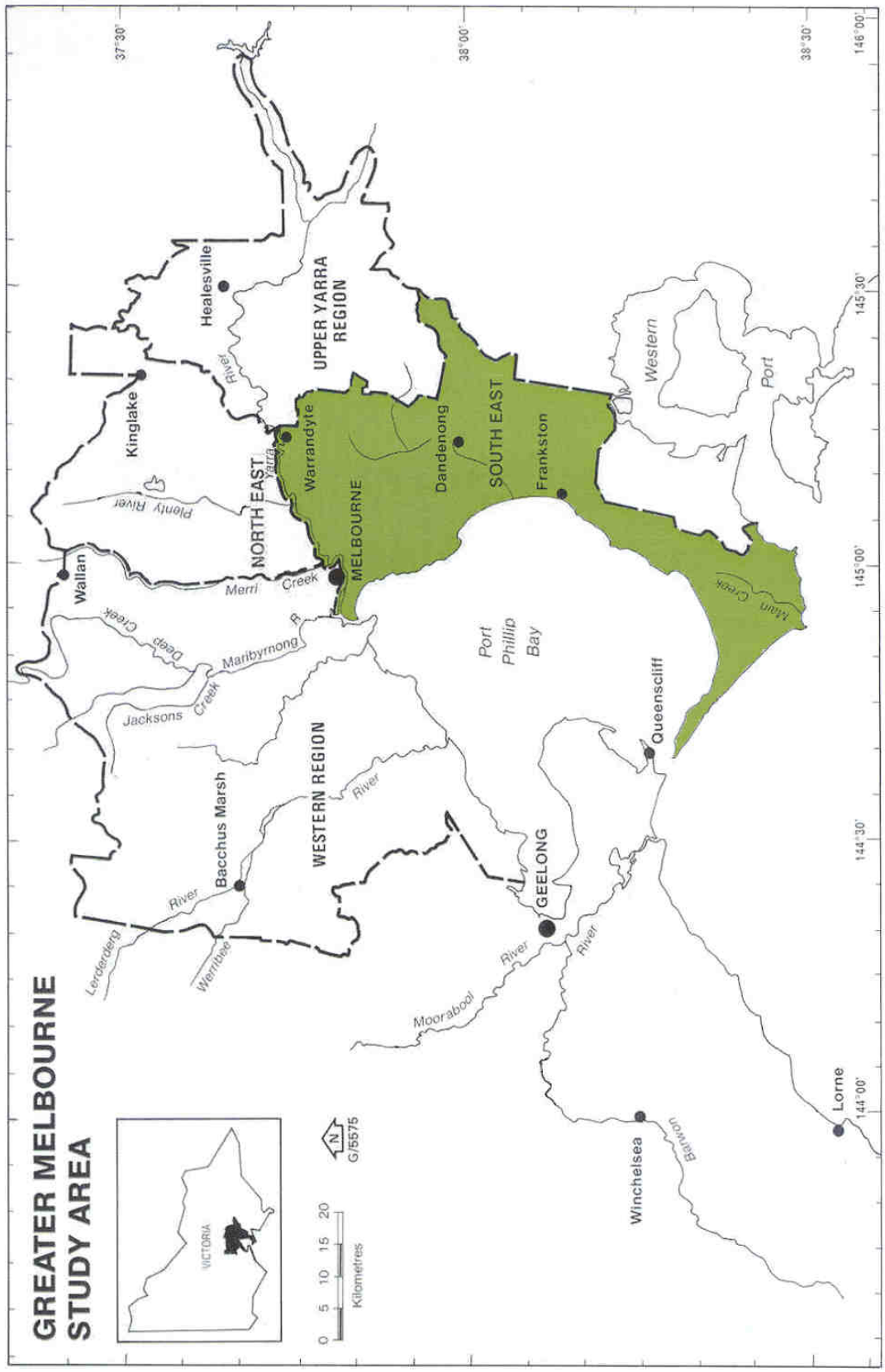


Figure 1. South East Melbourne and Mornington Peninsula study region (shaded), as part of the Greater Melbourne Study Area.

Table 1. Municipalities within the South East Melbourne Mornington Peninsula survey area, 1991.

Cities		**Area** (ha)
City of Berwick		11960
	Box Hill	2148
	Brighton	1348
	Camberwell	3600
	Caulfield	2197
	Chelsea	1223
	Croydon	3500
	Dandenong	3628
	Doncaster and Templestowe	8942
	Frankston	7285
	Hawthorn	972
	Kew	1456
	Knox	11000
	Malvern	1543
	Melbourne	3145
	Moorabbin	5121
	Mordialloc	1357
	Nunawading	4161
	Oakleigh	3030
	Port Melbourne	1062
	Prahran	955
	Ringwood	2460
	Sandringham	1514
	South Melbourne	891
	Springvale	9760
	St Kilda	870
	Waverley	5850
Shires		
Shire of	Cranbourne*	75490
	Flinders	32270
	Hastings	75110
	Mornington	9000
	Total	293948

*The whole of the Shire is not included in the study area.

4. METHODS

METHODS A. Field Sampling, Data Collection And Storage

The following methods were used throughout the Greater Melbourne study area for the survey of mammals, birds, reptiles and amphibians. These methods generally follow standard vertebrate survey techniques as described in Norris *et al.* (1983) and Emison *et al.* (1984). Fieldwork for the South East Melbourne and Mornington Peninsula Region was carried out between November 1987 and May 1988 and between April 1989 and July 1989.

Field survey equipment

Traps used were Elliott type A aluminium traps, wire cage traps (small 30 x 25 x 25 cm, large 90 x 30 x 30 cm) and pitfall traps with associated drift fences. Bats were trapped using modified harp traps, mist nets and triplines across water bodies.

Baits used were a peanut butter, rolled oats and golden syrup mixture, sardines and meat. Spotlight heads (50 w) were used with portable 12 volt batteries. Where necessary 8 x 40 binoculars were used to assist identification.

Trapping and observation techniques

Trapping sites were selected in areas of remnant native or exotic vegetation. Ground traps were laid along lines in groups of 10-20 with traps spaced 10 m apart. Traps were also placed in branches of trees up to 5 m above ground. Traps were left in position for 1-3 days and checked daily.

Bat traps were placed in areas considered the most likely flight path of bats utilizing the area, e.g. over and adjacent to dams, along tracks and watercourses with overhanging branches, and at entrances of caves or tunnels (Helman and Churchill 1986). Pitfall traps were usually installed in lines of 10 traps at 10 m intervals traversed by a fly wire drift fence. Traps were checked daily before 12:00 hrs and were left open for 5-10 days. Animals trapped were identified to species level where possible and sex and breeding condition noted. All animals were released at point of capture. Opportunistic observations of all vertebrate fauna were recorded. The dominant plant species at the trapsites were recorded, as was the broad vegetation type (e.g. Riparian Woodland, Tall Forest, Tea-tree Heath).

Spotlighting was undertaken in forested and other treed areas. Stag watching (observing old trees with hollows) was also undertaken around dusk at selected sites.

The presence of birds and amphibians were recorded from direct observation and call identification. Active searching (e.g. under logs, rocks, and other ground debris; scanning for active individuals, particularly at night on the edge of wetlands and along tracks) was used to locate reptiles, amphibians and small mammals. Other evidence of species occurrence was also recorded (e.g. nests, tracks, characteristic scats and diggings).

Yarra River survey

The Yarra River is an important environmental feature of the survey area, though access is frequently difficult because of private property adjacent to the River. In April 1989, two observers canoed the river between Warrandyte (the eastern boundary) and the mouth of the Yarra River. Wetlands adjacent to the river were inspected and the abundance and distribution of the fauna along the river recorded for every 1 km^2 cell of the Australian Mapping Grid.

Site selection for data collection

General broad scale maps (1:25,000) of the region were examined and initial effort was directed to visit all large areas > 100 ha of remnant native vegetation. After examination of these areas, sites with less extensive areas of remnant or introduced vegetation were examined, including roadside verges and strips of vegetation along drainage lines. Wetlands identified from maps and aerial photographs were visited. Geological, geomorphological and artificial features likely to provide specialist habitat were also examined (caves, mineshafts, sewage farms and golf courses).

Historical data

Data pertinent to the study area were obtained from the Atlas of Victorian Wildlife. Time constraints did not allow a full examination of the literature. However, effort was made to obtain published records that were regarded as important. Observers who had spent extensive time over several years compiling fauna lists of specific areas within the study area were consulted where possible. This provided data that could not otherwise have been obtained during this study. No fish surveys were conducted during this study.

Data storage and retrieval

All data were entered into the Atlas of Victorian Wildlife data base which is able to record fauna list and abundances at point localities or at broader resolutions e.g. 2' latitude x 2' longitude grid (cell) system. This system provides distribution maps and lists of vertebrate fauna (excluding fish). A specific computer program was written to analyse this data and identify a series of cells according to the following propositions and criteria.

METHODS B. Analysis And Site Definition

Underlying propositions

(a) Viable free-ranging populations of every scientifically recognised taxonomic entity (usually species but sometimes forms) within the region should be conserved.

(b) This should be accomplished in the most efficient manner possible regarding land area.

(c) Land uses changes and the consequent changes in wildlife populations continue in the study area; the data utilised in the analysis was based on recent empirical evidence, i.e. populations do utilise the sites at present and with proper management should continue to do so. Thus the basic model is based on the known presence of a species at each locality. It is not implied that our knowledge is complete.

Data Analysis: Determining sites of significance for the Greater Melbourne Area

Selection of regionally significant sites– Regional A

The methodology adopted was a refinement of that used to identify sites of zoological significance in East Gippsland by Norris and Mansergh (1981). To systematically analyse the data, the Greater Melbourne area was divided into a grid system of 2' latitude x 2' longitude. The distribution of each species (excluding fish and exceptions noted below) was quantified by the number of 2' x 2' cells in which it had been recently (post 1970) and reliably recorded. These cells are approximately 10km^2 (3.5 x 3.0 km) in area. An index of the species regional rarity was determined as the reciprocal of the number of 2' x 2' cells in which it occurred.

The 'value' of the known faunal complement of each cell was the sum of the values of every species within it. Thus areas with concentrations of regionally rare fauna received a higher value. All cells were sorted by value and examined from the lowest to the highest rank. A cell was selected as 'required' if it either contained a species that only occurred in one cell of higher rank or was the cell of highest rank containing that species. In this manner the minimum number of cells were selected that ensured *every* species occurred in at least two cells. The resultant series of cells became the basis for the sites of regional significance for the Greater Melbourne area; those occurring in the South East Melbourne and Mornington Peninsula were extracted as **Regional A** status.

Species that have specialised biological requirements or are regarded as threatened in Victoria were given special consideration in the above analysis:

(i) Species regarded as endangered or vulnerable in Victoria (following CFL 1987, Baker-Gabb 1991) were 'required' in five cells. Similarly species regarded as rare, restricted or requiring monitoring were 'required' in three cells.

(ii) Species that have specialised biological requirements and a large proportion of the population is concentrated for breeding or roosting. For these species the distribution ranking was determined by the localities of communal sites and all such sites were required. Sites of communally breeding

species which use transitory man-made facilities (e.g. Silver Gulls breeding in rubbish tips) and have ample natural breeding sites in the region are not included in the analysis.

Species **not included** in the analysis were:

(i) Species regarded as vagrants or escapees to the area were not included in establishing the 'value' of each cell.

(ii) Introduced species were not included in establishing the 'value' of each cell.

(iii) Breeding sites of the Peregrine Falcon were not included in the analysis as confidentiality of these precise localities is an appropriate management technique due to the vulnerability of nests to egg robbery and disturbance. In the South East Melbourne and Mornington Peninsula, there are at least three such sites and these are within the identified significant sites.

(iv) All records of *Canis familiaris* were treated as feral dogs: there are believed to be no Dingoes left in this part of the state.

Selection of sites of greater than regional significance

Habitats within the study area support some species which are threatened throughout their Victorian or entire range (CFL 1987). If 'regionally' significant areas contain substantial or otherwise significant wildlife populations the status was upgraded using the following criteria:

(a) **State significance**: The area contains significant populations of a species or community recognised as threatened in Victoria (CFL 1987, Ahern 1982, Ahern *et al.* 1985, Baker-Gabb 1991).

(b) **National significance**: The area contains populations of a species or community threatened in Australia. As many of our native species are endemic to Australia or the Australian region, this classification is often equivalent to the site having global significance.

(c) **International Treaty significance**. The area supports significant populations of species and their habitats that the Australian Government, under international treaties and conventions (e.g. Ramsar Convention on Wetlands, JAMBA), is bound to protect.

Apart from its faunal values, the significance of a site could be upgraded if it had significant zoological or cultural values directly pertaining to fauna. Such sites include those which:

(a) have been extensively studied, thus having important historical and comparative zoological values that provide scientific bench marks; and
(b) have the capacity to significantly affect the faunal attributes of Melbourne, the State's capital city.

Selection of regionally significant sites– Regional B

Sites with particular zoological significance for South East Melbourne and Mornington Peninsula but of lesser significance in the Greater Melbourne area are defined at the level of **Regional B**.

Such sites support species or communities that are uncommon to rare in the Greater Melbourne area and/or South East Melbourne and Mornington Peninsula and there is evidence to suggest that the conservation status of such fauna in the area will decline without adequate conservation and management. Regional B sites that support populations of uncommon or threatened species usually have a relatively high diversity of common native fauna.

Sites of local significance

The study area has been vastly modified since European settlement, and natural habitats have been fragmented. Numerous small remnants survive and have merit for conservation for their (a) inherent worth; (b) scientific interest, and (c) local recreation-education interest. We have endeavoured to identify these using the following criteria:

(a) Areas that have been substantially modified (e.g. cleared of most native vegetation) but are adjacent to or surrounded by areas of higher faunal significance.

(b) Areas that are traditionally used by members of the public to observe fauna. These areas have cultural values and usually some fauna is visually obvious (Koalas, Lorikeets).

(c) Areas with the potential, with adequate management, to achieve any of the above attributes.

Time constraints precluded the identification of every site of Regional B or local significance.

Delineation of Site Boundaries

The analysis generated a series of required cells that determined the general locality of the sites of Regional A significance and greater. The faunal complement of each 'required' cell was examined and the range of broad habitat types required to support that complement of species was determined.

The specific habitat requirements, extent of habitat required for a viable population and the general and population ecology of many if not most, of our native fauna remain ill defined. Notwithstanding, it is known that some species require substantial areas; for example the home range of a pair of Powerful Owls has been estimated to be 800 ha.

The boundaries of the sites were delineated on the best available information. Areas of habitat for some threatened species (e.g. New Holland Mouse) have been identified within the study area by special studies and where available, such data were used to delineate sites.

The size and shape of the site was determined from the known faunal complement of the site. In some cases two or more `required' cells are combined as one site. Boundaries were determined to provide sufficient areas of habitat for the faunal complement to persist at the site, thus sites may include a variety of habitats, e.g. wetlands and adjacent forest and heathland.

Boundaries were determined after examination of 1:10000 map series (land tenure) and aerial photographs (vegetation) of the areas and consideration of the following:

(i) *Topography*. Ridgelines, catchment edges are most appropriate boundaries.
(ii) *Fragility of habitat*. Some habitats are sensitive to disturbance and require an adequate buffer zone.
(iii) *Proximity to large areas of native habitats.*
(iv) *Quality and quantity of available habitat*.
(v) *Land tenure - land use*. Priority was given, where possible, to public land. Land uses within and adjacent to the site also affected the boundaries.

As the site is not the exact size or shape of the cell it may include adjacent areas that contain fauna not recorded in the required cell.

Maps show site locations and indicative boundaries. In most cases, significant values were diffuse and related in various ways to environments within the defined sited and nearby. Land use is always subject to change, and the boundaries are not intended to correspond exactly with current land use (now or at the time of the survey).

METHODS C. Overview Assessment

Threatened species within the Greater Melbourne area

Species that have a threatened conservation status in Victoria have been identified and given special consideration (see Methods B). The database was reviewed and the conservation status of species in the Greater Melbourne area was assessed. Threatened species in the study area have no formal recognition in the context of their conservation status in Victoria but populations around Melbourne have one or both of the following attributes

(i) A declining range or declining populations within their present range;

(ii) Occupy a habitat type(s) that is under represented in the reserve system and/or is subject to changes in land use that would be detrimental to substantial localised populations.

The 'threatening processes' to these species include:

(a) habitat destruction, modification or fragmentation;
(b) predation by introduced animals;
(c) competition with introduced species and/or other native species;
(d) pollution; and
(e) disturbance.

Taxonomy and Nomenclature

Taxonomy and nomenclature of the vertebrate fauna follows the Census of Australian Vertebrates (1988), and the Atlas of Victorian Wildlife (2003). Throughout the text English names are used; scientific names for every vertebrate species are provided in Appendix I; for vascular plants, scientific and English names, following the FIS Flora Species List (NRE 2001) are provided in Appendix II.

5. RESULTS

RESULTS A. Overview

Analysis: Sites of zoological significance

Within the South East Melbourne and Mornington Peninsula study area 33 sites of zoological significance have been identified (Table 2). The delineation of the sites in terms of significance categories are as follows: National (1), State (3), Regional A (17) and Regional B (12). Twelve sites are additionally categorised as having International Treaty significance. Detailed descriptions, including individual location maps, of 26 of the 33 significant sites are presented under Results B. The overall locations of each of the 26 sites within the study area in shown in Figure 2.

Limitations of data

The survey in the South East Melbourne and Mornington Peninsula Region was conducted over a short period (November 1987 – July 1989), with most areas being visited only once. However, the database was augmented by historical data from many sites observed over several years. Our distribution data (in both time and space) will, of necessity, be imperfect as will knowledge of the complete habitat requirements and life history of every species. Conservation and management of the following series of sites should be a primary conservation aim. However, important new discoveries will undoubtedly be made, and the value of some sites will change over time.

Our knowledge is imperfect in many respects. For example, we know few nesting sites for large raptors (other than Peregrine Falcons, which have been the focus of detailed studies). Large numbers of waterbirds use various wetlands in the region but often their communal roosting or breeding sites are unknown or poorly documented, at least in part because they may be used for short periods and then abandoned. When such sites become known, adequate protection should be given.

Table 2. Sites of Zoological Significance for South East Melbourne and Mornington Peninsula 1991. Broad coastal sites are listed at the end of the table, including one of State significance. Otherwise, sites are listed in order of decreasing significance.

Site	Significance	Description
THE YARRA RIVER From Warrandyte to the river mouth at Williamstown. Includes the Pound Bend section of Warrandyte State Park, the Yarra Valley Metropolitan Park, Royal Botanic Gardens and other public parklands, golf courses and sports grounds adjacent to the Yarra River.	National, International Treaty Significance	Page 14
EDITHVALE-SEAFORD WETLANDS Edithvale, Carrum and Seaford	State, International Treaty Significance	Page 20
SOUTH-EASTERN PURIFICATION PLANT (now known as Melbourne Water Eastern Treatment Plant - eds) Bangholme	State, International Treaty Significance	Page 24
BRAESIDE METROPOLITAN PARK Braeside	Regional A, International Treaty Significance	Page 28
ROYAL BOTANIC GARDENS - CRANBOURNE ANNEXE Cranbourne	Regional A	Page 32
DANDENONG CREEK From The Basin to the junction with the Patterson River	Regional A, International Treaty Significance	Page 36
LANGWARRIN FLORA AND FAUNA RESERVE Langwarrin	Regional A	Page 40
DEVIL BEND RESERVOIR, BITTERN RESERVE AND WOODS RESERVE South Moorooduc	Regional A, International Treaty Significance	Page 44
CHURCHILL NATIONAL PARK Endeavour Hills	Regional A	N/A
WOODLANDS GOLF CLUB Mordialloc	Regional A	Page 48
LYNDHURST RED GUM SWAMP Lyndhurst	Regional A, International Treaty Significance	Page 50

Table 2. cont.

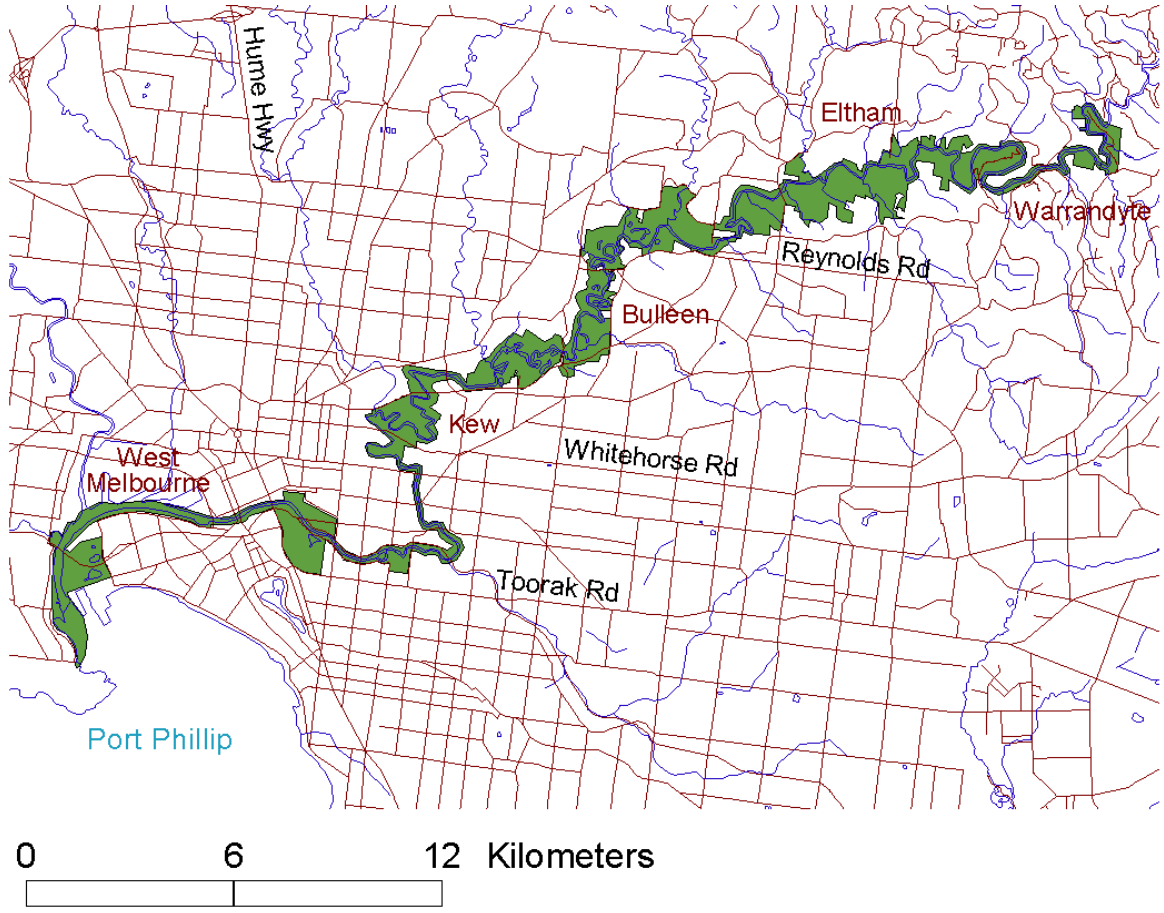
Site	Significance	Description
MULLUM MULLUM CREEK Mitcham/Donvale	Regional A	Page 54
POINT NEPEAN STATE PARK (now part of the Mornington Peninsula National Park - eds) Greens Bush section, Boneo	Regional A	N/A
ARTHURS SEAT STATE PARK Dromana	Regional A	N/A
CARDINIA CREEK From Cardinia Reservoir to Officer	Regional A	N/A
BROKIL CREEK Safely Beach	Regional A	Page 58
STONY CREEK Red Hill	Regional B	N/A
BLACKBURN LAKE SANCTUARY Blackburn	Regional B	Page 60
BONEO SWAMP Rosebud West	Regional B	N/A
FRANKSTON RESERVOIR Frankston	Regional B	Page 64
PORTSEA SWAMP AND SORRENTO GOLF CLUB Sorrento and Farnsworth Avenue, Portsea	Regional B	Page 66
THE BRIARS Mount Martha	Regional B	Page 70
THE PINES Frankston	Regional B	N/A
MOOROODUC QUARRY RESERVE Mt Eliza	Regional B	Page 72
Coastline: POINT LEO SURF BEACH TO FLINDERS JETTY	Regional B, International Treaty Significance	Page 76
Coastline: FLINDERS JETTY TO PICNIC POINT	Regional A, International Treaty Significance	Page 80

Table 2. cont.

Site	Significance	Description
Coastline: PICNIC POINT TO GUNNAMATTA BEACH	Regional A	Page 84
Coastline: GUNNAMATTA BEACH TO POLICE POINT	State, International Treaty Significance	Page 88
Coastline: POLICE POINT TO SAFETY BEACH	Regional B, International Treaty Significance	Page 92
Coastline: SAFETY BEACH TO MOONDAH BEACH	Regional A	Page 96
Coastline: MOONDAH BEACH TO MORDIALLOC PIER	Regional B	Page 100
Coastline: MORDIALLOC PIER TOPOINT ORMOND	Regional B, International Treaty Significance	Page 102
Coastline: ST. KILDA PIER	Regional A	Page 106

N/A = written description not available

RESULTS B. Site Descriptions


Hume Hwy
Eltham
Warrandyte
Reynolds Rd
Bulleen
Kew
Whitehorse Rd
West
Melbourne
Toorak Rd
Port Phillip
0
6
12 Kilometers
rivers, streams and waterbodies
roads
Yarra River
N

The Yarra River

Significance: National and some areas of lower significance.

Location:

The waterways and immediately adjacent public and private land of the Yarra River from Warrandyte to the river mouth at Williamstown. Includes the Pound Bend section of Warrandyte State Park, the Yarra Valley Metropolitan Park, Royal Botanic Gardens and other public parklands, golf courses and sportsgrounds adjacent to the Yarra River. This site includes a minimum distance of 30m either side of the river bank. This minimum area is expanded to include areas where the Crown land river frontage is greater than 30m; areas of adjacent permanent and semi-permanent wetlands; some areas within agricultural land where remnant vegetation on wetlands exist further than 30m from the river; areas of suitable public land that adjoin the river frontage. Regional corridors that link into this site are also listed.

Land Tenure:

The land tenure of this site is a mixture of public land (managed by various agencies) and some private property.

Site Description:

The Yarra is the major river in the study area and the site includes the river, adjacent riparian and wetland vegetation and areas of remnant bushland. The dominant vegetation type between Warrandyte and Fitzsimons Lane, Templestowe is Manna Gum Riparian Forest, which includes some Yellow Box and Red Box. Understorey dominants include Silver Wattle, Cherry Ballarat, Burgan, Blackwood and Victorian Christmas-bush.

Downstream of Fitzsimons Lane the vegetation changes and River Red Gum Riparian Woodland becomes the dominant vegetation community. Further downstream at Yarra Bend and Studley Park there is also some Yellow Box and Red Ironbark. Understorey species in the River Red Gum Riparian Woodland community include Swamp Paperbark, Silver Wattle, Sweet Bursaria and River Bottlebrush.

The condition of the riparian vegetation varies greatly along the Yarra River site. At Warrandyte and north of the river downstream to almost Fitzsimons Lane the vegetation is contiguous with larger areas of native vegetation and is in good condition. However, south of the river past Pound Bend and on both sides of the river downstream of Fitzsimons Lane the vegetation is restricted to a narrow riparian strip. Yarra Valley Metropolitan Park and Studley Park are two more extensive areas of native vegetation in this section, and both have been expanded by revegetation projects. This riparian strip is continuous almost to Burnley. From here to the mouth there is virtually no indigenous vegetation on the riverbank except for the occasional River Red Gum or Silver Wattle. The indigenous riparian vegetation has been replaced by parkland with exotic trees and grass.

There is no intact streamside vegetation from the city through to the mouth of the Yarra River. At the mouth there are revegetation projects in progress at Westgate Park and White Mangroves have been planted in the Stony Creek Backwash. Mangroves used to occur at the mouth of the Yarra River, but now the closest natural occurrence is at the Jawbone at Williamstown Rifle Range.

Reasons for Significance:

The Yarra River has been nominated for State significance because of the high diversity of species found along its length. Of the 295 endemic non-vagrant species in the South East Melbourne Mornington Peninsula study area, 227 (77%) have been recorded along or within 1km of the Yarra River. When broken down into classes this is 84% of bird species, 62% of mammal species, 61% of reptile species and 92% of amphibian species. The Common Spadefoot Toad is the only amphibian species that has not been recorded from along the Yarra although it is likely to occur there.

There are a number of species found along the Yarra that have threatened wildlife status in Victoria. These are the Regent Honeyeater (Critically Endangered), Painted Snipe (Critically Endangered and a CAMBA listed species), Brush-tailed Phascogale (Vulnerable), Large-footed Myotis (Near Threatened) and Eastern

Bent-wing Bat (Vulnerable) (DSE 2003a). Latham's Snipe (Near Threatened, DSE 2003a)*, a CAMBA/JAMBA species, Peregrine Falcon and the Koala also occur along this river; all these species require monitoring. There are also 54 regionally rare and threatened species recorded from the Yarra River site. This site is also an important habitat for waterbirds: 57 species have been recorded between Warrandyte and the river mouth. Of all the bird species known to breed in the South East Melbourne Mornington Peninsula study area at least 60% breed along the Yarra River.

Pound Bend, Wilson's Reserve and the river mouth were found to be particularly important locations for fauna along the Yarra: -

At Pound Bend the Large-footed Myotis was observed roosting in Pound Bend Tunnel along with a colony of over 200 Eastern Bent-wing Bats. The Regent Honeyeater, Koala and the Peregrine Falcon also occur here. The white form of the Grey Goshawk (Vulnerable, DSE 2003a) has been observed in the area on several occasions. Ten species of regionally rare and threatened species utilise the area, including the Nankeen Night-Heron (Near Threatened in Victoria, DSE 2003a), Yellow-tailed Black-Cockatoo, Gang-gang Cockatoo, Eastern Whipbird, Bassian Thrush, Speckled Warbler (Vulnerable in Victoria, DSE 2003a)*, Eastern Small-eyed Snake, Bibron's Toadlet (Endangered)* and Southern Toadlet (Vulnerable)*(DSE 2003a) At the time of the survey, this was the only known site at which the two toadlets were known to occur together in South East Melbourne and Mornington Peninsula.

A high diversity of species occurs at Wilson Reserve with 140 records from the area. These include the Painted Snipe, Peregrine Falcon and Latham's Snipe. Eighteen regionally rare and threatened species occur at this site. Most of these are wetlands associated species, including Baillon's Crake (Vulnerable in Victoria, DSE 2003a), Spotless Crake, Great Crested Grebe, Darter, Royal Spoonbill (Vulnerable in Victoria, DSE 2003a), Swamp Harrier, Little Grassbird, and Peron's Tree Frog. This highlights the importance of this location as wetland habitat.

The Yarra River mouth is significant for records of the uncommon White-fronted Tern (Near Threatened in Victoria, DSE 2003a)* and a wide diversity of waterbird species, seven of which are covered by International Migratory Bird Treaties. There are also small breeding colonies of Australian White Ibis at Holden Dock and Westgate Park. Thirteen regionally rare and threatened species have been recorded at the site, eight of which are wading birds, namely the Red-kneed Dotterel, Banded Lapwing, Red-capped Plover, Black-winged Stilt and three CAMBA/JAMBA listed species Common Sandpiper (Vulnerable in Victoria, DSE 2003a)*, Common Greenshank and Red-necked Stint. White's Skink is present on Port of Melbourne Authority land behind Webb Dock. There is also a small wetland on which the Black-winged Stilt has been recorded breeding.

Important sites for waterbirds and wading birds at the mouth of the Yarra River are Westgate Park and the adjoining Port of Melbourne Authority land to the south: Stony Creek Backwash, the east bank of the Yarra River mouth and Greenwich Bay. Stony Creek Backwash and the exposed east bank of the Yarra are utilised by waders as are some areas of Greenwich Bay. Greenwich Bay and the adjoining breakwaters associated with the Newport Power Station cooling water outfall are frequented by the White-fronted Tern and the Common Tern (a CAMBA/JAMBA listed species). The Arctic Tern, a rare vagrant, has also been recorded here.

The Yarra River is important habitat for native fish: there are at least 11 species of indigenous freshwater fish present in the river (MMBW 1988) including the Australian Grayling (Vulnerable in Victoria, DSE 2003a) which only occurs below Dights Falls.* A number of native fish with threatened species status in Victoria have been recorded from theYarra. These include the Macquarie Perch (Endangered), Australian Mudfish (Critically Endangered)(DSE 2003a), Pouched Lamprey, Broad-finned Galaxias and Spotted Galaxias.* The Yarra River provides the only access to the marine environment required by at least seven species of native fish to complete their life cycles. These species inhabit the Yarra River and its tributaries.

Apart from its inherent faunal value within the study area the Yarra River and adjacent riparian vegetation provides the most important habitat link into Melbourne and provides substantial habitat refuges, especially where the riparian vegetation connects with more extensive areas of native vegetation. This is demonstrated by the large faunal lists from areas of remnant bushland adjacent to the Yarra, such as Wilson Reserve and Studley Park. The high faunal value of the Yarra River is a direct result of the diversity of habitats that remain along its banks, such as wetlands, and their function as linking corridors to other habitat types. These habitat types include Tall Open Forest (such as along the Little Yarra around Powelltown, outside the study area); Open Forest (Warrandyte); Box Stringybark Woodland (Christmas Hills area, outside the study area); and River Red Gum Woodland (Plenty River - Gresswell, outside the study area). These linking corridors

formed by the Yarra River and its tributaries are major wildlife corridors, which serve more central parts of Melbourne and allow the rich diversity of fauna to persist in reasonable abundance in what is a highly urbanised environment.

Areas along the floodplains support pasture and grasslands that are periodically inundated providing important temporary wetlands. These areas are increasing in significance as most of the floodplain is coming under MMBW (now Melbourne Water – ed.) control and parts are being restored, such as the area covered by Yarra Valley Metropolitan Park. These wetlands are thought to be significant in a statewide context providing a refuge when other areas are drought stricken.

The Yarra River site has been expanded in certain sections and includes locations that have different significance ratings. Some of these locations are as follows:

Warrandyte State Park at the Pound Bend section, downstream from the Kangaroo Ground - Warrandyte Road Bridge. This area is of State significance.

Public land on the floodplains between Pound Bend and Fitzsimons Lane, including Petty's Orchard. Most of this area is cleared especially to the south of the river however it has excellent long-term potential to be a restored floodplain environment. Remnant bushland on the banks of the river at Griffith Park, Eltham is of Local significance.

Eltham Lower Park, wetlands and remnant bushland adjacent to the river are of Local significance.

The Yarra Valley Metropolitan Park, including Westerfolds Park, Birrarung Park, Banksia Park, Yarra Flats, and proposed additions to the Park in Lower Plenty. The site is of Regional B significance.

Public parklands, golf courses and sportsgrounds adjacent to the Yarra, such as Rosanna Golf Club, Banyule Flats Reserve, Warringal Parklands, Yarra Bend Park, Fairfield Park, Studley Park and Herring Island. These areas range from being of Regional A significance in the case of Wilson Reserve to Regional B (Studley Park, Yarra Bend Park) and Local (some golf courses and all sportsgrounds).

The Royal Botanic Gardens are included in the Yarra River site because of their proximity to the river. There are also a number of bird species either roosting in or visiting the gardens that use the river as a corridor. The Royal Botanic Gardens are one of two known sites in Victoria regularly used by the Grey-headed Flying-fox (Vulnerable in Victoria, DSE 2003a) for roosting*; the other is in East Gippsland. The flying-foxes are present in the gardens throughout the year whereas the East Gippsland coast is used only during certain periods. The Eastern Bent-wing Bat, an insectivorous cave-dwelling species has also been recorded foraging in the gardens. It is not known where they roost. The Royal Botanic Gardens are of State significance.

Stony Creek Backwash tidal mudflats are considered to be of Regional B significance.

Westgate Park, including adjacent land to the south behind Webb Dock and Greenwich Bay (Williamstown) have been assigned Regional A significance.

Management:

The public land is under various forms of management. It includes several types of reserved Crown land, unreserved Crown land, land owned by a municipality and land owned by other public bodies. The MMBW is responsible for the management of most of the site. Other bodies with management responsibilities include CFL, the Shire of Eltham, the cities of Doncaster & Templestowe, Heidelberg, Camberwell, Kew, Northcote, Richmond, Hawthorn, Prahran, Melbourne, Port Melbourne and Williamstown, the PMA, and land holders who have been issued with Crown Water Frontage and Unused Road Licences.

It is very important that the river and the surrounding vegetation be enhanced for wildlife. All existing native vegetation including wetlands immediately adjacent to the river and areas of remnant bushland, need to be retained and maintained, especially degraded areas near relatively intact areas.

The elongated form of the Yarra River site is a less than ideal shape for fauna conservation, therefore the areas of adjacent native vegetation have an important role as a local refugia as well as adding to the significance of the site and its function as a corridor.

For most of its length the Yarra River site is vegetated only as a narrow strip along the riverbank. The MMBW (now Melbourne Water and Parks Victoria – ed.) is addressing this problem in some areas such as the Yarra Valley Metropolitan Park, where they have undertaken a major replanting program. However, efforts should be made to encourage urban and rural landowners who own land down to the river or have land bordering the Crown Land Water Frontage to retain existing native vegetation to plant indigenous species on their properties where they border the river or river frontage. There is a list of suitable plants in the "Yarra Book" (MMBW 1988) and the revegetation guidelines outlined in the UYVDRA (1987) should be helpful. Assistance from Government agencies for the areas would encourage landholders to revegetate their land appropriately. Benefits of replanting, such as attracting wildlife to properties, contributing to the health and quality of the urban environment, increasing the capital appreciation of the property and reducing maintenance, need to be emphasised.

In areas where stock graze access to the river by stock needs to be either eliminated or limited to a minimum number of narrow points located in stable areas of the bank. This could be followed by revegetating remaining areas within 30m of the riverbank as outlined in UYVDRA (1987).

Water flows of the Yarra River are influenced by the following large MMBW controlled water impoundments: Upper Yarra, Silvan, Maroondah and Winneke Reservoirs. Minimum stream flow rates commensurate with the conservation of native fish and other fauna need to be determined and adopted.

Threatening processes to native fish include management practices which involve the removal of instream habitat such as desnagging operations which removes logs used by fish for shelter and for spawning and the clearing of bank vegetation which can lead to streambank erosion and increased sedimentation. The Tupong does not occur above Dights Falls and it is possible that this semi-artificial structure is acting as a barrier*. The potential of Dights Falls to impede the access of some species of native fish to the upper sections of the Yarra River and its tributaries needs to be investigated. The installation of a fish ladder of a design that can be used by all species of indigenous fish in the Yarra River is recommended.

Clearing of native vegetation within the Yarra River site needs to be halted or minimised where possible. Crown water frontage licences within the site should be available for conservation purposes rather than primary production. In areas where licences over water frontage or other Crown land have been issued for grazing or agricultural purposes, limits to exclude all areas of native vegetation within a minimum of 30m of the riverbank could be applied.

It is recommended that no further drainage of wetlands within the site is carried out and drainage of adjacent areas be assessed in relation to the effect this would have within the site.

This lower section of the Yarra River is extensively used for recreation. Some forms of passive recreation, such as sensitively designed walking trails, are compatible with conservation of the zoological attributes. Other activities within the site that require environmental modification, such as the construction of picnic areas need to be carefully planned to minimise the effects on wildlife.

A large number of storm water and effluent drains enter the Yarra River and its tributaries draining waste water and solid wastes into the waterways. The largest component of solid waste is non-biodegradable plastics including plastic bags, and packaging and styrofoam containers. This discarded waste poses a threat to wildlife as waterbirds, fish and marine mammals can become entangled or swallow it with often fatal consequences. The installation of solid waste traps at the outlets of these drains needs to be considered and other methods of restricting the entry of this type of waste into the environment investigated. All effluent entering the Yarra River should be treated prior to release into the waterway to remove all pollutants.

***Editors' Note:**

At the time of the survey Latham's Snipe, Speckled Warbler, Bibron's Toadlet, Southern Toadlet, White-fronted Tern and Common Sandpiper did not have threatened status in Victoria (Baker-Gabb 1991).

The Australian Grayling has since been found above Dights Falls (T. Raadik pers. comm.). Although a small number of these fish were translocated from below Dights Falls, their presence upstream is most likely attributable to the construction of a fish way at the falls in the early 1990's (S. Saddlier pers. comm.).

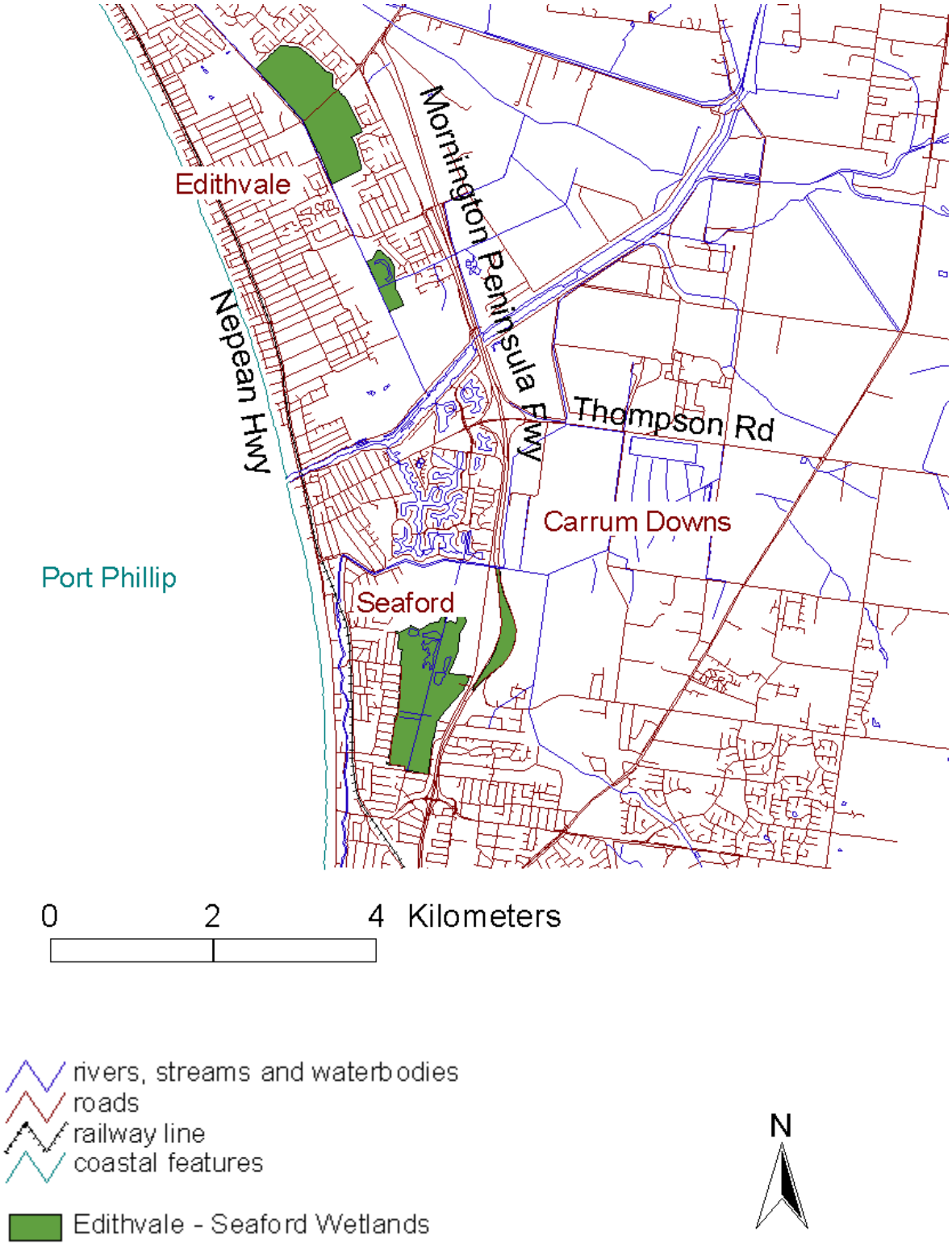
The Pouched Lamprey, Broad-finned Galaxias and Spotted Galaxias are no longer on the threatened fauna list for Victoria (DSE 2003a). However, these species are still considered to be rare within the Yarra River system (T. Raadik pers. comm.).

Powerful Owls (Vulnerable in Victoria, DSE 2003a) are known to occur regularly at several sites near Warrandyte, and the species occurs occasionally as far down stream as the Royal Botanic Gardens.

The number of Grey-headed Flying-foxes roosting in the Royal Botanic Gardens has increased such that their impact on vegetation is causing unsustainable damage to some of the plantings. In response to this issue the Department of Sustainability and Environment, Zoos Victoria, Parks Victoria and the Royal Botanic Gardens are currently implementing a trial to relocate the colony to a new roost site at Horseshoe Bend on the Yarra River at Ivanhoe (DSE 2003b).

Records of several fauna species have increased along the Yarra in recent years, perhaps in response to protection of vegetation. Koalas, Common Wombats, Short-beaked Echidnas, Platypus, Yellow-tailed Black-Cockatoos, Gang-gang Cockatoos and Azure Kingfishers are seen regularly at various sites. The Azure Kingfisher was recently added to Victoria's list of threatened species as Near Threatened (DSE 2003a).

A wetland at Banyule Flat was restored in the 1990's by blocking a drain. It is now in excellent condition and attracts a wide range of waterbirds including Black-winged Stilts (breeding), Baillon's Crake (summer visitor), Buff-banded Rail, low numbers of Latham's Snipe (regular summer visitor) and many other species. Small numbers of Australasian Shoveler occur sporadically: this species is listed as Vulnerable in Victoria (DSE 2003a). Additionally, a Painted Snipe was seen there in 2001 (Atlas of Victorian Wildlife).


Edithvale
Mornington Peninsula Fwy
Nepean Hwy
Thompson Rd
Carrum Downs
Port Phillip
Seaford
0
2
4 Kilometers
rivers, streams and waterbodies
roads
railway line
coastal features
Edithvale - Seaford Wetlands
N

Edithvale – Seaford Wetlands

Significance: State (Sections listed as a National Estate area)

Location:

This site consists of a wetland complex made up of a series of swamps, including the Edithvale North and South wetlands, adjacent to Edithvale Road; the Chelsea Swamp adjacent to Beazley Reserve; wetlands east of the Patterson River Country Club, north of Patterson River; and the Seaford Swamp south of the Eel Race Drain. In addition, a remnant bushland area has been included separating the north and south lanes of the Mornington Peninsula Freeway south of the Eel Race Drain.

Sections of this site, in the Chelsea Heights area, are situated close to the South-eastern Purification Plant (now known as Melbourne Water Eastern Treatment Plant – eds).

Land Tenure:

Public (Dandenong Valley Authority), local government (City of Springvale) and private.

Site Description:

The wetland areas are variable in regard to the extent, length and depth of water present over a twelve-month cycle. Typically sections dry out over the summer months and fill during the winter and spring periods. The wetlands are generally characterized by areas of shallow water, mudflats, extensive patches of Common Reed, low herbfields dominated by Water Buttons and sedgelands consisting of a variety of species. Sections north of the Patterson River are bordered by the secondary drain to the west. This drain is typically lined with Common Reed and sparsely scattered Swamp Paperbark. A small stand of Swamp Paperbark occurs in the south-east corner of the Patterson River Country Club. The wetlands are predominantly backed by residential developments and grazing land. Grazing was excluded when the wetlands were reserved in 1975.

The remnant bushland along the Mornington Peninsula Freeway consists of open forest dominated by an intermediate form of the Forest Red Gum/River Red Gum woodland with a sparse shrub layer grading into low Manna Gum woodland with a dense shrub layer, dominated by species such as the Prickly Tea-tree.

Reasons for Significance:

The wetland complex supports a high diversity of waterbirds, with some seventy-nine species observed between 1977 and 1990. Some of them occur in internationally significant numbers.

A large number of wader species (30) have been recorded. Twenty-one species are listed under international migratory bird agreements (CAMBA/JAMBA). However, most of these waders are rare visitors, and have only been recorded infrequently such as the Grey Plover (Near Threatened)*, Whimbrel (Vulnerable)*, Terek Sandpiper (Endangered)*, Sanderling (Near Threatened)*, Painted Snipe (Endangered)(DSE 2003a), Buff-breasted Sandpiper and Ruff. The Sharp-tailed Sandpiper, Red-necked Stint and Curlew Sandpiper are regular summer migrants, with mixed flocks of over one thousand individuals observed on occasions. The Common Sandpiper (Vulnerable in Victoria, DSE 2003a)* is regularly seen along the Patterson River. A number of waders breed in the wetland complex, including Black-fronted Dotterel and Black-winged Stilt. Red-capped Plovers bred in 1973-74, when extensive bare areas existed through grazing and mechanical disturbance.

This wetland complex is an important area for the Latham's Snipe (a CAMBA/JAMBA species and Near Threatened in Victoria, DSE 2003a*). Concentrations of up to one hundred individuals at densities of 50 birds/ha have been recorded at the Seaford Swamp (Naarding 1983). Such densities of this species are rare in Victoria. Smaller numbers occur in other wetland areas: for example, approximately twenty individuals were observed in the wetland north of the Patterson River in November 1990, and thirty-two individuals in the Edithvale North Swamp in November 1990.

The Australasian Bittern, a species listed as Endangered in Victoria (DSE 2003a), occurs regularly in small numbers. The status of this bird in the wetland complex is poorly understood. The Little Bittern, listed as Endangered in Victoria (DSE 2003a), has been recorded but appears to be only a rare visitor. A number of other large wading birds, such as the Glossy Ibis (a CAMBA listed bird and Near Threatened in Victoria,

DSE 2003a) and Intermediate Egret (Critically Endangered in Victoria, DSE 2003a), are also rare visitors to the area.

A variety of terns have been observed resting or feeding over the wetlands, including regionally rare species such as the White-winged Black Tern (a CAMBA/JAMBA listed species and Near Threatened in Victoria, DSE 2003a*) and Arctic Tern. The Whiskered Tern, listed as Near Threatened in Victoria (DSE 2003a), has been observed nesting on at least one occasion: this is the only breeding locality known for this species east of Melbourne (Emison *et al.* 1987).

A high diversity of crakes and rails are present, including regionally uncommon species, such as Baillon's Crake, Spotless Crake and Black-tailed Native-hen. These birds typically occur on the fringes of waterbodies and in dense swampland vegetation. Baillon's Crakes, classified as Vulnerable in Victoria (DSE 2003a), are regular summer visitors, breeding in dense vegetation. Such habitat is also important for resident marshland passerines, such as the Striated Fieldwren, Little Grassbird and Clamorous Reed Warbler. This site supports the largest population of such birds in the eastern residential zone of Melbourne.

Concentrations of ducks, especially teal, Australasian Shoveler (Vulnerable in Victoria, DSE 2003a)* and Pacific Black Duck, occur on the shallow waterbodies of the site. Three species of waterfowl have been recorded nesting. These are the Black Swan, Pacific Black Duck and the Chestnut Teal.

The Stubble Quail is a seasonal visitor to the site, sometimes occurring in large numbers. The regionally rare Brown Quail was recorded from the site in 1964. This species is listed as Near Threatened in Victoria (DSE 2003a).*

The Blue-winged Parrot is a regular visitor to the area, occasionally occurring in flocks of up to sixty individuals. The Orange-bellied Parrot (Critically Endangered, DSE 2003a) has been recorded on several occasions prior to 1986, with very small numbers remaining for short periods. However, there are no recent records.

A captive population of Eastern Grey Kangaroos is present at Edithvale South Swamp. No confirmed sightings of the Water Rat have been made at the site.*

Amphibians generally occur in low densities, the most common being the Common Froglet and Spotted Marsh Frog. Snakes are generally scarce; the only record during the present survey was of a single Tiger Snake.

The remnant bushland area situated between the north and south lanes of the Mornington Peninsula Freeway supports both the Common Brushtail and Common Ringtail Possums. Despite trapping during the present survey no bats or small native ground-dwelling mammals were recorded. It appears that native rats are no longer extant in the area. A number of regionally uncommon species were recorded from this remnant bushland area, including the Barn Owl, Rufous Songlark and Eastern Three-lined Skink.

Management:

The remnant wetlands are part of a once extensive system called the Carrum Carrum Swamp. This swamp has been greatly reduced in area by land reclamation and drainage schemes. Parts of the swamp today are under residential development (e.g. Patterson Lakes) or agricultural land. Further reduction in the wetland area or type of wetland habitat may have unknown effects on regionally uncommon or significant bird species utilising the site.

The nature of the wetlands has been altered with drains, such as the Eel Race Drain, probably to the detriment of the faunal value of the site. Similarly, residential development is present in close proximity to sections of the wetland, such as at Edithvale South Swamp. At this locality the wetland has been fenced off by cyclone fencing to restrict public access. However, the effects on faunal values of housing in such close proximity to the wetland are unknown. A monitoring program is needed to determine the ongoing impacts of the drains and the surrounding residential development.

The wetland areas were regarded by some sections of the community as unsightly and degraded. This has led to pressure to "rehabilitate" the wetlands. For example, sections of the wetland at Chelsea have been deepened. During the present survey few waterbirds and no regionally uncommon species were observed in this area. In order to maintain the high waterbird richness in the site it is important not to alter the wetland habitat at the expense of the quality of bird species frequenting the area.

The bird viewing facilities provided on the northern edge of Edithvale South Swamp, adjacent to Edithvale Road, are important as a public interpretation and education facility.

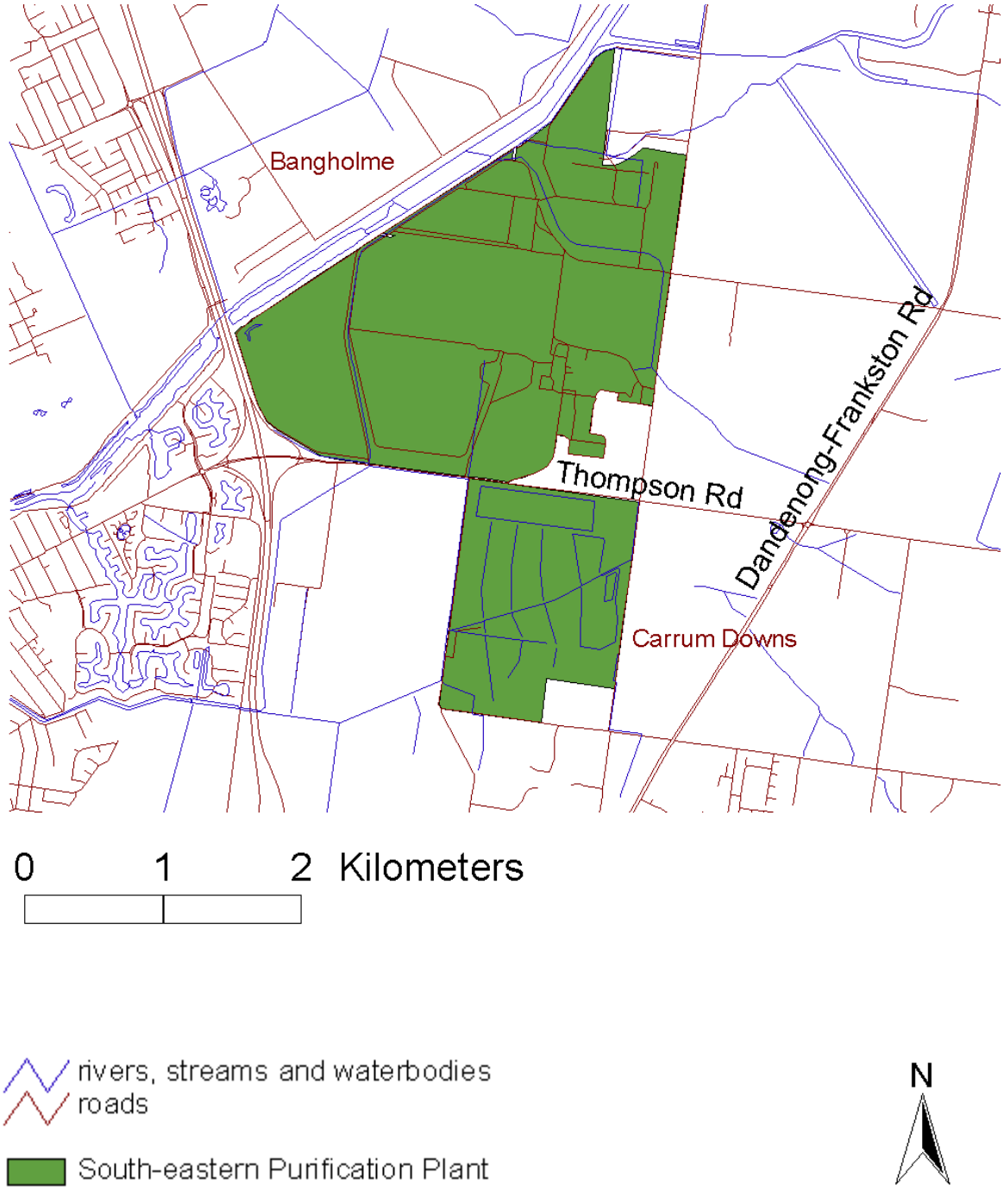
***Editors' Note:**

At the time of the survey the Grey Plover, Whimbrel, Terek Sandpiper, Sanderling, Common Sandpiper, Latham's Snipe, White-winged Black Tern, Australasian Shoveler and Brown Quail did not have threatened status in Victoria (Baker-Gabb 1991).

Water Rats have been reported recently at Seaford but not Edithvale.

The wetlands form a last remnant (3%) of the former Carrum Carrum Swamp, which occupied 4000 ha from Mordialloc to Frankston in the 1860s (Endersby and Carter 2001). The Edithvale and Seaford wetlands were formally reserved in 1975, and the Carrum wetland was released for development as the Patterson Lakes estate. Regular observations of waterbirds have been made by Mike Carter and others over many years, producing a detailed record of changes in waterbird numbers and the occurrence of vagrant species. Some of this information has been summarised by Endersby and Carter (2001). Conservation measures have been implemented. New records continue to be made, e.g. a vagrant Bridled Tern (a CAMBA/JAMBA listed species that usually inhabits tropical oceans) at Patterson Lake in 1998 (Atlas of Victorian Wildlife), Brown Quail at Edithvale in June 2001 (M. Carter pers. comm.), a pair of Freckled Ducks (Endangered in Victoria, DSE 2003a) at Edithvale wetlands in July-August 2001 and regular observations of Australasian Bitterns at Edithvale in winter 2001 and 2002. Migratory waders are less numerous than they were in the 1970s when grazing provided greater areas of bare mudflat (M. Carter pers. comm.).

In August 2001 Edithvale-Seaford Wetlands was declared a Ramsar site by the Ramsar Convention Bureau.


Bangholme
Thompson Rd
Dandenong-Frankston Rd
Carrum Downs
0 1 2 Kilometers
rivers, streams and waterbodies
roads
South-eastern Purification Plant
N

South-Eastern Purification Plant

Significance: State

Location:

This site incorporates the Board of Works South-Eastern Purification Plant between Thomson Road and the Patterson River, Bangholme. It also includes the Frankston Sewage Authority Purification Plant south of Thomson Road, Carrum Downs. (The Board of Works South-Eastern Purification Plant and adjacent Frankston Sewerage Authority Purification Plant are now known collectively as Melbourne Water Eastern Treatment Plant – ed.)

Land Tenure:

Public land (Board of Works, Mornington Peninsula and District Water Board).

Site Description:

Both purification plants are characterised by a series of bare-banked sewerage treatment pondages. In the South-Eastern Purification Plant there are several settling pondages that are infrequently used for sewerage treatment, and presently function as wetland areas. A small wetland ringed by River Red Gums is present adjacent to the Mornington Peninsula Freeway. The remainder of the Plant area consists of mown grassed areas, a golf course and stands of planted trees.

Reasons for Significance:

The South-Eastern Purification Plant regularly contains a high diversity of waterbirds, with some seventy-six species observed between 1973 and 1988. Large numbers of waterfowl are typically present. For example, on a visit on 17 May 1988 a total of 5021 waterfowl (including grebes and Eurasian Coot) were observed. This was the largest number of waterfowl recorded in the study area during the present survey. The Blue-billed Duck, listed as Endangered in Victoria (DSE 2003a), was observed with ducklings. Few breeding records of this species have been made in the survey area. The Freckled Duck, listed as Endangered in the state (DSE 2003a), has been recorded on the pondages on a small number of occasions.

The Australasian Bittern (Endangered in Victoria, DSE 2003a) appears to be a resident species, with a population of less than ten individuals present. This bird tends to frequent the weed infested pondage embayments that are disused or have little water present. The Little Egret (Endangered in Victoria, DSE 2003a), Intermediate Egret (Critically Endangered in Victoria, DSE 2003a) and the Glossy Ibis (a CAMBA listed species and Near Threatened in Victoria, DSE 2003a) have all been recorded on occasions. All these species are rare visitors to the survey area.

A large number of wader species (27 species) have been recorded. Eighteen species are listed under international migratory bird agreements (CAMBA/JAMBA). However, most of these waders are rare visitors and have only been recorded infrequently (e.g. Black-tailed Godwit (Vulnerable in Victoria, DSE 2003a)*, Whimbrel (Vulnerable in Victoria, DSE 2003a)*, Little Curlew and Marsh Sandpiper). The Sharp-tailed Sandpiper, Red-necked Stint, Curlew Sandpiper and Greenshank are regular summer migrants. Approximately 100 Latham's Snipe (Near Threatened in Victoria, DSE 2003a)* occur in Basins 1-4 and in other swampy areas in the Plant each year between September and March (P. Chick pers comm.). A number of waders breed in the area, including the Red-kneed Dotterel and Black-winged Stilt.

A high diversity of crakes and rails are present, including regionally uncommon species, such as Lewin's Rail (Vulnerable in Victoria, DSE 2003a) and Spotless Crake. The Baillon's Crake, listed as Vulnerable in Victoria (DSE 2003a), has been recorded nesting. These species tend to frequent the vegetated or reedy margins of wetlands in the Plant. Such habitat is also important for resident marshland passerines, such as the Striated Fieldwren and Little Grassbird.

The area also supports a variety of terrestrial bird species, including the Southern Boobook, Red-rumped Parrot, Sacred Kingfisher and Scarlet Robin. The Chestnut-breasted Mannikin has been recorded in small flocks on several occasions. Victorian populations of this finch are derived from aviary escapes (Emison *et al.* 1987). Regionally uncommon species, such as the Collared Sparrowhawk, Black Falcon (Vulnerable in Victoria, DSE 2003a), Hooded Robin (Near Threatened in Victoria, DSE 2003a)* and Singing Bushlark are

rare visitors. The Blue-winged Parrot is a regular visitor, with flocks of up to eighty individuals observed. Such flock sizes are rare in the Mornington Peninsula region.

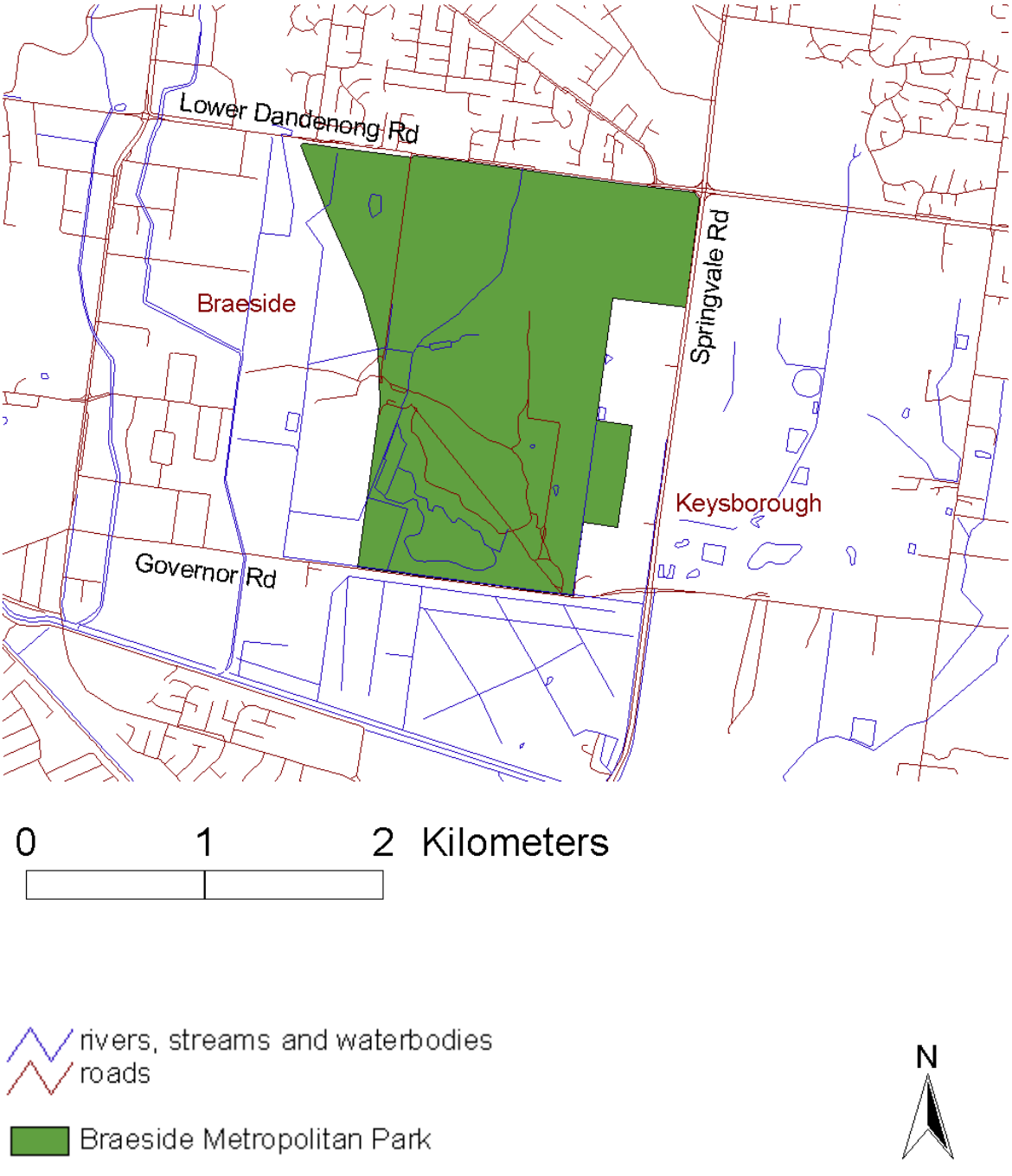
The Frankston Sewerage Authority Purification Plant contains a lower species diversity and richness than observed in the South Eastern Purification Plant. However, numbers of waterfowl are frequently present, including approximately seventy Blue-billed Ducks in May 1988. Such a concentration of this bird, listed as Endangered in Victoria (DSE 2003a), was not recorded elsewhere in the survey area. Small numbers of migratory waders regularly occur in the plant, including the Sharp-tailed Sandpiper, Common Sandpiper (Vulnerable in Victoria, DSE 2003a)* and Latham's Snipe.

Management:

The main attraction of these wetlands to wildlife stems from their use as a sewage treatment works. Maintenance of wetland areas in the disused sewerage treatment embayments in the South-Eastern Purification Plant, adds to the importance of this site to waterbirds. The policy of restricting public access helps reduce disturbance and contributes to the value of these wetlands as refuge for waterfowl.

***Editors' Note:**

At the time of the survey the Black-tailed Godwit, Whimbrel, Latham's Snipe, Hooded Robin and Common Sandpiper did not have threatened status (Baker-Gabb 1991). Additional vagrant species include Victoria's only record of a Spotted Redshank, one of very few records of this Eurasian wader in Australia.


Lower Dandenong Rd
Springvale Rd
Braeside
Keysborough
Governor Rd
0 1 2 Kilometers
rivers, streams and waterbodies
roads
Braeside Metropolitan Park
N

Braeside Metropolitan Park

Significance: Regional A

Location:

Braeside Metropolitan Park is situated south of Lower Dandenong Road and north of Governor Road. The site is bordered on the east by Springvale Road and on the west by the proposed Mornington Peninsula Freeway and a proposed industrial estate. This site also includes the Southern Golf Course (local significance).

Land Tenure: Public land reserved for conservation, education and recreation.

Site Description:

There are three main habitat types at the Braeside site. Coast Manna Gum Heath Woodland occupies the north-west of the site. Tree species present include White Sallee, Narrow-leaf Peppermint and some Swamp Gum. Understorey species include Heath Tea-tree, Prickly Tea-tree, Wedding Bush, Silver Banksia, Guinea Flower and Parsnip Trachymene. Dominant ground layer species include Austral Bracken, Spiny-headed Mat-rush and Sandhill Sword-sedge. This is one of the few remaining areas of this type of vegetation community close to Melbourne (Carr and Robinson 1987). River Red Gum Woodland, with a ground layer dominated by introduced grasses and Kangaroo Grass, occupies an area to the south of the Heath Woodland. Grassy Wetland lies to the south of the River Red Gum Woodland, on the northern edge of what was once the Carrum-Carrum Swamp. The Carrum-Carrum Swamp was a large triangular wetland that once extended from Mordialloc in the north, to Frankston in the south and east to Dandenong. Since European settlement the wetland has been greatly reduced in area by draining and clearing for grazing and more recently for urban development. The remnants of the vast Carrum-Carrum Swamp also include the Edithvale-Seaford Wetlands.

The Braeside wetlands have been greatly modified by past land use such as grazing, and more recently they are part of the Braeside Sewage Treatment Farm. The Braeside Sewage Treatment Plant was closed in 1980 and the area then became a Metropolitan Park (MMBW 1987). The south-east corner of the site is still grazed by cattle.

Reasons for Significance:

This site contains a high diversity of fauna with some 170 species recorded from the site. The Hooded Plover, Vulnerable in Victoria (DSE 2003a), has been recorded as a vagrant to the site. The Grey-crowned Babbler, also Endangered, was last recorded from the site in 1979 and now appears to be extinct at Braeside. A small colony of Grey-crowned Babblers persists at the nearby Woodlands Golf Course.

There are 38 regionally rare species that have been recorded at Braeside including the Short-beaked Echidna and Eastern Broad-nosed Bat. Two individual Eastern Broad-nosed Bats were trapped at this site, constituting the first confirmed records for Greater Melbourne.* These records represent a western extension of the range of the species, with most Victorian records previously being from East Gippsland (Atlas of Victorian Wildlife). At Braeside the Eastern Broad-nosed Bat appears to be associated with River Red Gum Woodland; habitat of this type exists in only a few areas around Melbourne and the majority of those are in the north. Braeside Metropolitan Park contains the only large area of River Red Gum Woodland reserved for conservation in the South East study area. Most of this habitat has been cleared for housing or grazing and the remnants remain under threat of further disturbance. Seven other species of bat have been recorded from this site; these are the White-striped Freetail Bat, Large Forest Bat, Little Forest Bat, Southern Forest Bat, Chocolate Wattled Bat, Gould's Wattled Bat and the Lesser Long-eared Bat; all of these species are widespread in the Melbourne Study Area.

Sixty-three species of bird have been recorded from the wetlands of the Braeside site, many of them breeding there. Twenty-five of the birds associated with the wetlands are considered to be regionally rare and threatened. These include Latham's Snipe (Near Threatened, DSE 2003a)*, Sharp-tailed Sandpiper (both CAMBA/JAMBA listed species), Buff-banded Rail, Black-winged Stilt (a breeding resident), Red-kneed Dotterel, Little Bittern (Endangered, DSE 2003a) and Australasian Shoveler (Vulnerable, DSE 2003a).*

The Tree Dragon and Southern Toadlet (Vulnerable in Victoria, DSE 2003a)*, both regionally rare and threatened, have been recorded at this site.

The Braeside Metropolitan Park is culturally important as it provides opportunities for community education in fauna and flora conservation and helps to foster an awareness of the importance of urban bushland remnants.

Management:

The current and future management of the Braeside site as outlined in the Braeside Metropolitan Park Master Plan Report (MMBW 1987) are wholly consistent with the aim to conserve the fauna and flora of the site.

Braeside Metropolitan Park has been degraded by past land use such as clearing and subsequent grazing. The wetlands were originally part of the Carrum-Carrum Swamp, most of which has been drained and cleared for grazing and urban development. These remaining wetlands were also modified during the time Braeside functioned as a sewage farm. The management plans for Braeside aim to address the problem of habitat degradation. Management is focused on the rehabilitation and enhancement of habitat, involving the replanting of endemic species, the control of environmental weeds, encouraging the regeneration of existing species and the protection of sensitive habitats, such as restricting access to heathland areas.

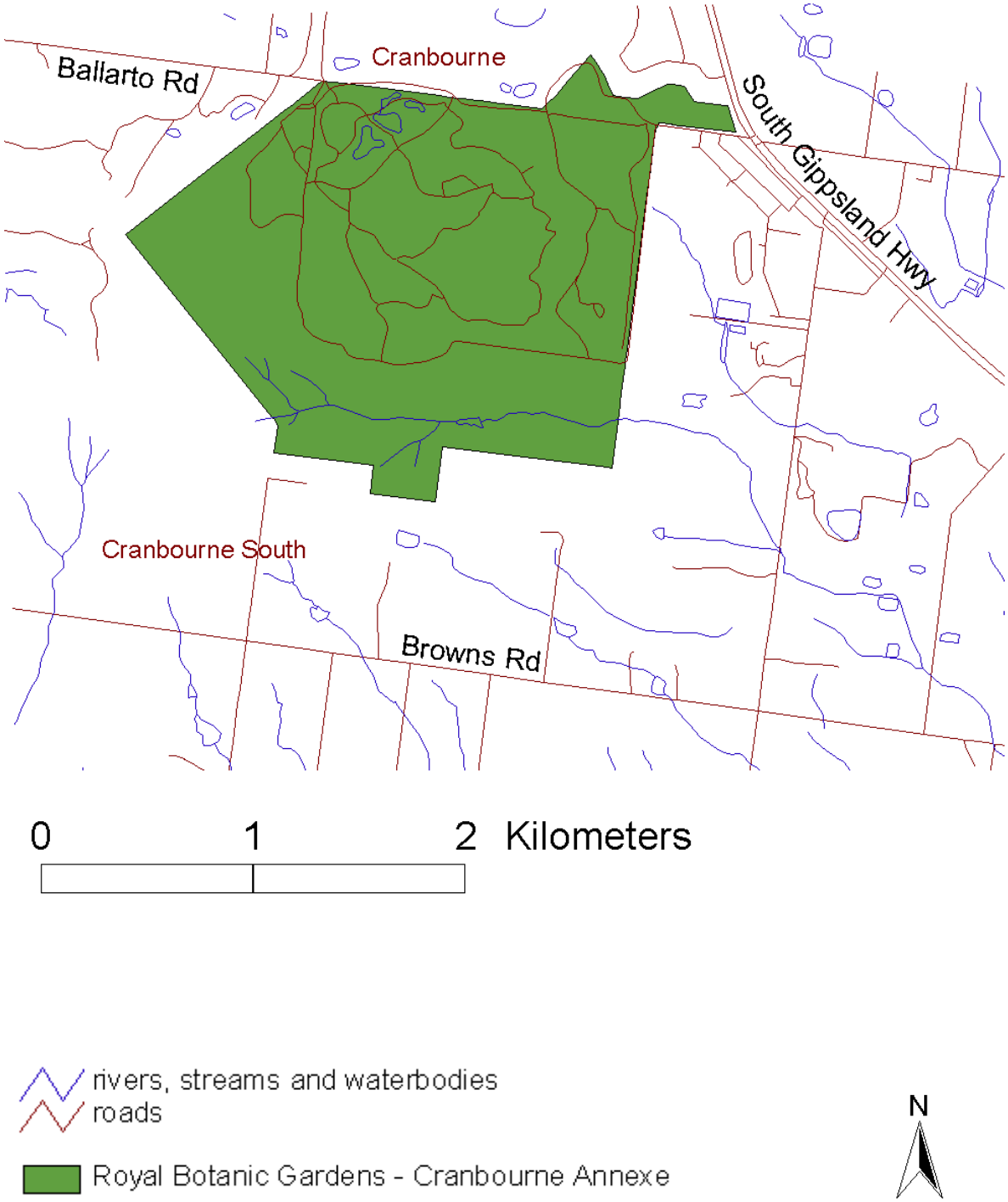
Management aims also include rabbit and fox control, both of which pose predation threats to the native fauna of the site. A large population of rabbits resides at Braeside, competing with the native fauna for resources. Rabbits also have the potential to change the habitat through grazing pressure and therefore make it less suitable for the endemic fauna. Foxes are also widespread at the site: these predators have been shown to have a major impact on remnant faunal populations (Kinnear *et al.,* 1988) and may cause the local extinction of some species.

***Editors' Note:**

During the survey the two broad-nosed bats trapped at Braeside, as well as one at Lyndhurst Red Gum Swamp, were originally identified as the Inland Broad-nosed Bat. At the time there was some confusion in identification of species within this genus, and it was not known which species would be more likely to occur in the area. With this in mind the two broad-nosed bats caught at Braeside were examined thoroughly and samples were taken for electrophoretic tests which were conducted by the Evolutionary Biology Unit at the South Australian Museum. From this information, they were identified as Eastern Broad-nosed Bats. At present it is believed that the ranges of the Eastern Broad-nosed Bat and Inland Broad-nosed Bat, while approaching closely, do not overlap. The individual from Lyndhurst was caught prior to the Braeside specimens and did not undergo the same rigorous examination and although most likely an Eastern Broad-nosed Bat its identification is unconfirmed and is thus recorded as an 'unidentified broad-nosed bat' (Lindy Lumsden pers.comm.). At the time of the survey the Eastern Broad-nosed Bat was classified as Insufficiently Known (suspected Rare, Vulnerable or Endangered) in Victoria (Baker-Gabb, 1991), however this species no longer has threatened status in Victoria (DSE 2003a).

At the time of the survey the Australasian Shoveler, Latham's Snipe and Southern Toadlet did not have threatened status in Victoria (Baker-Gabb 1991).

A regular survey of birds at Braeside has been conducted by the Victorian Ornithological Research Group.


Ballarto Rd
Cranbourne
South Gippsland Hwy
Cranbourne South
Browns Rd
0
1
2 Kilometers
rivers, streams and waterbodies
roads
Royal Botanic Gardens - Cranbourne Annexe
N

Royal Botanic Gardens - Cranbourne Annexe

Significance: Regional A

Location:

Royal Botanic Gardens Annexe at Cranbourne, comprising remnant heathland and bushland at the end of Ballarto Road, south of Cranbourne.

Site Description:

There are three main habitat types at the site: Tea-tree Heath, Swamp Scrub and Low Open Forest. Tea-tree Heath is the major habitat tree within this habitat type. Other vegetation present includes Scrub Sheoak, Yellow Hakea, Furze Hakea, Silver Banksia and Common Heath. There is a scattered overstorey of Coast Manna Gum. The Swamp Scrub occupies a large part of the north-east corner of the annexe. It is mainly composed of Scented Paperbark, Shiny Cassinia and Silver Banksia with scattered Coast Manna Gums and Silver-leaf Stringybark. There is also a large Sedge Wetland in this comer of the site. The Low Open Forest consists of Coast Manna Gum, Silver-leaf Stringybark and Narrow-leaf Peppermint and occurs mainly in the west of the site. It has a scattered understorey of Tree Everlasting, Prickly Tea-tree, Spike Wattle, Silver Banksia, Common Heath and Sword-sedge. There are a number of artificial lakes in the area where there used to be a sand quarry near the entrance to the annexe. In the south of the site there is an area of cleared land that was once farmland and is being planted out as an arboretum.

Reasons for Significance:

At the Cranbourne Annexe site there are records of four threatened species: the New Holland Mouse (Endangered in Victoria), Grey Goshawk (Vulnerable), Swift Parrot (Endangered) and Swamp Skink (Vulnerable) (DSE 2003a).

The New Holland Mouse was last recorded at this site in 1976 by Braithwaite and Gullan (1978). During the course of their study on habitat selection by small mammals, the numbers of New Holland Mice trapped declined from ten in May 1974 to one during 1976. The New Holland Mouse has been recorded from two other areas on the Mornington Peninsula: at Tyabb, where the animal was first recorded in Victoria in 1970 (Seebeck and Beste 1970) and at Langwarrin. The species was last recorded at Tyabb in 1972 and at a property adjacent to the Langwarrin Flora and Fauna Reserve in 1984. There have been no new records of the New Holland Mouse from anywhere on the peninsula since, and its continued presence on the peninsula must be in doubt. This species occurs elsewhere in Victoria at Anglesea and the central Gippsland Lakes area in South Gippsland.

A single Grey Goshawk was observed on a number of occasions at the Cranbourne Annexe over the summer period of 1989-90.* Two Swift Parrots were observed in 1988 at this site. However, they were not seen foraging and it is unclear how they were utelising the area.

The Swamp Skink is a relatively large skink that is restricted to wetland areas. At the Cranbourne site it occurs in the Swamp Scrub. This species has been adversely affected by the draining and clearing of its wetland habitat, which has been extensively carried out on the Mornington Peninsula.

Many regionally rare and threatened species occur at this site including the Koala, Southern Brown Bandicoot (Near Threatened in Victoria, DSE 2003a)*, Short-beaked Echidna, Black Wallaby, Tree Dragon, White's Skink, Delicate Skink, Eastern Small-eyed Snake and White-lipped Snake. There are a number of wetland-associated species including the Buff-banded Rail, Australian Spotted Crake, Swamp Rat and Southern Toadlet (Vulnerable in Victoria, DSE 2003a)*. The Southern Emu-wren was recorded in Swamp Scrub vegetation.

The Cranbourne Annexe supports a very diverse herpetofauna; eighteen species of reptiles and frogs have been recorded from the site.

Management:

It is important that the Cranbourne Annexe be managed to conserve the high fauna values of the site. Community education and flora conservation need to be included in this process. An intensive trapping program in all areas of suitable New Holland Mouse habitat is required to help establish whether this species is still present.

If the New Holland Mouse is present at the site, careful management of its habitat is necessary. This may require creating areas of preferred habitat. The New Holland Mouse appears to be a food generalist and habitat specialist, preferring immature dry-heath vegetation (Braithwaite and Gullan 1978, Posamentier and Recher 1974). As the heath matures it becomes less suitable for the species and numbers decline. It is possible that this has occurred at Cranbourne. To create suitable habitat for this species a program of prescribed burning will need to be developed. The Southern Brown Bandicoot also favours these early seral stages of the dry-heath vegetation. Any prescribed burning program should be formulated in consultation with zoologists and botanists so that the New Holland Mouse habitat is enhanced with minimum impact on other fauna and flora.

Upgrading and widening of the track in the Cranbourne Annexe has caused some habitat damage, especially on Botanic Drive. Future road works need to be carried out with minimum impact on adjacent habitat.

Feral dogs are a problem at the Annexe; a pack is known to roam through the reserve (P. Gullan pers. comm.). They are believed to be responsible for the demise of the Eastern Grey Kangaroo in the area and they pose a serious threat to the diminishing Black Wallaby population, the Southern Brown Bandicoot and Koala populations. The Koala is vulnerable to dog attack when moving along the ground from one tree to another. Foxes and both feral and domestic cats are also a threat to the fauna of the Cranbourne Annexe. Cats prey on small mammals (including the New Holland Mouse, Southern Brown Bandicoot and Sugar Glider), birds and reptiles. The problem with roaming cats and dogs is likely to increase with the encroachment of urban development. An ongoing predator control program for dogs, cats and foxes would help alleviate their impact on the native fauna.

Any fire management plan should consider the impact it may have on the fauna of the site.

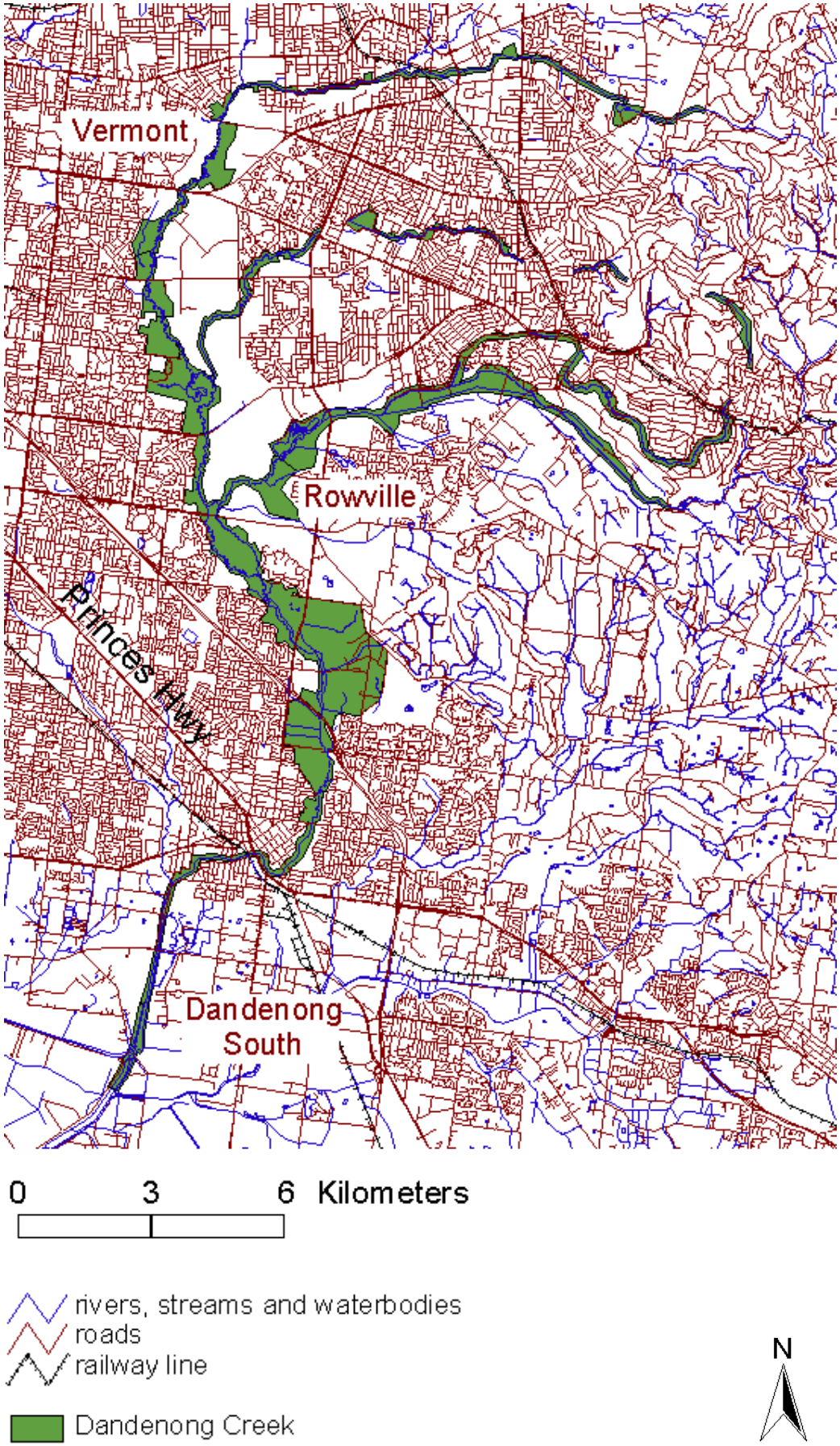
***Editors' Note:**

There are no recent records of the Grey Goshawk at this site (Atlas of Victorian Wildlife).

At the time of the survey the Southern Brown Bandicoot and Southern Toadlet did not have threatened status in Victoria (Baker-Gabb 1991). The Southern Brown Bandicoot is now listed as nationally endangered.

The Annexe is actively managed by the Royal Botanic Gardens to conserve flora and fauna and achieve some of the objectives suggested above.

The Chestnut-rumped Heathwren (Vulnerable in Victoria, DSE 2003a) has been recorded on several occasions at Cranbourne Annexe within the last few years. These are the first records of the species for this location (Atlas of Victorian Wildlife).


Vermont
Rowville
Princes Hwy
Dandenong South
0 3 6 Kilometers
rivers, streams and waterbodies
roads
railway line
Dandenong Creek
N

Dandenong Creek

Significance: Regional A

Location:

The site includes the 51 km of waterways of the Dandenong Creek and adjacent public and private land from where the stream leaves the Dandenong Ranges National Park to its confluence with the Eumemmering Creek. At this point the Dandenong Creek becomes the Patterson River. The site is expanded to include areas of adjacent permanent and semi-permanent wetlands and areas of suitable public land of adjoining stream frontage. The site also includes the following tributaries of Dandenong Creek: Blind Creek, Corhanwarrabul Creek and its tributaries, Ferny Creek and Monbulk Creek. Caribbean Lake, which is adjacent to the Corhanwarrabul Creek, is also included. Most of the site lies within the Dandenong Valley Metropolitan Park (now Dandenong Valley Parklands – ed.), which is managed by the MMBW (now Parks Victoria – ed.).

Land Tenure:

The site is mostly public land managed by various agencies but also includes some privately owned land.

Site Description:

The site includes the waterways, adjacent riparian and wetland vegetation and areas of remnant bushland. The remnant native vegetation is mostly confined to a narrow riparian strip. The dominant habitat type of the riparian strip is Manna Gum Riparian Forest. Other tree species in this habitat include Swamp Gum, Messmate and Yellow Box. Common understorey species include Silver Wattle, Black Wattle, Blackwood, Cherry Ballart, Sweet Bursaria, Prickly Tea-tree, Hedge Wattle and Drooping Cassinia. The ground layer is mostly weed species. However, in the few places where it is relatively intact it is dominated by Saw Sedge, Sword-sedge and Tussock Grass. There are also areas of Swamp Paperbark and Swamp Scrub along the banks and on the floodplain. In places this riparian vegetation is only a metre or so wide, especially where the waterway has been channelled. It has been estimated that as much as 60% of the Dandenong Creek has been channelled and piped (Nuttal 1983). Common Reed is widespread along the waterways of Dandenong Creek and its tributaries, especially along the lower channelled sections.

There are a number of semi-permanent and permanent wetlands on the floodplain as well as two large artificial impoundments: Jells Park Lake in the Dandenong Valley Metropolitan Park and Caribbean Lake adjacent to the Corhanwarrabul Creek. Caribbean Lake is the focus of an outdoor amusement park. Away from the waterway the site is mostly cleared pastureland with scattered trees (both living and dead) except for a few areas where there are larger bushland remnants. The most notable bushland remnants are: Liverpool Road Retarding Basin where there is an area of Messmate Open Forest; Campbell Croft Reserve which has a small remnant of Messmate, Silver-leaf Stringybark and Narrow-leaf Peppermint on a rise overlooking the lake; Koomba Park containing a large area of Manna Gum Riparian Forest; Jells Park which also has an extensive area of relatively intact Manna Gum Riparian Forest and a small remnant of Silver-leaf Stringybark and Narrow-leaf Peppermint on a rise overlooking the lake.

Reasons for Significance:

The Dandenong Creek has a high diversity of species along its length. There are records of 179 native vertebrate species along or within 1 km of the Creek. These consist of 155 species of bird, thirteen species of mammal, four species of reptile and seven species of frog. The Dandenong Creek is particularly important as wetland habitat with 55 wetland species recorded along its length. This site also provides breeding habitat for many birds: of the 155 bird species that occur in the Dandenong Creek 31 have been recorded breeding and it is highly probable that more species breed there.

Jells Park contains a high species diversity, especially of wetland-associated species. There are records of 157 species, just under half of which are wetland species. There are also records of the Critically Endangered Regent Honeyeater and the Little Button-quail, which is classified as Near Threatened in Victoria (DSE 2003a). These species are uncommon visitors to the area.

Several threatened species have been recorded from the site including the Powerful Owl (Vulnerable in Victoria), Little Egret (Endangered), Intermediate Egret (Critically Endangered), Blue-billed Duck

(Endangered), Baillon's Crake (Vulnerable) and Swift Parrot (Endangered) (DSE 2003a). In addition, regionally rare and threatened species occur here, many of which are wetland-associated species. They include the Great Cormorant, Great Crested Grebe, Darter*, Red-kneed Dotterel, Banded Lapwing, Latham's Snipe (a CAMBA/JAMBA listed species and Near Threatened in Victoria, DSE 2003a*), Black-winged Stilt, Royal Spoonbill (Vulnerable in Victoria), Musk Duck (Vulnerable)* (DSE 2003a) and Little Grassbird.

This site supports a diverse bat fauna. Eight species are known to occur here and they are widespread along the Dandenong Creek. Six species were trapped at Liverpool Road Retarding Basin in the north of the site and six species were trapped at the Police Road Retarding Basin in the south of the site. The regionally rare and threatened Great Pipistrelle was trapped at Liverpool Road Retarding Basin at the base of the Dandenong Ranges. It is an interesting record as this species of bat is usually found at higher altitudes. The closest record of the Great Pipistrelle is at One Tree Hill in the Dandenong Ranges National Park.

Areas along the Dandenong Creek floodplain support pasture and grasslands that are periodically inundated, providing important temporary wetlands. There are also a number of permanent wetlands such as at Jells Park Lake. These permanent and semi-permanent wetlands provide important habitat for wetland species with fifty-five wetland-associated species recorded from the site. These wetlands also have a role as refugia when wetlands in other parts of the state dry out in drought years. The wetlands are increasing in significance as much of the Dandenong Creek is under public control (between Boronia Road and Wellington Road) and parts are being restored and revegetated, including Jells Park and Koomba Park.

The Dandenong Creek also provides habitat for native fish with five species known to be present in the waterway. They are the Pouched Lamprey, Short-finned Eel, Common Galaxias, Dwarf Galaxias (Vulnerable in Victoria, DSE 2003a) and the Southern Pygmy Perch (Koehn 1986). The Pouched Lamprey is considered to be potentially threatened in Victoria (Koehn and Morison 1990). The Dwarf Galaxias is a fish of shallow swamps, drains and backwaters which has a patchy distribution in Victoria. It was recorded in wetland areas the floodplain of the Dandenong Creek at Tirhatuan Park Public Golf Course.

The Dandenong Creek site, with the remnant wetland and bushland habitats found along its length, has a role as a wildlife corridor into Melbourne from the Dandenong Ranges and allows a diverse complement of fauna to exist in a highly urbanised environment. This is illustrated by the large number of species found at areas with remnant bushland such as at Liverpool Road Retarding Basin, Koomba Park and Jells Park, and by the particular species found there. There are records of the Olive Whistler, Gang-gang Cockatoo and Bassian Thrush (all species of the ranges). A population of White-winged Choughs is resident at Jells Park: this species is otherwise found mainly in dry forest on the western fringe of Melbourne.

Management:

The public land is under various forms of management. It includes several types of reserved crown land, unreserved crown land, land owned by various municipalities and land owned by other public bodies. A coordinated management plan is required.

Consolidating the site would help protect and preserve the integrity of the stream. Where possible it is recommended that a minimum distance of 20m be reserved along both sides of the Dandenong Creek from where it leaves the Dandenong Ranges National Park to the Patterson River. This minimum area could be expanded to include: areas of adjacent permanent and semi-permanent wetlands; areas of suitable public land that adjoin the stream (some are already reserved for conservation purposes such as Koomba Park and Jells Park); and areas within agricultural land where remnant vegetation on wetland exist further than 20 m from the stream.

Much of the site has been cleared of native vegetation except for remnant riparian vegetation that remains along parts of the waterway. This remnant vegetation has been further degraded by weed invasion. Existing native vegetation needs to be retained and restored by implementing revegetation works and weed control programs. Good examples of what can be achieved can be seen at Koomba Park and Jells Park where the Board of Works has carried out restoration and revegetation works. The Board of Works is continuing habitat restoration works along other parts of the Dandenong Creek (Melbourne Water and Parks Victoria now undertake these tasks - ed.). There should be no further drainage of wetlands within the site and drainage of adjacent areas should be assessed in relation to the effect this would have within the site.

A number of species occurring at Dandenong Creek use tree hollows for nests, shelter and roosts. Eight species of birds recorded breeding at the site nest in hollows and it is highly likely that there are others. Tree hollows are also utilised by the Common Brushtail Possum, Common Ringtail Possum and Sugar Glider.

The eight species of bats that occur here all roost in tree hollows. Thus there is a great demand for tree hollows, which are a declining resource. Most of the available hollows are in dead trees and there is a scarcity of mature trees with hollows. Although there has been replanting in some parts of the site, the dead trees will probably fall before the younger trees mature and form hollows. The use of tree hollows by the introduced Common Starling and Common Myna, both of which will often oust native birds, and feral bees, further limit the availability of tree hollows to native species. The installation of nest boxes and bat boxes would provide alternative nesting and roosting sites. Suitable designs for nest boxes (for birds, possums and gliders) and for bat boxes can be found in "The Yarra Book" (MMBW 1988) and “Nest Boxes for Australian Birds” (McCulloch and Thomas 1986). The use of hollow branches from fallen timber for nest boxes is strongly discouraged. Fallen timber provides habitat and shelter for ground dwelling mammals, such as Agile Antechinus, and a number of reptiles and frog species. The feasibility of controlling Common Mynas, Common Starlings and feral bees or at least limiting their access to tree hollows and nest boxes also needs to be investigated.

The paucity of native fish species present in the Dandenong Creek (only five species have been recorded) is attributed to past management practices which have greatly modified the habitat for fish (Koehn 1986). The major impact on the fish fauna has been the channelling and piping of parts of the Creek. This has decreased the variety and amount of suitable fish habitat by reducing cover and shelter and affecting food sources and spawning areas. Other detrimental practices include clearing riparian vegetation, which degrades the stream bank leading to increasing sedimentation, and the removal of instream habitat through desnagging operations.

Four out of the five species of native fish migrate between freshwater and the sea during their lifecycle. The passage of fish has been affected by the construction of barriers across the waterway, such as Pillar’s Crossing weir at Patterson Lakes. The absence of Common Galaxias above this point suggests that the weir is blocking the passage of this species to the upper reaches of the Dandenong Creek (Koehn 1986). Barriers may also prevent species from entering the Dandenong Creek, such as the Australian Grayling, Spotted Galaxias and Tupong, all of which occur in similar waterways in the Greater Melbourne area but have not been recorded from this site (Koehn 1986).

A number of storm water and effluent drains enter the Dandenong Creek and its tributaries, and drain urban run-off, domestic and industrial wastes into the Dandenong Creek. These pollutants are thought to be the cause of the poor water quality of the waterway and consequently responsible for the low diversity of fish species (Nuttal 1982). A considerable amount of solid waste also enters the waterway through the drains. A major component of the solid waste is non-biodegradable plastics including plastic bags, packaging and styrofoam containers. This discarded waste poses a threat to wildlife. Waterbirds and fish can become entangled in it or swallow it with fatal consequences.

Recommendations outlined by Koehn (1986) to improve habitat conditions for fish include: no further channelling or piping of the waterway; restoration of channelled sections; revegetation of banks with indigenous plants; modification of barriers across the waterway to allow fish passage (install fish ladders); improvement of water quality and installation of solid waste traps at drain outlets; discourage removal of logs and wood debris within the stream; and the reduction of silt inputs

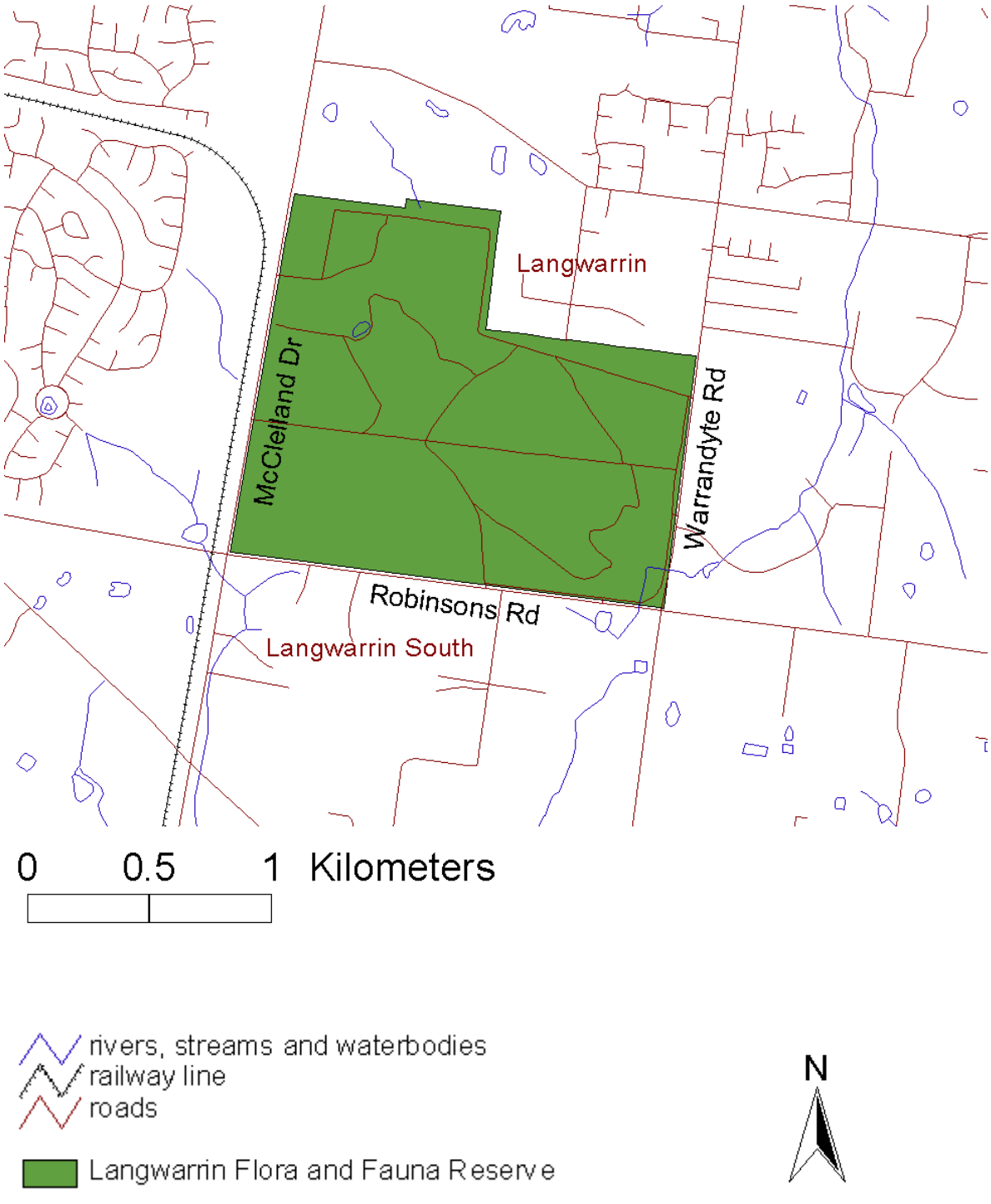
The Dandenong Creek is used extensively for recreation. Some forms of passive recreation, such as sensitively designed walking trails, are compatible with conservation of zoological attributes.

***Editors’ Note:**

At the time of the survey the Darter was listed as Restricted colonial breeding or roosting sites in Victoria (Baker-Gabb 1991), however, this species does not have threatened status in the state at present (DSE 2003a). Also at the time, Latham’s Snipe and Musk Duck did not have threatened status in Victoria.

Since the survey there has been a record of a pair of Little Bitterns (Endangered in Victoria, DSE 2003a) seen at Koomba Park during the breeding season in 1994 (Atlas of Victorian Wildlife).

Land management agencies have been reorganised since 1991 and the main responsible authorities are now Melbourne Water and Parks Victoria. The management of fish barriers in the Melbourne area is discussed by O’Brien and O’Connor (2001), in a report to Parks Victoria. Many of the issues identified above remain pertinent today.


Langwarrin
McClelland Dr
Warrandyte Rd
Robinsons Rd
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rivers, streams and waterbodies
railway line
roads
Langwarrin Flora and Fauna Reserve
N

Langwarrin Flora and Fauna Reserve

Significance: Regional A

Location:

The remnant bushland and heathland bounded by McClelland Drive, Robinsons Road and Warrandyte Road, Langwarrin. The site also includes adjacent areas of public and private land.

Land Tenure: Public land reserved for flora and fauna conservation, Railway reserve and private land.

Site Description:

The main faunal habitats are Silver-leaf Stringybark Low Open Forest, Tea-tree Heath and Swamp Scrub and are described below. For a more detailed description of these vegetation types see CFL (1986).

Tree species in the Silver-leaf Stringybark Low Open Forest include Coast Manna Gum, Swamp Gum, Narrow-leaf Peppermint and Messmate. Shrub species include Silver Banksia, Prickly Tea-tree, Green Sheoak, Tree Everlasting, Hedge Wattle and Snowy Daisy-bush. Common ground layer species include Thatch Saw-sedge, Red-fruit Saw-sedge, Common Heath, Tussock Grass and Austral Bracken.

The dominant flora species in the Tea-tree Heath are Heath Tea-tree and Prickly Tea-tree. There are a variety of other heath species present including Yellow Hakea, Green Sheoak, Common Heath, Horny Cone-bush, Guinea-flower, Spike Wattle, Showy Parrot-pea, Pink Beard-heath, Showy Bossiaea and Furze Hakea. Coast Manna Gum is scattered throughout the heath.

Swamp Scrub is the dominant habitat in low-lying water logged areas. The Swamp Scrub is dominated by Scented Paper-bark. Understorey species include Sword-sedges, Saw Sedges, Coral Fern and Fishbone Water-fern. There is a scattered overstorey of Coast Manna Gum and Swamp Gum.

This site also includes the Railway Reserve across McClelland Drive and the area of Tea-tree Heath on the property ('Spring Hill') which borders the north-west boundary of the reserve.

Reasons for Significance:

The New Holland Mouse, which is Endangered in Victoria (DSE 2003a), has been recorded at this site. This is one of two locations within the Greater Melbourne area where this species has been recorded, the other being the Royal Botanic Gardens Cranbourne Annexe. The species has also been recorded from Tyabb on the Mornington Peninsula, outside the survey area. Elsewhere in Victoria it occurs in the Gippsland Lakes area and near Anglesea. The New Holland Mouse was last trapped at Langwarrin Flora and Fauna Reserve in 1983 (Atlas of Victorian Wildlife) and on the adjacent property 'Spring Hill' in 1984, where pop holes and soil heaps characteristic of burrowing activity of this species have also been observed (P. Chance pers. comm.). During the course of this survey an effort was made to relocate the New Holland Mouse at Langwarrin Flora and Fauna Reserve. The species was not trapped in 950 trapnights (Elliot and pitfall traps) at Langwarrin Flora and Fauna Reserve and 200 trap nights (Elliot traps) at 'Spring Hill'. The New Holland Mouse was last recorded at Tyabb in 1972 and at the Cranbourne Annexe in 1976.

The Swamp Skink, which is classified as Vulnerable in Victoria (DSE 2003a), has been found inhabiting the Swamp Scrub at this site. This type of habitat was once much more widespread on the peninsula (Calder 1975). However, since European settlement much of it has been drained and cleared or damaged by grazing to the detriment of the Swamp Skink and other wetland species.

Nineteen species of regionally uncommon fauna occur at Langwarrin Flora and Fauna Reserve including the Koala, Southern Brown Bandicoot (Near Threatened in Victoria, DSE 2003a)*, Black Wallaby, Swamp Rat, Latham's Snipe (a CAMBA/JAMBA listed species and Near Threatened in Victoria, DSE 2003a*), Painted Button-quail, Southern Emu-wren, Tree Dragon and Haswell's Froglet.

The Southern Emu-wren appears to prefer the regenerating Tea-tree Heath in the northern part of the reserve, and at least eight Emu-wrens were seen in this area in June 1989. The Southern Emu-wren is rare within the survey area. There also appears to be a good population of Southern Brown Bandicoot in the reserve and on 'Springhill' as evidenced by the many diggings to be seen, especially in the dominating heath. The Southern

Brown Bandicoot has been adversely affected by urbanisation although small remnant populations persist in the urban area such as at Woodlands Golf Course, Mordialloc. Haswell's Froglet has only been recorded from three sites in the study area although it is probably more common. The Mornington Peninsula populations of Haswell's Froglet are the most western occurrences of this species.

This site also supports a good population of insectivorous bats. In seven bat trap nights 200 individual bats belonging to six species were trapped. These species were the Lesser Long-eared Bat, Chocolate Wattled Bat, Southern Forest Bat, Little Forest Bat, Large Forest Bat and Gould's Wattled Bat.

Management:

The primary objective of management should be the conservation of the fauna and flora as stated in the proposed management plan (CFL 1986).

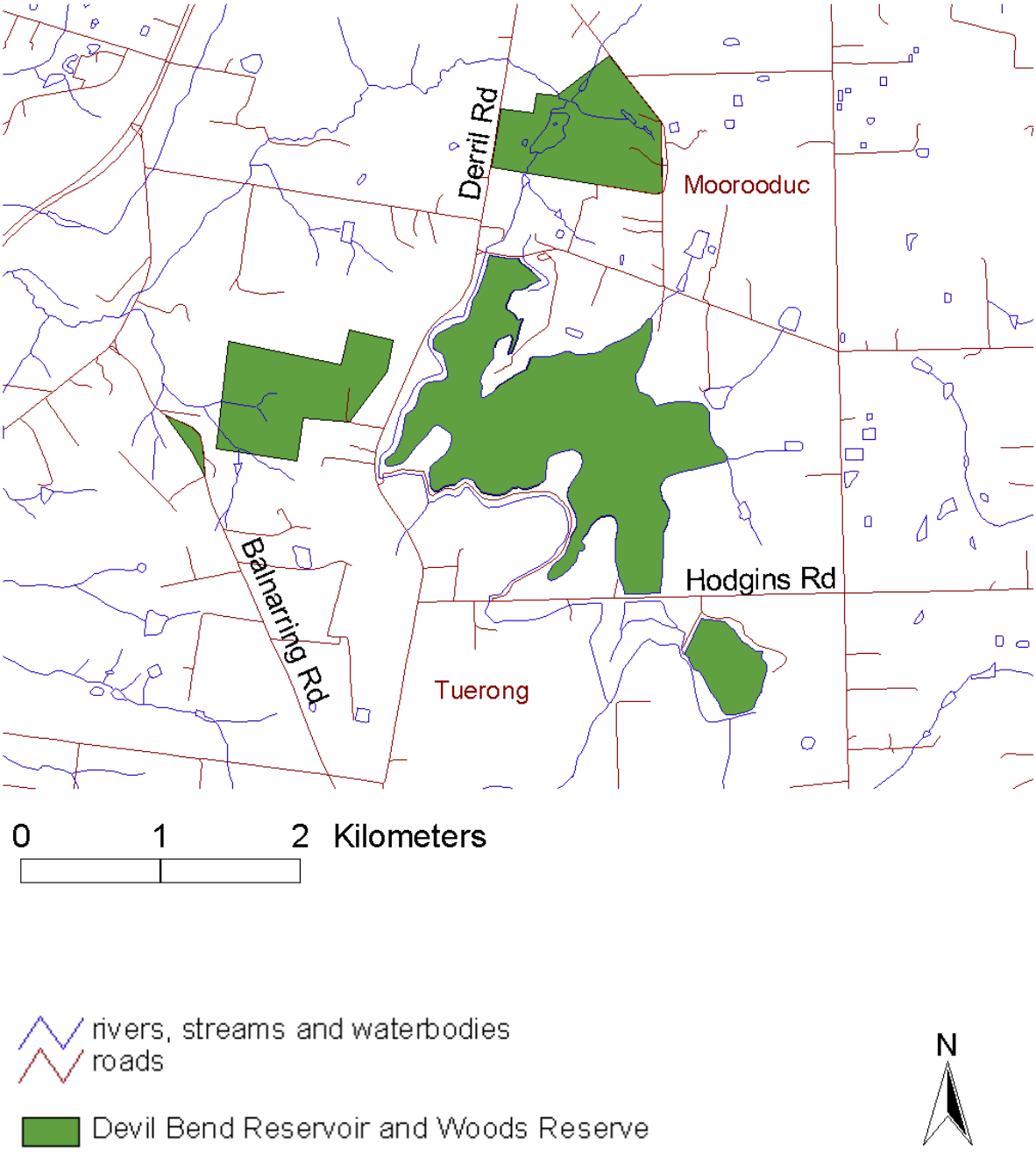
The most significant member of the faunal complement at this site is the New Holland Mouse. Considerable effort has gone into managing parts of the reserve for this species; a program of prescriptive burning has been carried out since 1980 to provide suitable habitat. The proposed management plan also outlines ways in which areas of the Langwarrin Flora and Fauna Reserve with potential New Holland Mouse habitat can be enhanced. However, there is a need to establish whether or not this species is still present. To determine this, a major trapping effort would be required, ideally during spring or summer. During this period the population density is greatest as it is post-breeding season and individuals are most active due to mild weather conditions. Such a trapping program should ideally include other areas of suitable habitat. Such habitat occurs at The Pines (Frankston), Royal Botanic Gardens (Cranbourne Annexe), Braeside Metropolitan Park and Tyabb.

Non-native predators pose a threat to fauna inhabiting the site. Black Wallaby numbers have been reduced by dog predation, and will continue to fall without dog control measures. Dogs, feral cats and foxes prey on Southern Brown Bandicoots, with the juvenile animals being particularly vulnerable. Cats and foxes also prey on Agile Antechinus, Swamp Rat, birds and some reptiles.

It is recommended that a buffer zone be established around the reserve such that the present semi-rural allotments are retained with no further subdivision. High-density urban development is incompatible with the conservation of fauna and flora and may lead to greater disturbance and degradation of the site by people and their pets. There is also an increased risk of garden plants escaping into the reserve and becoming weeds, as has occurred with of Sweet Pittosporum and Sallow Wattle (Chandler 1988).

***Editors' Note:**

At the time of the survey the Southern Brown Bandicoot and Latham's Snipe did not have threatened status in Victoria (Baker-Gabb 1991).


Derril Rd
Moorooduc
Hodgins Rd
Balnarring Rd
Tuerong
0
1
2 Kilometers
rivers, streams and waterbodies
roads
Devil Bend Reservoir and Woods Reserve
N

Devil Bend Reservoir, Bittern Reservoir and Woods Reserve

Significance: Regional A.

Location:

Devil Bend Reservoir east of Derril Road, Moorooduc South including Devil Bend Golf Course immediately to the north. Woods Reserve and surrounding bushland to the west of Derril Road and Bittern Reservoir south of Hodgins Road. Tuerong Reserve, adjacent to the south-west corner of Woods Reserve across Balnarring Road, is included in the site.

Land Tenure:

Private land and public land reserved for water supply, recreation and flora and fauna conservation.

Site Description:

The site includes the impoundments that are surrounded in part by remnant bushland of Narrow-leaf Peppermint - Manna Gum - Swamp Gum Open Forest. Understorey species include Blackwood, Cherry Ballart, Tree Everlasting, Prickly Tea-tree, Yellow Hakea and Swamp Paperbark. Ground layer species are predominantly Thatch Saw-sedge, Common Heath, Austral Bracken, Kangaroo Grass and Hop Goodenia. The adjacent Woods Reserve is vegetated by Narrow-leaf Peppermint - Messmate Stringybark Open Forest with some Manna Gum and Swamp Gum. Understorey dominants include Silver Wattle, Prickly Tea-tree, Blackwood, Cherry Ballart and Tree Everlasting. The ground layer consists mainly of Thatch Saw-sedge, Austral Bracken, Common Heath and Small Grass-trees. Woods Reserve encompasses a branch of Devil Bend Creek, a tributary of Balcombe Creek. There is similar vegetation at Tuerong Reserve while Devil Bend Golf Course contains a scattering of remnant trees and shrubs.

Reasons for Significance:

There are records of the Grey-crowned Babbler and a high diversity of waterbirds at this site. The Grey-crowned Babbler is listed as Endangered in Victoria (DSE 2003a) and survives only as a small population on the Mornington Peninsula (Schulz 1991). This population appears to be declining and the species is in danger of becoming extinct in the Greater Melbourne area. Three Grey-crowned Babblers were recorded at Devil Bend Reservoir during this survey, constituting one of few recent sightings of the bird in the study area.

Latham's Snipe (a CAMBA/JAMBA listed species and Near Threatened in Victoria, DSE 2003a*) and the Koala, both of which require monitoring in Victoria, are present at the site. There are also nineteen regionally rare and threatened species occurring here. Most of these are associated with wetlands, including the Buff-banded Rail, Great Crested Grebe, Whiskered Tern (Near Threatened in Victoria), Caspian Tern (Near Threatened in Victoria and a CAMBA listed bird), Royal Spoonbill (Vulnerable), Australasian Bittern (Endangered), Musk Duck (Vulnerable)* (DSE 2003a) and Clamorous Reed Warbler. Flocks of up to 200 Blue-billed Duck (Endangered in Victoria, DSE 2003a) winter on Devil Bend Reservoir.

Other regionally rare and threatened species occurring at the site are the Black Wallaby, Swamp Rat, Short-beaked Echidna, Delicate Skink and Eastern Small-eyed Snake. There has been an unconfirmed report that the Tree Goanna (Vulnerable in Victoria, DSE 2003a) is present at the site. If confirmed, this site would be the only location on the Mornington Peninsula where the Tree Goanna persists. The increasing urbanisation of the Greater Melbourne area has had a large impact on the Tree Goanna and it is now confined to the fringes with a very small population surviving in the Dandenong Ranges.

The site also hosts a diverse bat fauna (seven species), which are present in good numbers: in four bat-trap nights 100 individuals were trapped.

Management:

Restrictions on access to Devil Bend Reservoir and Bittern Reservoir have contributed to the maintenance of the high nature conservation value of these areas. The reservoirs are an important refuge for waterbirds in drought years and for waterfowl during the duck hunting season. The bushland areas of the reservoirs also support species of threatened fauna, including the Grey-crowned Babbler, Black Wallaby and Short- beaked Echidna. Retaining and enhancing the habitats of this site for these species and others is recommended.

Cleared areas within the reservoir boundaries could be revegetated with indigenous flora. Eradication and/or control of environmental weeds such as Blackberry and Sweet Pittosporum will increase the habitat value. Sweet Pittosporum has become a major weed species on the Mornington Peninsula (Chandler 1988). All management actions in regard to habitat need to be carried out in a manner that is compatible with the other uses of the site, such as its use as a water supply.

The main threats to the Grey-crowned Babbler are habitat loss and fragmentation and predation by cats and foxes. Management addressing these issues would benefit this species.

The native vegetation of the Mornington Peninsula has been extensively cleared, only 14% of the vegetation present prior to European settlement remains (Calder 1975). Approximately half of this is in patches suitable for the conservation of a wide range of species. Devil Bend Golf Course and Tuerong Reservoir have been included in this site to maximise the area where wildlife values need to be considered in the management of the site.

A number of regionally rare and threatened fauna utilise Woods Reserve, particularly mammals such as the Koala and Swamp Rat, and reptiles such as the Eastern Small-eyed Snake and Delicate Skink. To ensure the survival of these species there should be no clearing of the vegetation either on the reserve or on adjacent private land. Efforts should be made to confirm the presence of the Tree Goanna and to assess its status at the site.

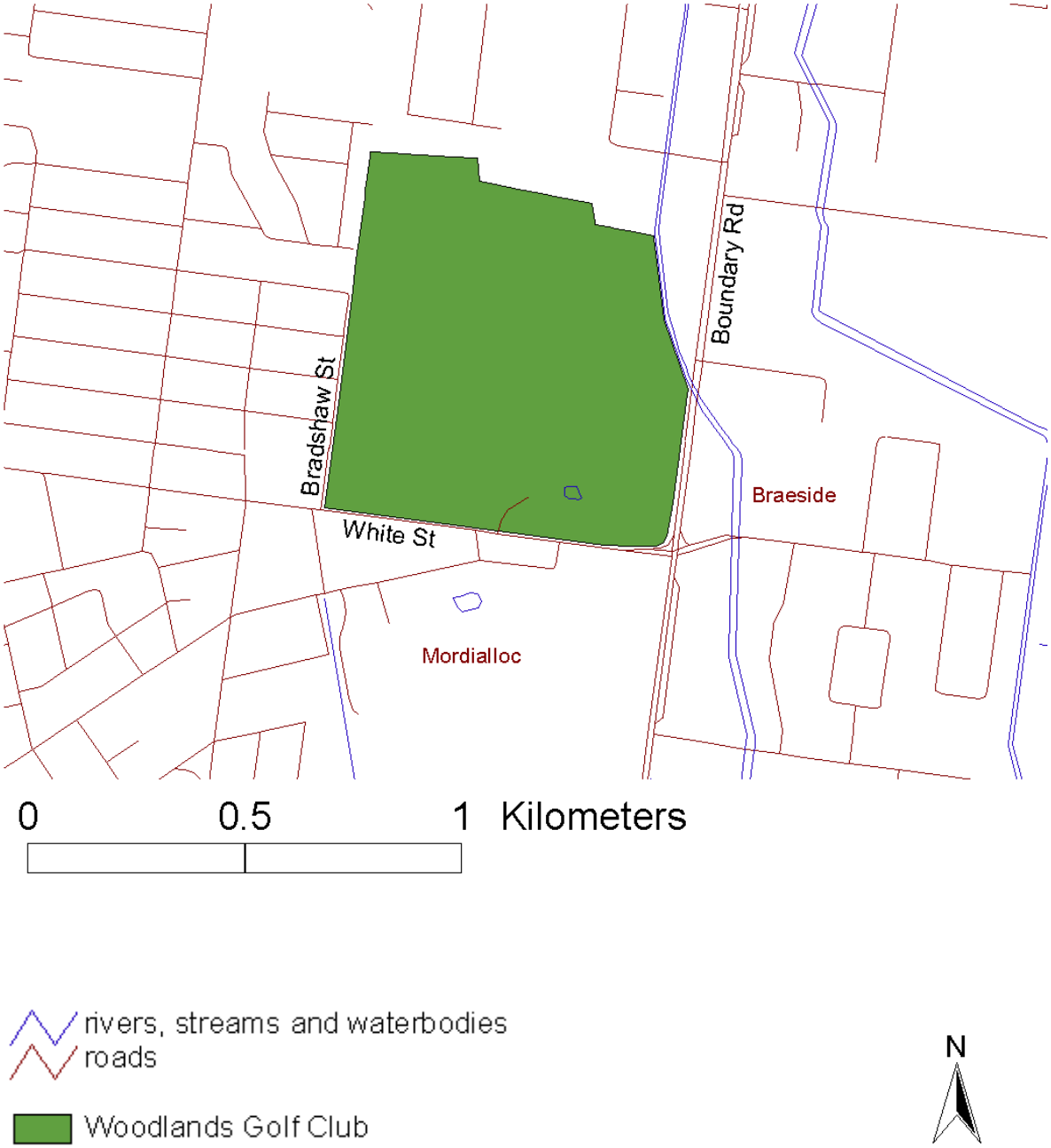
Foxes, cats (both feral and pets) and dogs can have a major impact on wildlife populations especially in small remnant areas. Cats and foxes prey on ground mammals, birds and reptiles. Dogs will harass and kill Swamp Wallabies. A control program for these introduced predators is recommended.

Any fire management plan should consider the requirements of the fauna of the site. Some management techniques, such as slashing and the clearing of fallen timber, can have detrimental impacts on the wildlife.

***Editors' Note:**

At the time of the survey Latham's Snipe and Musk Duck did not have threatened status in Victoria (Baker-Gabb 1991).

Future use of Devil Bend Reservoir is under review, as it is no longer needed for water supply. The importance of the site for conservation is highlighted by the recent discovery of a breeding pair of White-bellied Sea-Eagles (a CAMBA listed species and Vulnerable in Victoria, DSE 2003a) (B. Mitchell, pers. comm.).


Boundary Rd
Bradshaw St
White St
Braeside
Mordialloc
0
0.5
1 Kilometers
rivers, streams and waterbodies
roads
Woodlands Golf Club
N

Woodlands Golf Club

Significance: Regional A

Location:

Woodlands Golf Club is located on the corner of White Street and Boundary Road, Mordialloc.

Land Tenure: Private

Site Description:

This eighteen-hole golf club consists of open grassed fairways and greens bordered by stands of native vegetation such as River Red Gum, Coast Wattle and Coast Tea-tree. These stands are generally weed infested, with little indigenous understorey flora remaining.

Reasons for Significance:

This site contains a breeding population of the Grey-crowned Babbler, a species regarded as Endangered in Victoria (DSE 2003a). At the time of this survey it was one of only a few extant populations known on the Mornington Peninsula (Schulz 1991). The birds occurring at this site are regarded as one of the most secure populations in the region (Schulz 1991).*

The Southern Brown Bandicoot (Near Threatened in Victoria, DSE 2003a)* is widespread at this site sheltering by daytime in dense thickets adjacent to the fairways and venturing out at dusk, dawn and night into more open areas. This species was once widespread in the northern part of the study area. However, many populations have become extinct, including those at Ricketts Point and Beaumaris, and few populations are known to persist. The population at this site appears to be secure at present.*

The golf club contains a range of bushland species, some of which are uncommon in the residential section of the study area including the Common Bronzewing, Musk and Little Lorikeet,* Tawny Frogmouth and Chocolate Wattled Bat.

Management:

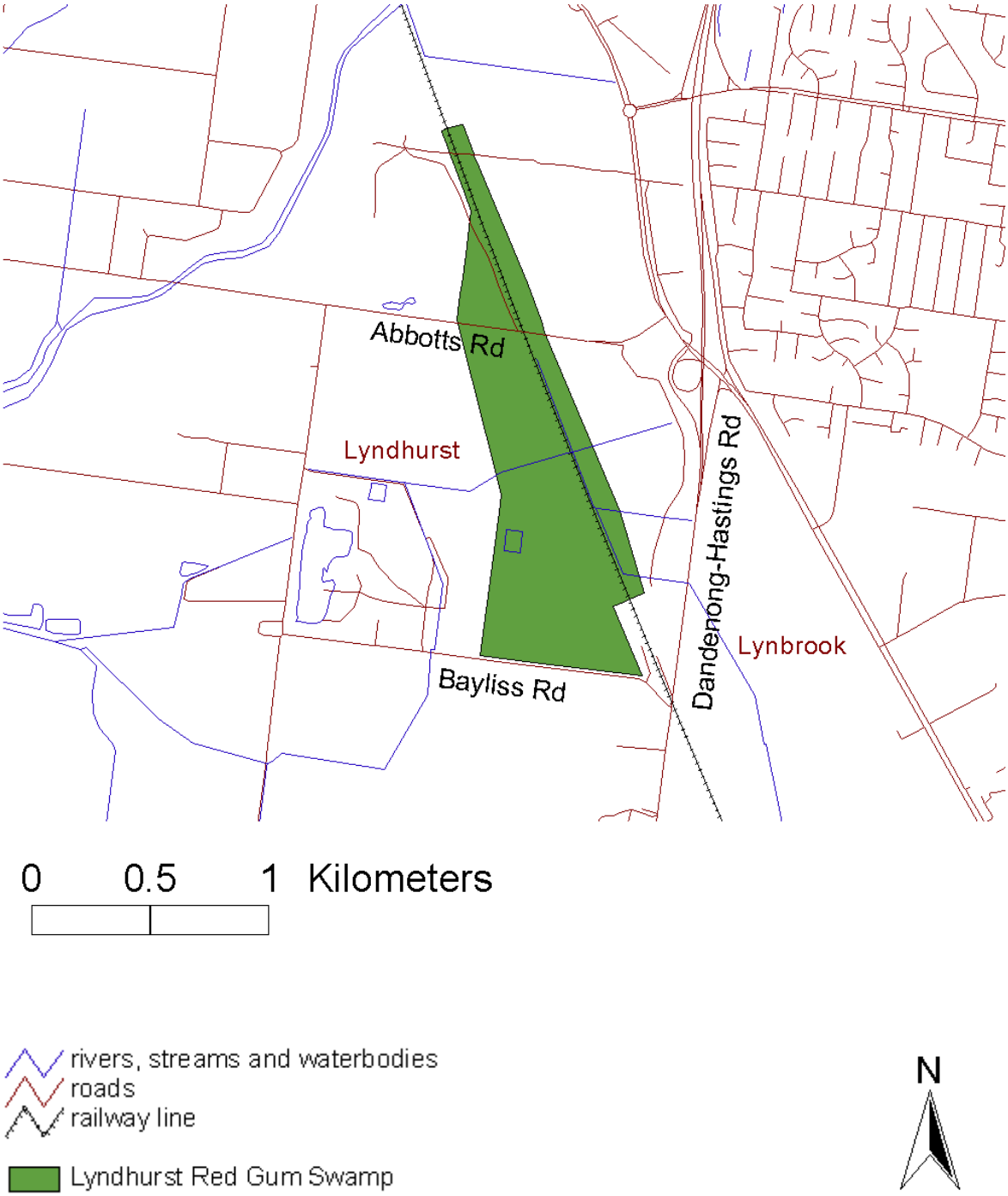
The Woodlands Golf Club has been managed in a fashion that has allowed regionally uncommon and declining species to persist at the site. Retaining existing management regimes would encourage the continuing presence of such species as the Grey-crowned Babbler and Southern Brown Bandicoot. In particular, the retention of dense undergrowth in shrubbery bordering open grassed areas would provide shelter and breeding sites. A fox eradication program would help maintain populations of these uncommon species at the site.

***Editors' Notes:**

Small numbers of Grey-crowned Babblers have been observed at this site on a few occasions during the 1990's (Atlas of Victorian Wildlife) and a pair was recorded in April 2001 (R. Pyne pers. comm.) suggesting the continued use of Woodlands Golf Club by this species.

At the time of the survey the Southern Brown Bandicoot did not have threatened status in Victoria (Baker-Gabb 1991). The current status of this species at this site is unknown, with no recent sightings recorded (Atlas of Victorian Wildlife).

The Musk Lorikeet has since become a regular visitor to Melbourne in large numbers while Little Lorikeets remain scarce.


Abbotts Rd
Lyndhurst
Dandenong-Hastings Rd
Lynbrook
Bayliss Rd
0 0.5 1 Kilometers
rivers, streams and waterbodies
roads
railway line
Lyndhurst Red Gum Swamp
N

Lyndhurst Red Gum Swamp

Significance: Regional A

Location:

Situated along the South Gippsland railway line, north-west of Lyndhurst station to north of Abbotts Road. Present in a variable width on both sides of the railway line, on the east side extending almost to the Dandenong-Hastings Road.

Land Tenure: Private, except a small section in the railway reserve.

Site Description:

West of the railway line the area is dominated by River Red Gum woodland with a sparse shrub layer of Blackberries, Blackwood and Black Wattle. The ground is typically swampy in the winter to early summer months, with Hollow Sedge, Spike Sedge and Swamp Wallaby-grass well represented. Several excavated channels and one dam are present. An area adjacent to Abbotts Road has no River Red Gums, but an extensive coverage of Swamp Wallaby-grass and other wetland flora.

On the east side of the railway line there is a scattering of large River Red Gums. Species such as Swamp Wallaby-grass and Hollow Sedge dominate this section. A number of drainage channels are present.

A channel along the edge of the railway line contains a dense stand of Bulrush and some Common Reed.

Reasons for Significance:

This site contains the most extensive stand of River Red Gum in the region and hence the best example of the faunal assemblage typical of this habitat type in the region. Hollow-nesting birds are well represented and include parrots, Southern Boobook, Barn Owl and Tree Martin. A resident population of Long-billed Corellas is present. This species is confined to the River Red Gum belt of the survey area that includes the Cranbourne-Lyndhurst-Braeside region. The Rufous Songlark, common in River Red Gum areas north of Melbourne, is a rare visitor to the region but may occur regularly at this site.

An unidentified broad-nosed bat, originally thought to be an Inland Broad-nosed bat, was captured at this site. It is probable that this was actually an Eastern broad-nosed Bat, a species previously not known from the Mornington Peninsula region. However, due to confusion about the known distribution of this species and the Inland Broad-nosed Bat at the time of the survey and the difficulty in distinguishing the two species, the identity of the specimen remains unconfirmed. Two individuals confirmed to be Eastern Broad-nosed Bats were captured at Braeside Metropolitan Park at a later stage of the survey (see Editors' Note for Braeside Metropolitan Park). At Braeside the species appears to be associated with River Red Gum habitat.

The wetland area covering much of this site contains a large population of Latham's Snipe (Near Threatened in Victoria, DSE 2003a)*, a CAMBA/JAMBA listed species. Approximately 50 individuals were recorded from both the flooded areas under the River Red Gum woodland and east of the railway line. This species has declined in the region and few sites remain where numbers of this bird regularly occur. Similar numbers of individuals are only known from three other sites in the region: Edithvale-Carrum-Seaford wetlands, South-Eastern Purification Plant and Greens Bush. It is not known whether birds move between these key areas.

A single Painted Snipe was recorded accompanying Latham's Snipe in flooded grassland beneath the River Red Gum woodland. This is the only record of this species from the study area in recent years. It is not known whether the Painted Snipe is a regular visitor to the site. This species is classified as Critically Endangered in Victoria (DSE 2003a), is a CAMBA listed bird and is one of the least-known shorebirds in Australia (Lane and Davies 1987). Its preferred habitat of shallow swamps has been destroyed at a faster rate in the more settled parts of Australia than any other wetland type (Corrick 1981, 1982).

The Spotless Crake, a regionally uncommon species, was recorded from an extensive flooded grassland area, east of the railway line. The Brown Quail was observed in small numbers on the fringes of the flooded grassland area. This species is classified as Near Threatened (DSE 2003a).* A small population of

marshland passerines is present, including the Striated Fieldwren and Little Grassbird. The Clamorous Reed Warbler nests in the dense reed thickets along the railway line.

Two species of waterbird, the Pacific Black Duck and Chestnut Teal, were recorded nesting in hollows of large River Red Gums.

One of the largest choruses of the Common Spadefoot Toad (at least 30 individuals) recorded in the survey area during the study was heard in flooded grasslands at this site.

Management:

The wetland is under direct threat from reclamation and drainage works. A section east of the railway line has recently been drained and filled for an industrial subdivision. It appears likely that the remainder of the site is under similar threat. Due to the importance of the site's faunal values steps need to be taken to protect the nature conservation values of the area.

***Editors' Note:**

At the time of the survey Latham's Snipe and Brown Quail did not have threatened status in Victoria (Baker-Gabb 1991).


Heads Rd
Donvale
Glenvale Rd
Mitcham
Deep Creek Rd
0
0.5
1 Kilometers
rivers, streams and waterbodies
roads
Mullum Mullum Creek
N

Mullum Mullum Creek

Significance: Regional A

Location:

Mullum Mullum Creek between Deep Creek Road, Mitcham and Heads Road, Donvale, and adjacent bushland, including Yarran Dheran Reserve and the Hillcrest bushland area.

Land Tenure: Public with a section of native bushland on private land adjacent to Hillcrest.

Site Description:

In a detailed survey of the flora and flora of the area, Yugovic *et al*. (1990) identified eight distinct plant communities. The vegetation along the creek is dominated by Manna Gum and some Willows with a shrub layer dominated by Sweet Bursaria, Victorian Christmas-bush, Dusty Miller, Hop Goodenia and Blackberry. The slopes above the creek is vegetated by woodland dominated by Long-leaf Box, Yellow Box and Red Stringybark. The shrub layer varies in density and is dominated by Cherry Ballart, Dogwood, Prickly Tea-tree, Sweet Bursaria and Burgan. Quarry Road crosses the creek in the middle section of the area.

Reasons for Significance:

This area contains a diverse array of fauna, with sixteen mammal, 143 bird, ten reptile and six amphibian species recorded (Yugovic *et al.* 1990).

Gould's Long-eared Bat was recorded in the Hillcrest area. This bat is uncommon within the Greater Melbourne region (Atlas of Victorian Wildlife). The presence of the Southern Forest Bat is also of interest, since it appears to be an uncommon species in the urban Melbourne area (Atlas of Victorian Wildlife).

The Sugar Gilder is common in the area. This species was moderately common along Mullum Mullum Creek in all areas of eucalypt bushland prior to captive individuals being released in the area three to four years ago (S. Baker pers. comm.). Few bushland areas with a high density of Sugar Gliders were located within the survey area.

The high recorded diversity of bird species is in part due to frequent visits by interested bird watchers over a period of time, but is also due to the area's high floristic diversity (Beardsell and Frood 1988). The riparian forest along the Mullum Mullum Creek had the greatest avifaunal diversity, with many species characteristic of the moist peppermint – stringy-bark forests typical of the Eastern Highlands. These include the Rose Robin, Australian King-Parrot and Crescent Honeyeater. Several species that are common in this habitat further to the east outside the survey area, such as Olive Whistler and Lewin's Honeyeater, occur as vagrants to the Mullum Mullum Creek (Yugovic *et al*. 1990). The avifauna of the box-stringybark woodland/open forest has affinities with north central Victoria (Beardsell and Frood 1988). A number of species that are rare within the survey area were recorded from this habitat including the Painted Button-quail and Buff-rumped Thornbill.

A number of birds rare within the survey area have been recorded as vagrants. These include the Dollarbird, Western Gerygone, Red-capped Robin, Scarlet Honeyeater, Spangled Drongo, Brush Cuckoo, Red-browed Treecreeper and the threatened Square-tailed Kite (Vulnerable), Grey Goshawk (Lower Risk – near threatened) and Powerful Owl (Vulnerable) (DSE 2003a).

A pair of Australian Owlet-nightjars appears to be resident in the area. This species is comparatively rare in urban Melbourne (Atlas of Victorian Wildlife). This is likely to be partly because the species takes from the ground (Schulz 1988, Webb 1989), exposing itself to introduced predators such as cats and foxes.

An estimated eight pairs of Tawny Frogmouths occur in the Mullum Mullum Creek area. This is a high density given that territories typically range in size from 40-80 ha (Schodde and Mason 1980). Such a density has not been reported elsewhere in urban Melbourne (Atlas of Victorian Wildlife). High densities of the Sacred Kingfisher also occur along the creek.

The Mullum Mullum Creek area supports a number of species that are present in few other areas within urban Melbourne. It is the only site known to support a breeding population of Painted Button-quail and one of a few locations for breeding Common Bronzewings. This area is probably one of the only regular sites for the Pink Robin, Rose Robin and Crescent Honeyeater, which are recorded in small numbers each year.

The White-lipped Snake, an uncommon species in urban Melbourne, was the most common snake recorded within this site.

A number of species have become locally extinct in recent years. These include the Platypus,* Brown Hare, Eastern Whipbird, White-winged Chough and the threatened Growling Grass Frog (Endangered in Victoria, DSE 2003a)* (Yugovic *et al*. 1990). Other species have declined in numbers. These include the Short-beaked Echidna, Common Wombat, Black Wallaby, Painted Button-quail, Common Bronzewing, Gang-gang Cockatoo, Pallid Cuckoo, Australian Owlet-Nightjar, Olive Whistler, Leaden Flycatcher, Dusky Woodswallow, Lowland Copperhead and Tiger Snake (Yugovic *et al*. 1990).

Management.

The Mullum Mullum Creek valley is in the path of the proposed Eastern Arterial Road. The effects of the proposed developments on the fauna are difficult to predict. However, loss and alteration of habitat associated with road construction is likely to lead to further extinctions of sensitive vertebrate species (Yugovic *et al*. 1990).

The quality of the Mullum Mullum Creek requires investigation. Suspected deterioration in water quality and increased bank erosion is likely to have contributed to local extinction of the Platypus.*

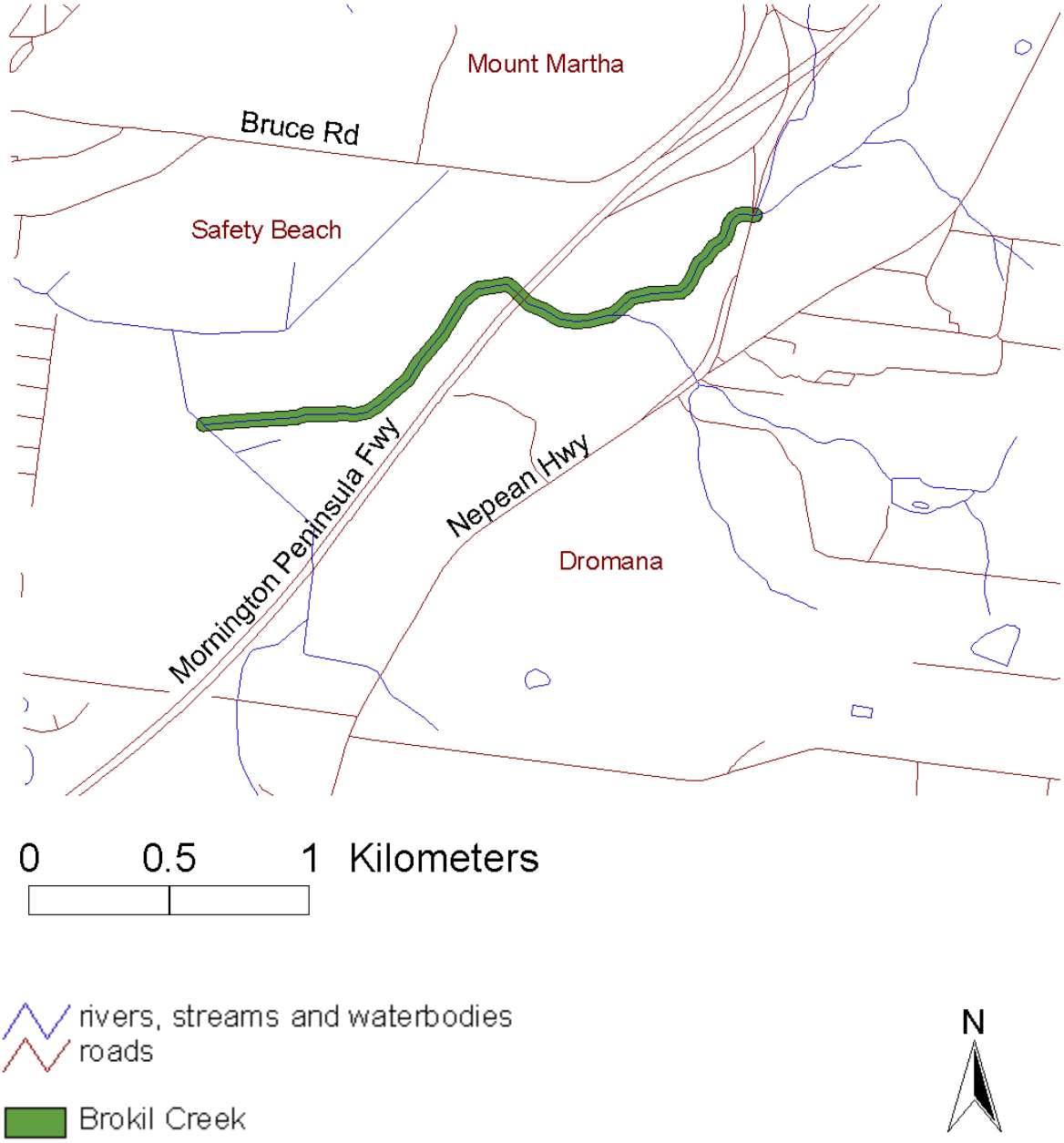
In sections along the creek introduced weeds such as the Blackberry form important breeding and shelter sites for small passerines such as the Superb Fairy-wren. Widespread elimination of such weeds, without the provision of alternative shelter sites already in place, may endanger such species in the area.

Populations of foxes, feral dogs and cats frequent the area. These introduced predators place increased pressure on the native fauna and a control and monitoring program is recommended.

***Editors' Note:**

The Platypus has returned to Mullum Mullum Creek in recent years.

At the time of the survey the Growling Grass Frog did not have threatened status in Victoria (Baker-Gabb 1991).


Mount Martha
Bruce Rd
Safety Beach
Mornington Peninsula Fwy
Nepean Hwy
Dromana
0 0.5 1 Kilometers
rivers, streams and waterbodies
roads
Brokil Creek
N

Brokil Creek

Significance: Regional A

Location:

Mid-section of the Brokil Creek, adjacent to the Mornington Peninsula Freeway, Safety Beach.

Land Tenure: Private

Site Description:

This section of the creek contains a wetland area characterized by dense Swamp Paperbark closed-scrub, with scattered Woolly Tea-tree and Prickly Moses. Scattered stands of Rush and Common Reed are present. This area lies immediately adjacent to the freeway and pastureland.

Reasons for Significance:

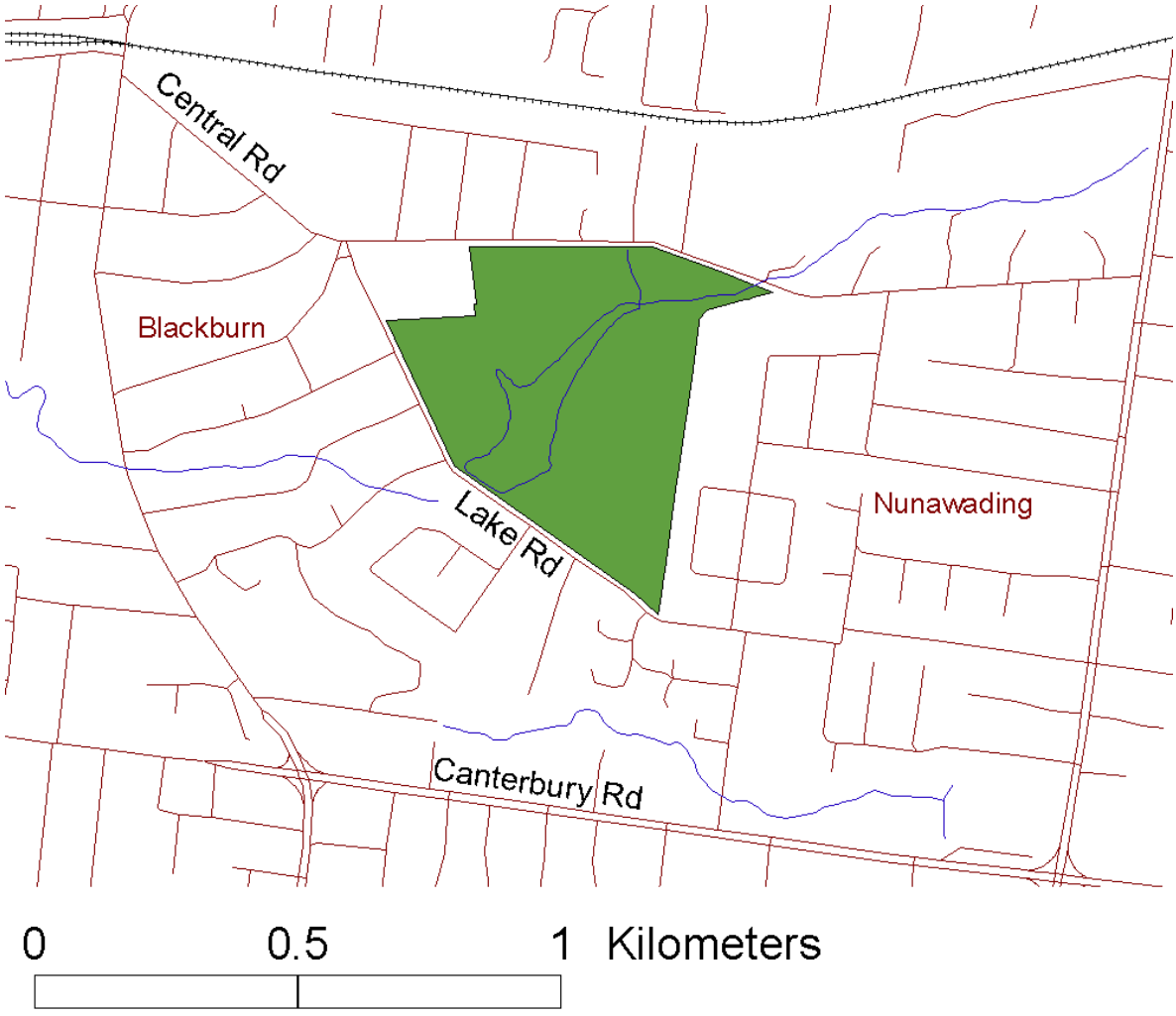
A small population of the Swamp Skink is present at the site. This species is classified as Vulnerable in Victoria (DSE 2003a) and in the present survey it was only recorded from a small number of sites on the Mornington Peninsula including Greens Bush, Boneo Swamp and a section of Nepean State Park. Other species recorded at this site include the Water Rat and Delicate Skink, the latter being present in small numbers on the edges of the closed scrub.

This site contains one of the few relatively intact stands of Swamp Paperbark closed-scrub wetland remaining in the region. Consequently it provides a good example of the faunal assemblage typical of this habitat type in the survey area.

Management:

The Brokil Creek area is used by cattle for grazing and resting purposes. Consequently a network of trails traverses this site, boggy areas are pugged, the banks of the creek have been greatly altered by trampling, and weeds have spread through sections.

Subdivision of the comparatively large grazing holdings in the area may lead to a loss of habitat and hence nature conservation values in the site.


Central Rd
Blackburn
Lake Rd
Nunawading
Canterbury Rd
0
0.5
1 Kilometers
rivers, streams and waterbodies
roads
railway line
Blackburn Lake Sanctuary
N

Blackburn Lake Sanctuary

Significance: Regional B

Location:

Remnant bushland and impoundment on the headwaters of Gardiners Creek, bounded by Central Road and Lake Road, Blackburn.

Land Tenure: Public Land

Site Description:

The site is vegetated by Long-leaf Box/Messmate Open Forest along with some Yellow Box and Swamp Gum. Understorey species include Cherry Ballart, Sweet Bursaria, Blackwood, Lightwood, Prickly Tea-tree, Drooping Cassinia and Golden Wattle. The ground layer is dominated by Kangaroo Grass, Wallaby Grass, Saw Sedge and Sword-sedge species.

Reasons for Significance:

Ninety-four bird species have been recorded at Blackburn Lake Sanctuary, a significant number for such a highly urbanised area. About one third of these have also been recorded breeding. The Critically Endangered Regent Honeyeater (DSE 2003a) has made rare appearances at this site and bred there regularly until the mid 1970's. The Peregrine Falcon is an occasional visitor.

Eleven species of regionally rare and threatened fauna occur at the site. The majority of these are bird species associated with wetlands. They are the Buff-banded Rail (recorded breeding), Darter, Nankeen Night-Heron (Near Threatened in Victoria), Australian Shelduck, Musk Duck (Vulnerable),* Australasian Shoveler (Vulnerable)* and Clamorous Reed Warbler (DSE 2003a). The Short-beaked Echidna has recently been sighted at the Sanctuary. It is significant that this species is still persisting in a suburban environment.

An attempt has been made to re-introduce the Sugar Glider back into Blackburn Lake Sanctuary: 43 gliders were released into the sanctuary between 1984 and 1985. However, only one animal has been subsequently sighted, during a four day trapping program in August 1988 (Nunawading Gazette 1988), which suggests that the re-introduction has not been successful.

Blackburn Lake Sanctuary also has cultural importance as a bushland environment regularly visited by local residents and naturalists, with bird watching as a popular activity.

Management:

The current management of Blackburn Lake Sanctuary is geared towards flora and fauna conservation and passive recreation. Continuing the management of this site with these priorities will help preserve the fauna diversity found within this remnant bushland.

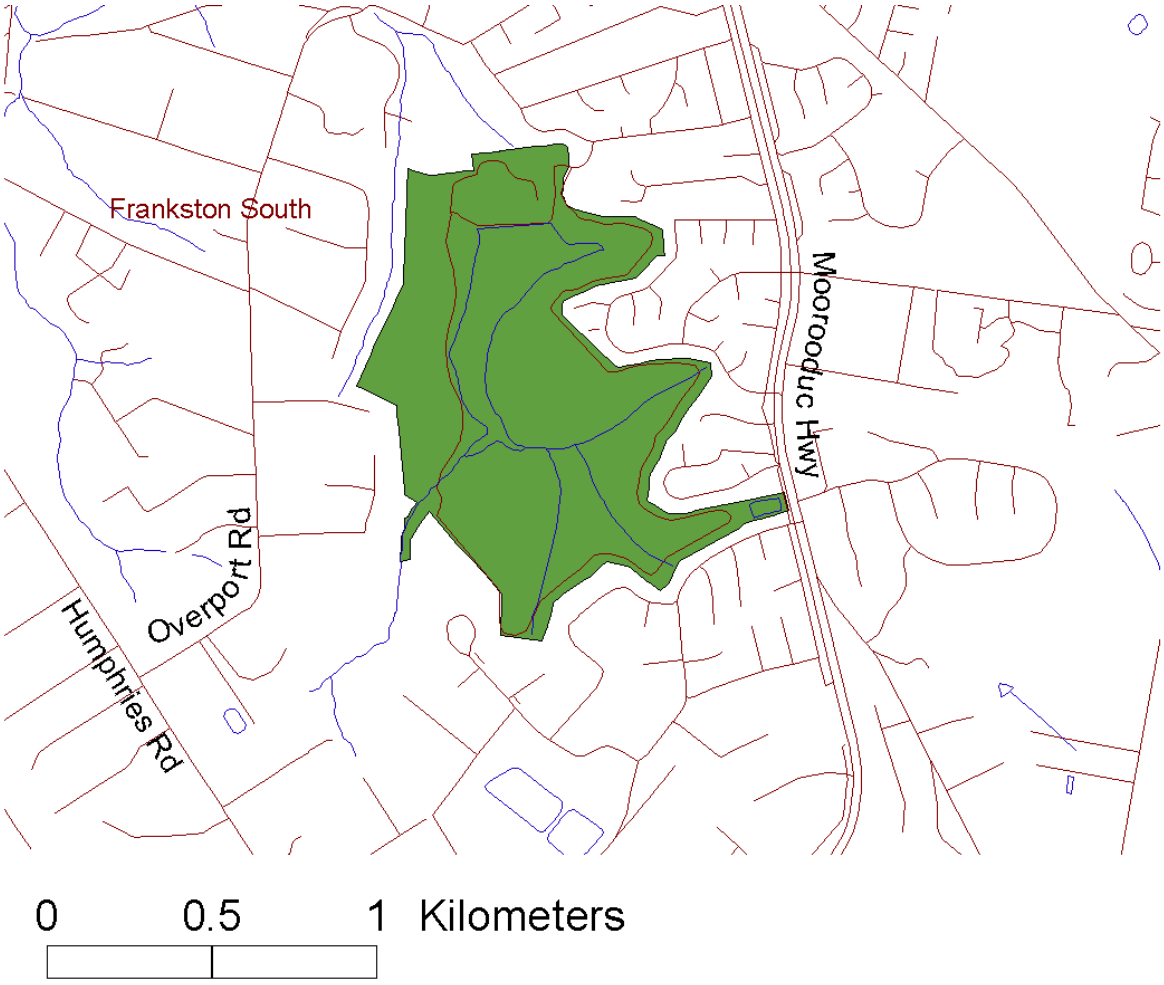
Some of the eucalyptus trees at this site are suffering from dieback, which appears to be a result of the interaction between Bell Miners, leaf-sucking insects and other insectivorous birds. The Bell Miner is very territorial and excludes other birds from its colonial areas (Loyn *et. al.,* 1983). This aggressive defence of its territory often leads to insect outbreaks, which can result in defoliation and eventual death of a tree. This interaction and other possible causes of eucalypt dieback need to be investigated further so that methods of ameliorating the problem can be developed and implemented.

There are a number of resident Mallard and Mallard-Pacific Black Duck hybrids on the lake. Removal of these birds would prevent interbreeding with the wild population of Pacific Black Ducks that visit the lake.

At the time of the survey there were few records of ground mammals, reptiles and frogs from the sanctuary and no bats had been recorded. It is possible that the Swamp Rat, Agile Antechinus and a number of bat species could inhabit or use the site. A program of small mammal and bat trapping would be a valuable step in adding to our knowledge about the fauna present at the site.

***Editors' Notes**

At the time of the survey the Musk Duck and Australasian Shoveler did not have threatened status in Victoria (Baker-Gabb 1991).


Frankston South
Moorooduc Hwy
Overport Rd
Humphries Rd
0
0.5
1 Kilometers
rivers, streams and waterbodies
roads
Frankston Reservoir
N

Frankston Reservoir

Significance: Regional B

Location:

Frankston Reservoir including the impoundment and surrounding remnant bushland within the reservoir enclosure.

Site Description:

The impoundment lies on the Sweetwater Creek. The remnant bushland comprises of three main vegetation types: Swamp Scrub of Prickly tea-tree and Swamp Gum, Tea-tree Heath dominated by Silver Banksia, Dagger Hakea and Prickly Tea-tree and Narrow-leaf Peppermint-Swamp Gum Low Forest.

Reasons for Significance:

A number of regionally rare and threatened species occur at this site. They include two waterbird species, Great Crested Grebe and Nankeen Night-Heron (Near Threatened in Victoria, DSE 2003a), which are associated with the impoundment and the creek respectively. The Bassian Thrush, Short-beaked Echidna, Black Wallaby, Swamp Rat and the Southern Toadlet (Vulnerable in Victoria, DSE 2003a)* all occur in habitat provided by the remnant bushland. This site also hosts a diverse range of bushland dwelling birds.

Ground-dwelling species such as the Bassian Thrush and Swamp Rat are potentially under threat of predation from cats and foxes. The Black Wallaby and Short-beaked Echidna are unlikely to stay in the area if harassed by dogs. A surrounding fence seems to have afforded this site some protection from disturbance associated with urban development such as dogs, cats and people; a relatively diverse faunal assemblage has persisted here.

Management:

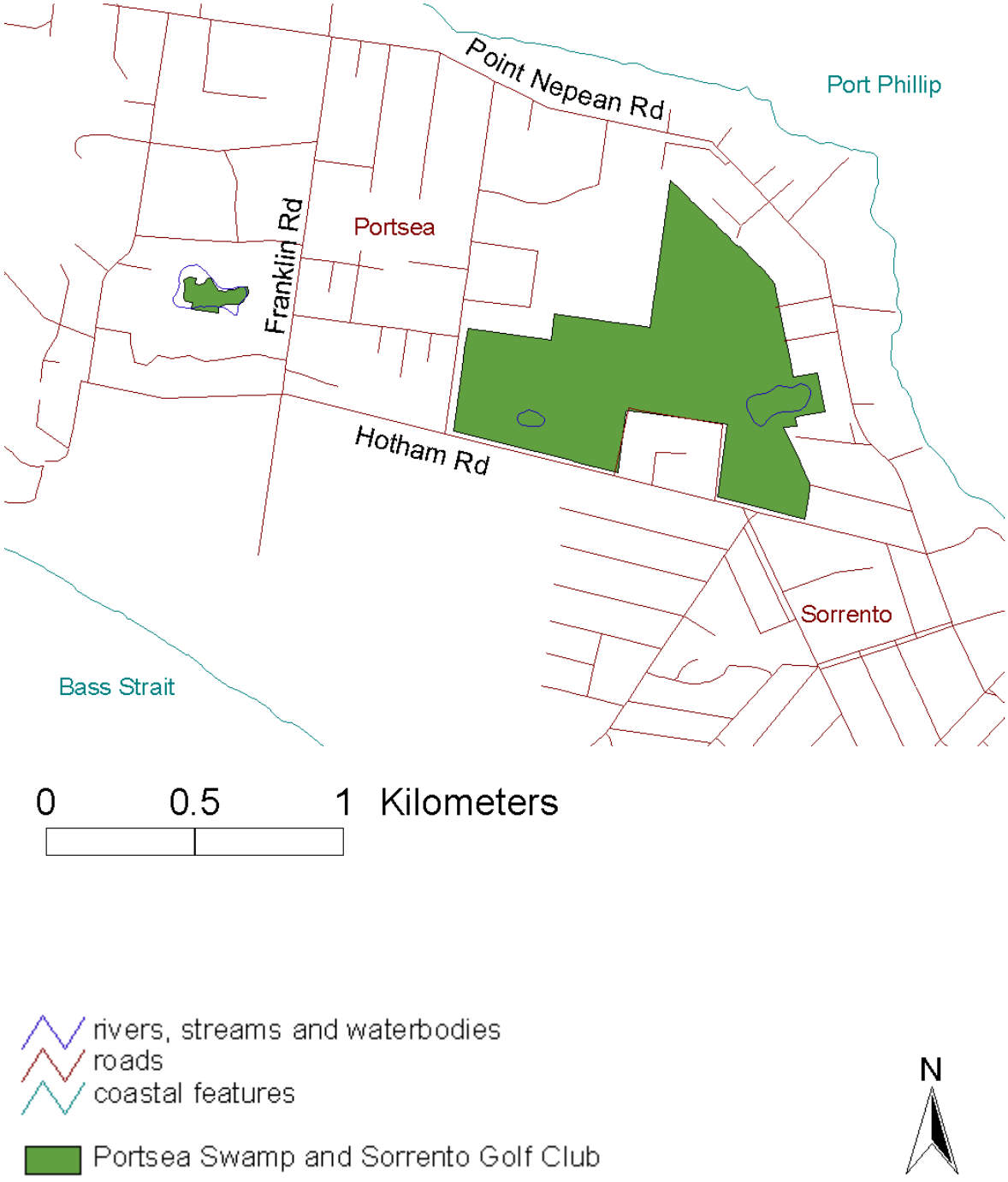
Although Frankston Reservoir is protected by a surrounding fence and is closed to the public, there is the potential for invasion by foxes. Foxes could have a severe impact on populations of small mammals and ground frequenting birds such as the Bassian Thrush. An ongoing fox control program is therefore recommended.

The quality of habitat could be enhanced by the removal of environmental weeds, which include a number of Monterey Pines. Any fire management plan for the reservoir should take into account the requirements of the wildlife.

A comprehensive fauna survey using bat traps, Elliot traps, cage traps and/or pitfall traps would help clarify the diversity of bats and small mammals present. There is minimal information on the bats and antechinus species of the area; an unidentified antechinus has been reported from the site (H. Brunner pers. comm.) and there is a historical record of the Agile Antechinus from 1976 (Atlas of Victorian Wildlife). It is possible that the Eastern Pygmy-possum is present at this site, as it has been recorded from similar habitat at Greens Bush and from Edithvale in the late 1800's. A trapping program would also assist in the identification of areas that are important to small mammal populations.

***Editors' Note:**

At the time of the survey the Southern Toadlet did not have threatened status in Victoria (Baker-Gabb 1991).


Point Nepean Rd
Port Phillip
Franklin Rd
Portsea
Hotham Rd
Sorrento
Bass Strait
0
0.5
1 Kilometers
rivers, streams and waterbodies
roads
coastal features
Portsea Swamp and Sorrento Golf Club
N

Portsea Swamp and Sorrento Golf Club

Significance: Regional A

Location:

This site contains two separate areas:

1. Remnant wetland between Farnsworth Avenue and Franklin Road, Portsea

2. Wetlands and surrounding coastal scrub on the eastern side of Sorrento Golf Club.

Land Tenure: Private (both areas)

Site Description:

The Farnsworth Avenue wetland is surrounded by residential development and several small grazing areas. The site consists of a shallow wetland that frequently dries out over the summer period. Several small islands are present. There are patches of Beaded Glasswort and Creeping Brookweed, particularly on the western edge. Rubble and other rubbish have been dumped on the edges and within parts of the wetland.*

The largest wetland in the Sorrento Golf club is surrounded by areas of bare mud and stands of Chaffy Saw-sedge and Spike Sedge. The shoreline is backed by a variable band of dense coastal scrub dominated by species such as the Coast Wattle and Coast Tea-tree. Two smaller wetlands are lined with Common Reed. Algal growth is generally present on the surface of the largest wetland. All these wetlands are located within the Sorrento Golf Club, an extensive eighteen-hole golf course with open fairways and patches of remnant indigenous vegetation.

Reasons for Significance:

Few wetlands occur naturally on the tip of the Mornington Peninsula, west of Rye. The wetlands of this site contain the highest nature conservation values of any wetlands in this area.

The Black-winged Stilt regularly breeds in small numbers on the islands of the wetland at Farnsworth Avenue. For example, in summer of 1986-87 two broods (of three and four chicks) and summer of 1987-88 three hatchlings were recorded (S. Hughes pers. comm.). This species moves between the Farnsworth Avenue wetland and the largest wetland in the Sorrento Golf Club, particularly when the juvenile birds are able to fly. As the Farnsworth Avenue wetland dries out, birds either move to the Sorrento Golf Club wetlands or leave the area. The Black-winged Stilt is an uncommon breeding species in the region. During the survey it was only recorded nesting at two other sites: Edithvale-Carrum-Seaford wetlands, South-Eastern Purification Plant and the mouth of the Yarra.

Other regionally uncommon waders occur irregularly on both wetland sites, including the Red-kneed Dotterel, Sharp-tailed Sandpiper and Latham's Snipe (Near Threatened in Victoria, DSE 2003a)*, the latter two are CAMBA/JAMBA listed species.

A number of additional waterbirds have been recorded breeding at Farnsworth Avenue wetland, including the White-faced Heron, Chestnut Teal and Grey Teal.

The surrounding remnant coastal scrub supports a variety of indigenous fauna. For example, some 46 species of terrestrial birds have been recorded, including the Southern Boobook, Restless Flycatcher, Scarlet Robin and Brown-headed Honeyeater. A Grey-headed Flying-Fox (Vulnerable in Victoria, DSE 2003a) was recorded from the area in 1987, at a time when numbers of this species were present in the Royal Botanic Gardens and other parts of Melbourne. The Swamp Rat was present at both sites. The Metallic Skink is widespread and common. The only amphibian recorded during the survey was the Southern Bullfrog.

Management:

The Farnsworth Avenue wetland has been the subject of proposals for drainage and land reclamation works. Such activities would be likely to result in the loss of water-bird breeding sites. The construction of houses

and other developments may increase human disturbance reducing the nature conservation values of the site. The small islands and wetlands are regionally important as breeding habitat for the Black-winged Stilt.

Foxes and cats (feral and domestic) are potential predators of nestling Black-winged Stilts and other breeding waterbirds. A fox and feral cat eradication program would help protect breeding animals. An education program is recommended for local residents on the effects of domestic cats on native wildlife.

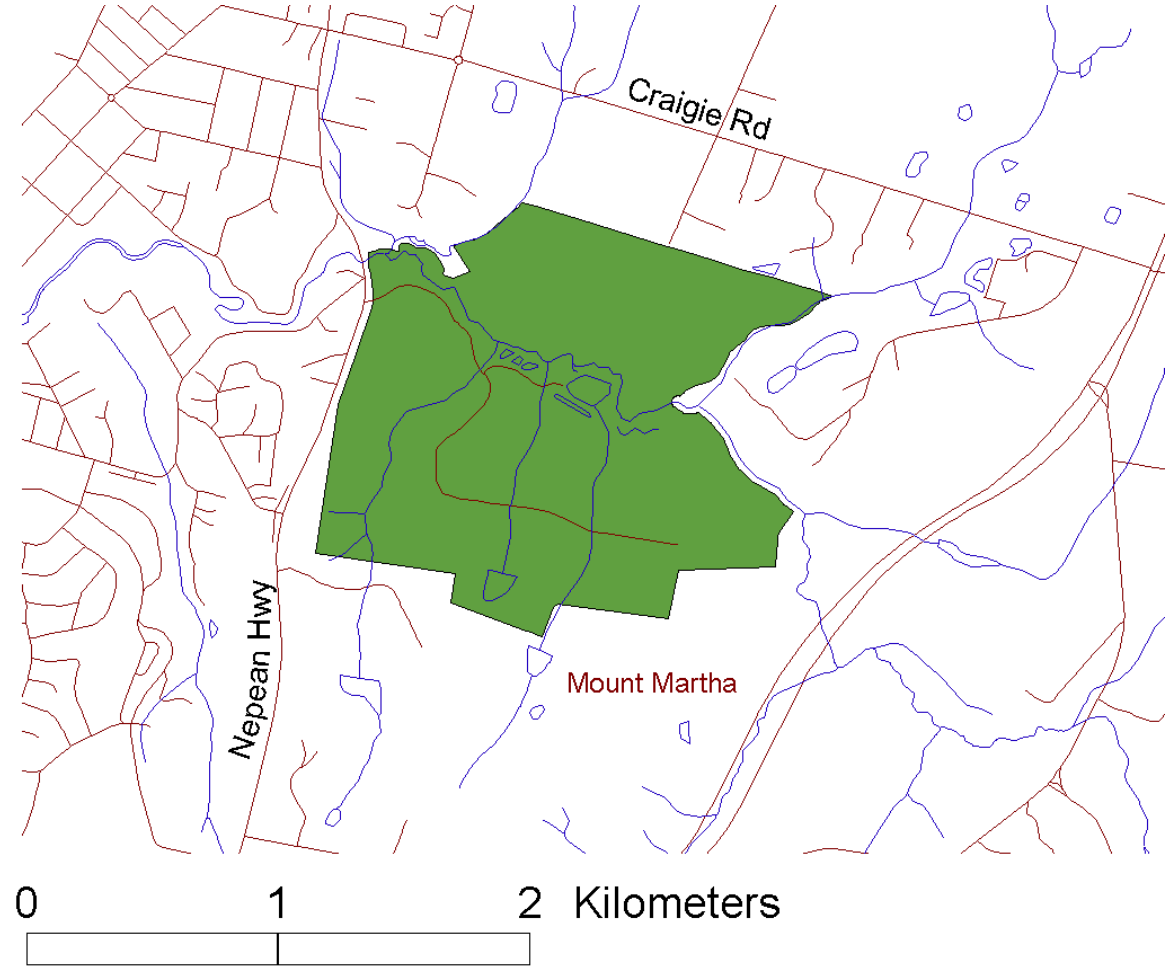
The mudflats, adjacent sedgelands and coastal scrub of this site should be maintained where possible under the current golf club management regime. The adjoining coastal scrub helps screen the wetland from golf course users and is therefore important in maintaining the conservation values of the site.

***Editors' Notes:**

The Farnsworth Avenue wetland is now surrounded by houses to the east, north and west while much of the southern margin supports rank grassland and patchy shrubland. Water levels are now managed by the Mornington Peninsula Shire in conjunction with local residents through addition of fresh water from a bore pump. Complete drying of the wetland no longer occurs and the vegetation is increasingly dominated by permanent wetland species such as Common Reed and Cumbungi (Tonkinson and Loyn 1997).

At the time of the survey Latham's Snipe did not have threatened status in Victoria (Baker-Gabb 1991).

The wetland has proved to be an important habitat for crakes, with Australian Spotted Crake and Baillon's Crake (Vulnerable in Victoria, DSE 2003a) seen regularly, e.g. in October 1997 (Tonkinson and Loyn 1997).


Craigie Rd
Nepean Hwy
Mount Martha
0
1
2 Kilometers
rivers, streams and waterbodies
roads
The Briars
N

The Briars

Significance: Regional B

Location:

The Briars historical property located along Balcombe Creek, east of the Nepean Highway, Mount Martha.

Land Tenure: Public (Shire of Mornington)

Site Description:

On the north side of Balcombe Creek there is an area of remnant indigenous bushland. The bushland is dominated by Manna Gum with a dense shrub layer including Swamp Paperbark, Hedge Wattle, Silver Wattle and Silver Banksia. Stands of Swamp Paperbark occur along Balcombe Creek. A wetland has been created on the south side of the creek, with areas of open water and reed bed/sedgeland thickets. The remainder of the property consists largely of cleared grazing land. A bird hide is located on the edge of the wetland.

Reasons for Significance:

The bushland area supports a diversity of fauna, including regionally uncommon species such as the Crested Shrike-tit, Sugar Glider, Koala, Chocolate Wattled Bat, Southern Forest Bat and Tree Dragon. The fauna present is largely typical of this forest type on the Mornington Peninsula. The Australian King-Parrot was observed at this site but is thought to be a vagrant to the area.

The Rufous Fantail occurs along Balcombe Creek and is likely to breed in the area. Numbers of Crescent Honeyeater and Golden Whistler also occur along the creek.

The wetland area supports a small population of regionally widespread waterbird species. The numbers of species recorded utilizing the wetland is increasing as the swamp becomes established. The Growling Grass Frog occurs in and around the wetland area. This species is classified as Endangered in Victoria (DSE 2003a).*

Management:

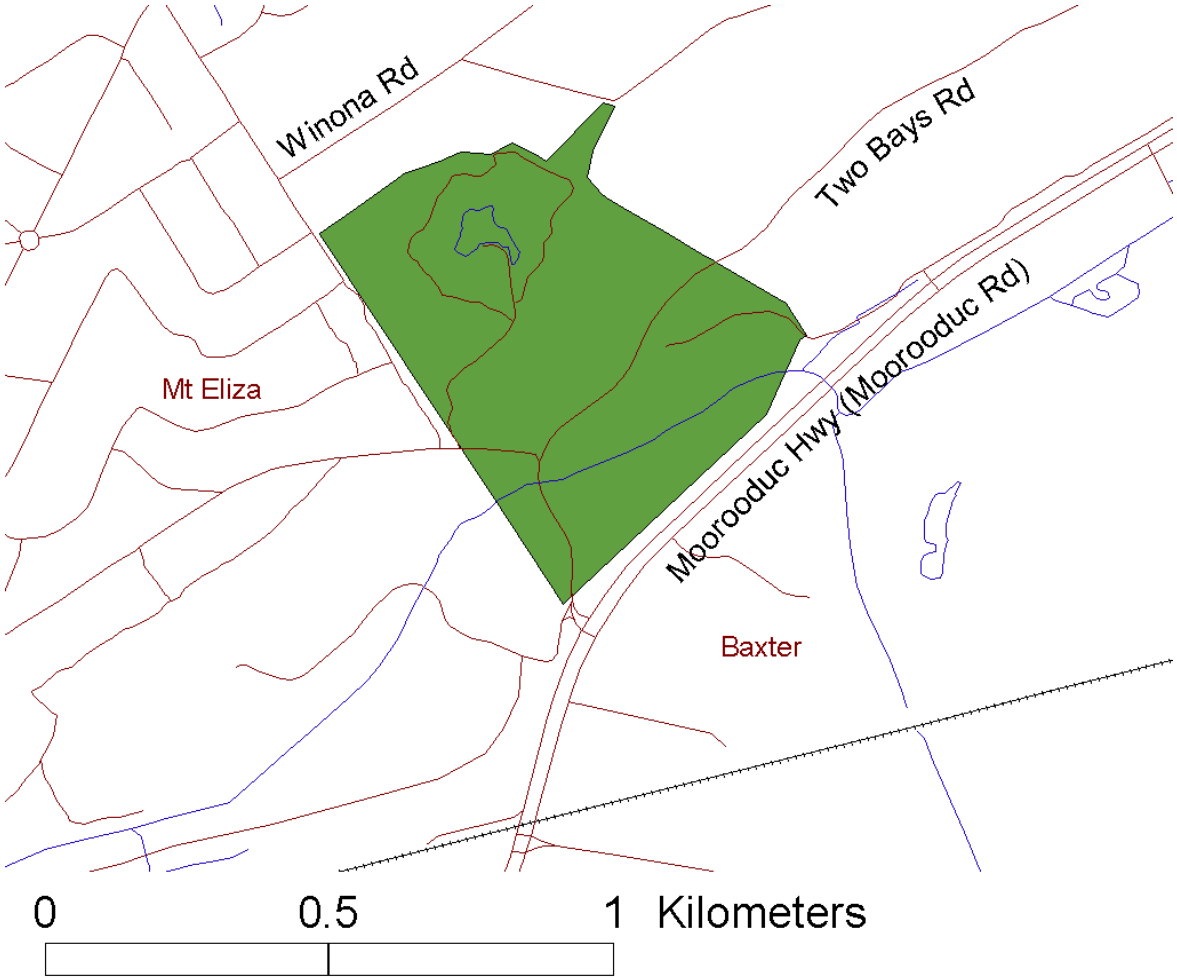
The bushland area is one of the few of its type reserved for nature conservation in the region. This factor together with the generally restricted public access and the planting and re-creation of additional bushland habitat makes this section of the Briars important in terms of a regional faunal context. Few other Manna Gum bushland areas retaining original understorey vegetation remain on the Mornington Peninsula.

As the wetland becomes established the area is likely to support numbers of breeding and/or regionally uncommon waterbirds. Although no crakes or small rails were recorded during the survey it is possible that in time several species will take up residence or become regular visitors.

The area presents great potential for environmental education. The provision of a bird hide complete with accompanying interpretative material and the construction of a nature trail and the regular conduct of spotlight and other guided walks will make The Briars a tremendous asset for environmental education.

***Editor's Note:**

At the time of the survey the Growling Grass Frog did not have threatened status in Victoria (Baker-Gabb 1991).


Winona Rd
Two Bays Rd
Mt Eliza
Moorooduc Hwy (Moorooduc Rd)
Baxter
0
0.5
1 Kilometers
river, streams and waterbodies
roads
railway line
Moorooduc Quarry Reserve
N

Moorooduc Quarry Reserve

Significance: Regional B

Location:

Bushland (approximately 20 ha) on the corner of Moorooduc Road and Canadian Bay Road.

Land Tenure: Public land reserved for flora and fauna.

Site Description:

The site is predominantly Narrow-leaf Peppermint/Messmate Open Forest with some Swamp Gum in lower areas. The understorey is characterised by Cherry Ballart, Blackwood, Prickly Tea-tree and Shiny Cassinia. There is also some Sallow Wattle and Sweet Pittosporum in the understorey. The site also includes an abandoned water-filled quarry and a reclaimed tip south of Two Bays Road. Balcombe Creek runs through the southern end of the site.

Reasons for Significance:

Four regionally threatened species occur at this site: Bassian Thrush, Short-beaked Echidna, Black Wallaby and the Southern Toadlet (Vulnerable in Victoria, DSE 2003a)*. The Bassian Thrush is a ground-frequenting species and the adults and young are therefore vulnerable to predation by cats and foxes. The Short-beaked Echidna also falls prey to foxes and can be harassed by dogs. Dogs will also harass resident Koalas when they are on the ground while moving between trees. The Black Wallaby was last recorded at this site in 1983 (Atlas of Victorian Wildlife). No sign of this species was observed during this survey.

Four species of bats were recorded from the site, White-striped Freetail Bat, Gould's Wattled Bat, Little Forest Bat and Lesser Long-eared Bat. The Sugar Glider also occurs here despite the encroachment of residential development. Sugar Gliders are preyed upon by cats (domestic and feral).

A variety of bushland bird species frequent the site including the Scarlet Robin, Satin Flycatcher, four species of lorikeet and ten species of honeyeater. A small colony of Bell Miners occurs at the reserve. At the time of the survey, this was one of the two known populations on the Peninsula.*

Management:

The control of cats and foxes is required if species such as Bassian Thrush and Sugar Glider are to survive. Dogs are a threat to the continued survival of the Short-beaked Echidna and the Koala. The presence of dogs will also diminish the chances of the Black Wallaby becoming re-established.

There are signs of dieback in some of the eucalyptus species (especially the Swamp Gums) on the site that may be caused by the activities of the Bell Miner. The monitoring of Bell Miner populations would help determine this.

A control program aimed at weeds such as Blackberry and Kikuyu is recommended. Kikuyu is blanketing the ground near the quarry and at the old tip site. There are also environmental weeds present, such as Sallow Wattle and Sweet Pittosporum which are natives originating from far east Victoria that have escaped from gardens into bushland areas. Both these plants are problem weeds throughout Mornington Peninsula (Chandler 1988). Revegetating the reclaimed tip area with endemic plant species would enhance the area for wildlife.

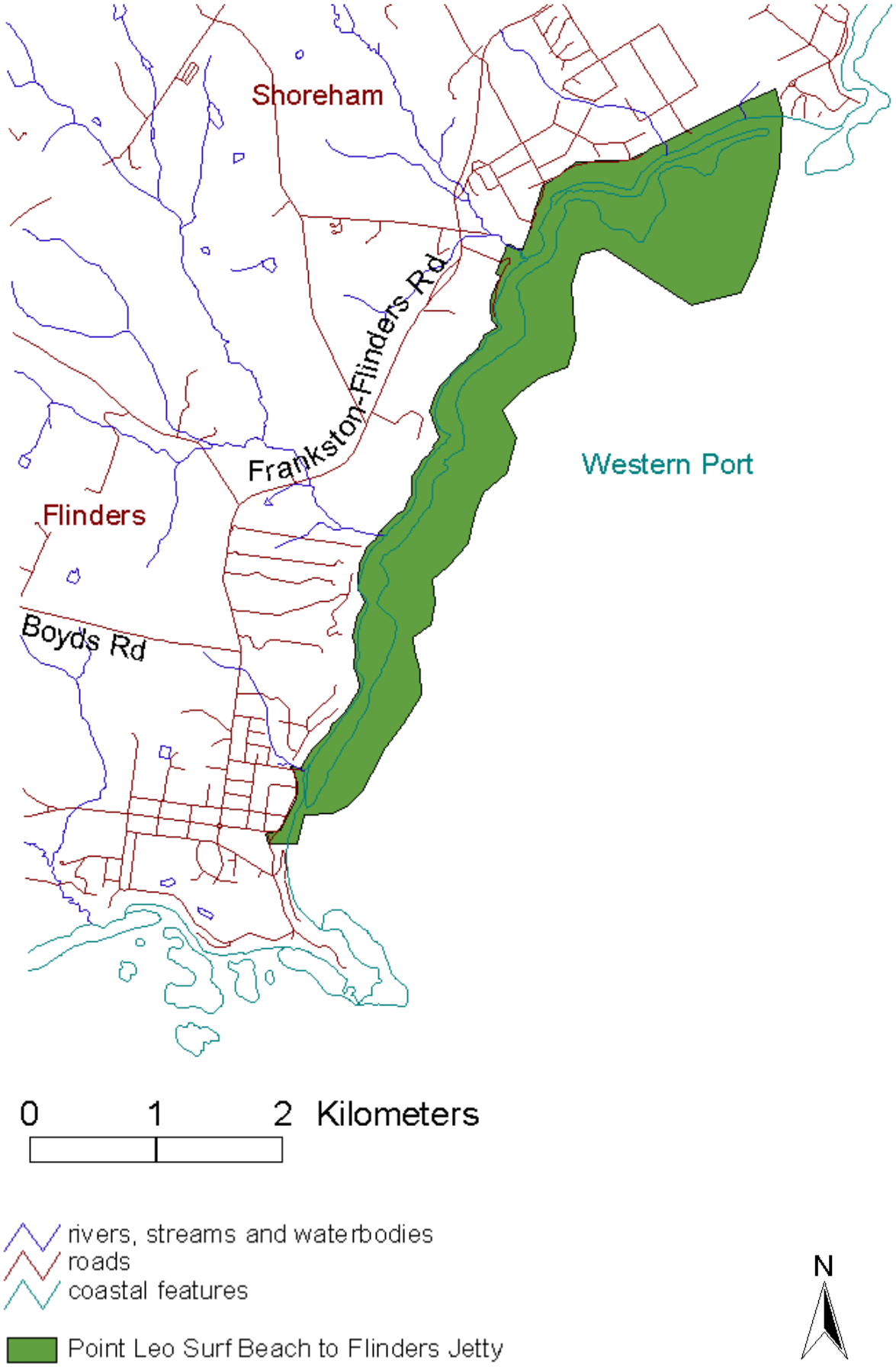
A survey of the reserve to identify the presence of small mammals would provide useful data. There may be marsupial mice present such as the Agile Antechinus as well as native rodents such as the Swamp Rat.

This area has the potential to be a resource for outdoor environmental education both formally (within the school system) and informally.

***Editors' Note:**

At the time of the survey the Southern Toadlet did not have threatened status in Victoria (Baker-Gabb 1991).

The Bell Miner colony has grown and caused some management concern because of the associated increase in psyllids and dieback (Loyn and Smith 1999). Bell Miners now occupy several sites on the Mornington Peninsula (Atlas of Victorian Wildlife).


Shoreham
Frankston-Flinders Rd
Western Port
Flinders
Boyds Rd
0 1 2 Kilometers
rivers, streams and waterbodies
roads
coastal features
Point Leo Surf Beach to Flinders Jetty
N

Coastline - Point Leo Surf Beach to Flinders Jetty.

Significance: Regional B, International Treaty Significance

Location:

This site includes the foreshore and a varying width of native vegetation backing the shore between Point Leo Surf Beach and Flinders Jetty.

Land Tenure:

The foreshore and much of the adjacent band of native vegetation is public land. Small stands of Manna Gum and Drooping Sheoak are on nearby private land.

Site Description:

The shoreline is characterised by a series of basalt reef platforms connected by sandy beaches. Much of the vegetation on adjoining headlands and dunes has been cleared and is heavily infested with weeds. However, there are patches of native vegetation, such as stands of Drooping Sheoak, Coast Banksia and Manna Gum are present.

Reasons for Significance:

This site is one of the few localities on the Mornington Peninsula where the Red-capped Plover has been recorded nesting. Up to 52 Red-capped Plovers have been recorded along this stretch of coastline, with the highest concentrations observed during the winter period. Also infrequently present during this time are small numbers of Sooty Oystercatchers (Near Threatened in Victoria, DSE 2003a)*. A wader roost site and feeding area is centred on Honeysuckle Reef. Here up to 150 migratory waders have been recorded roosting amongst beach-cast sea grass or feeding on the exposed reef platforms. Species recorded include the Pacific Golden Plover (Near Threatened in Victoria, DSE 2003a)*, Grey Plover (Near Threatened in Victoria, DSE 2003a)*, Double-banded Plover, Curlew Sandpiper and Red-necked Stint. Many of these species are covered under the CAMBA/JAMBA Treaties. This wader site was not identified in Andrew *et al.* (1984).

A variety of bush birds frequent the remnant stands of native vegetation, including the Sacred Kingfisher, Singing Honeyeater and Spiny-cheeked Honeyeater. The last two species breed in the area and are near the eastern edge of their range (Emison *et al*. 1987).

The Koala, Sugar Glider and Southern Boobook also frequent bushland in the Shoreham Beach area. Populations of the Swamp Rat are present on the seaward side of the headland vegetation south-west of Shoreham and at Boyd Point. The Metallic Skink also occurs in these areas.

Management:

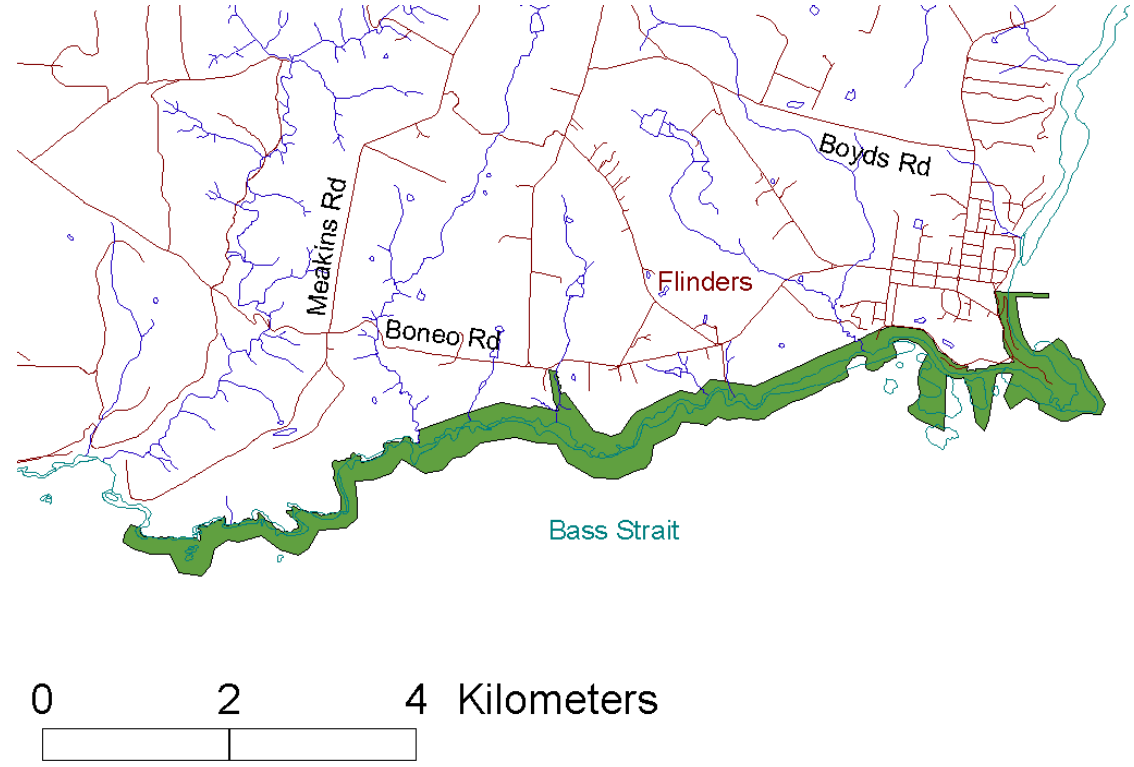
Waders frequenting this stretch of coastline have declined in the last ten years (M. Schulz pers. obs.) The Red-capped Plover formerly nested on beaches that received only low visitation by beach goers. However, in the last five years the combination of an increased number of dwellings erected close to the coast and increased usage of the shoreline by people and dogs appears to have resulted in absence of breeding Red-capped Plovers since 1986 (M. Schulz pers. obs.).

The marine life on the exposed reef platforms has been subject to illegal harvesting. Such activities may in the long-term reduce food availability to large wading birds including White-faced Herons and Australian White Ibis.

The presence of introduced weeds such as Blackberries and the African Boxthorn provide nesting and shelter sites for a number of birds, including the Superb Fairy-wren, Singing Honeyeater and Red-browed Firetail. Extensive removal of these weeds may eliminate these birds from the area.

***Editors' Note:**

At the time of the survey the Sooty Oystercatcher Pacific, Golden Plover and Grey Plover did not have threatened status in Victoria (Baker-Gabb 1991).


Meakins Rd
Boneo Rd
Boyds Rd
Flinders
Bass Strait
0
2
4 Kilometers
rivers, streams and waterbodies
roads
coastal features
Flinders Jetty to Picnic Point
N

Coastline - Flinders Jetty to Picnic Point

Significance: Regional A, International Treaty Significance

Location:

This site includes the shoreline and a band of vegetation of varying width, backing the coast between Flinders jetty and Picnic Point.

Land Tenure:

The coastline and much of the adjacent narrow band of vegetation adjacent is public land. A naval gunnery range is present at West Head, with restricted public access. Private grazing land occurs to the cliff edge along much of the coast between "The Blowhole" and Picnic Point.

Site Description:

The rugged coastline is characterised by towering cliffs, exposed reef platforms, short rocky beaches and thundering swells. At Flinders Ocean Beach there is a series of extensive reef platforms backed by a narrow sandy beach. Tussock grassland with scattered thickets of species such as the Coast Beard-heath, predominate between West Head and "The Blowhole". West of the latter locality to Picnic Point, pastureland stretches to the cliff tops and scattered stands of remnant native vegetation are mainly present where stock are unable to gain access.

Reasons for Significance:

The Flinders Ocean Beach reef system and adjacent beach are an important locality for waders. A maximum count of 89 Ruddy Turnstones, a CAMBA/JAMBA listed species, accounts for over 10% of the estimated state's population (RAOU Wader Count data). Smaller numbers of other waders use this area, including the Sooty Oystercatcher (mainly a winter visitor) (Near Threatened in Victoria, DSE 2003a)*, Red-capped Plover, Pacific Golden Plover (Near Threatened in Victoria, DSE 2003a)*, Double-banded Plover and Red-necked Stint (a CAMBA/JAMBA listed species). The Hooded Plover (Vulnerable in Victoria, DSE 2003a) is a rare visitor to this section of coastline and no breeding records have been made.

Concentrations of up to 80 White-faced Herons regularly frequent the reef platforms at the Flinders Ocean Beach. Roosting flocks have been observed on decaying seaweed banks or in adjacent pine trees.

The tussock grassland on the cliff tops and steep slopes between Double Creek and "The Blowhole" contain an assemblage of fauna poorly represented on the Peninsula. The White-lipped Snake, Glossy Grass Skink (Near Threatened in Victoria, DSE 2003a), Metallic Skink, and Swamp Rat are present. Of special interest is a population of Agile Antechinus. This species typically frequents a variety of forested habitats (Braithwaite 1979) rather than coastal tussock grassland with a scattering of shrubs. Such a habitat is more characteristic of the Swamp Antechinus (Wainer 1976). The Singing Honeyeater and Striated Fieldwren are common breeding residents. Several records of the Brown Quail (Near Threatened in Victoria, DSE 2003a)* suggest a small resident population.

The Swamp Rat is common in coastal vegetation between the Flinders jetty and the Flinders Ocean Beach. At the latter locality burrows have been found under several beach houses.

Unidentified bats have also been reported from this stretch of coastline in several sea caves. Searches during the present survey failed to detect any bats. However, as Eastern Bent-wing Bat colonies are known nearby (see Coast - Picnic Point to Gunnamatta Beach), it is likely that bats use these sea caves on occasions.

Management:

The numbers of waders frequenting the reef platforms at Flinders Ocean Beach is surprising in view of the heavy public usage of the area. Disturbance to these birds is principally due to uncontrolled dogs and it is recommended that only dogs on leashes be allowed into this area.* The reef platforms along this coastline are subject to illegal gathering of marine invertebrates.

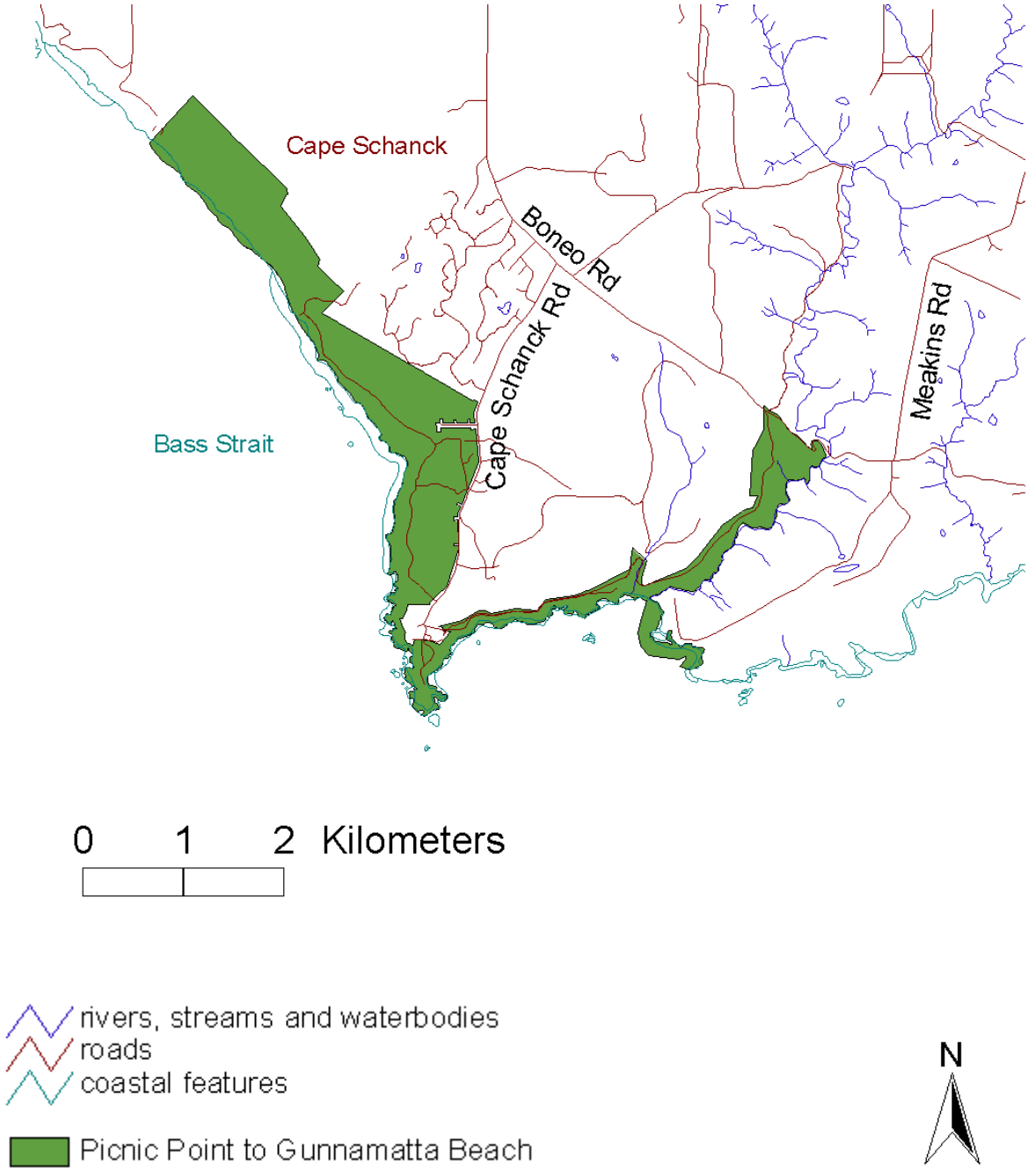
The coastline between "The Blowhole" and Picnic Point is grazed to the edge of the cliff tops. As a result there is very little native vegetation and a low fauna diversity occurring along this section. In order to connect the important cliff top tussock grasslands in the "Blowhole" area to Nepean State Park at Bushrangers Bay it is recommended that a distance of 50 m back from the cliff tops and gullies incising the cliff line be fenced off from livestock. Such an initiative would not only form a corridor along the cliff tops for tussock grassland inhabiting fauna but will also lead to an expansion in numbers of uncommon Peninsula fauna such as the Brown Quail and White-lipped Snake.

***Editors' Note:**

The Sooty Oystercatcher, Pacific Golden Plover and Brown Quail did not have threatened status in Victoria at the time of the survey (Baker-Gabb 1991).

It is now a condition that dogs are controlled in the area. This is detailed by signs and reinforced by ranger inspections.

Further information on waders at Flinders is given by Loyn *et al.* (2001) in the context of a long-running survey of waterbirds in Western Port.


Cape Schanck
Boneo Rd
Cape Schanck Rd
Meakins Rd
Bass Strait
0 1 2 Kilometers
rivers, streams and waterbodies
roads
coastal features
Picnic Point to Gunnamatta Beach
N

Coastline - Picnic Point to Gunnamatta Beach

Significance: State

Location:

The coastline from Picnic Point to Gunnamatta Beach and all sections of Nepean State Park (now Mornington Peninsula National Park – ed.) inland to the Rosebud-Flinders Road.

Land Tenure:

Public land, except for a section of private land backing the eastern side of Bushrangers Bay and the east bank at Main Creek.

Site Description:

The coastline is similar to that of the coastline site Flinders Jetty to Picnic Point. A short beach is present at Bushrangers Bay, with the mouth of the Main Creek present on the western side. A band of coastal scrub dominated by species such as Coast Wattle, Coast Tea-tree, Moonah, Coast Beard-heath and Wirilda backs the coastline. A stand of Common Reed occurs along Main Creek almost reaching Bushrangers Bay. On the western side of Main Creek a stand of Coast Banksia Woodland/Open Woodland is present along the Bushrangers Bay walking track.

Reasons for Significance:

The only confirmed sites utilised by the Eastern Bent-wing Bat on the Mornington Peninsula are at Angel Cave and several sea caves between Bushrangers Bay and Cape Schanck. A maximum count of 165 Eastern Bent-wing Bats was made in July 1990. These sites appear to be frequented only during the winter to early spring period, since no bats were located during several searches in the summer months.

A pair of Hooded Plover (Vulnerable in Victoria, DSE 2003a) is resident at Bushrangers Bay. Other wader species are rare and only transitory on this section of coastline.

A small rock stack several hundred metres offshore in Bushrangers Bay is used irregularly by up to 15 Australian Fur Seals as a haul-out site.

The reed beds near the mouth of Main Creek provide habitat for a small breeding population of Clamorous Reed Warblers. A maximum of 24 birds was recorded in October 1990. This section of Main Creek also contains a small number of Brown Quail (Near Threatened, DSE 2003a),* White-lipped Snake and Water Rat. This last species was also recorded from a sea cave west of Main Creek Mouth. The occurrence of the Water Rat in a high-energy marine environment is of special interest.

Cape Schanck is an important site for seabird watching. In the winter months small numbers of White-fronted Terns (Near Threatened in Victoria, DSE 2003a)* regularly occur close inshore. Most days during this period numbers of Shy Albatross (Vulnerable in Victoria, DSE 2003a)*, Black-browed Albatross and Yellow-nosed Albatross (Vulnerable in Victoria, DSE 2003a)* and Giant-Petrels can be seen. In the summer months large flocks of Short-tailed Shearwaters, a JAMBA listed species, are commonly observed. A number of seabirds rarely recorded in Bass Strait have been observed from the Cape. These include the Royal Albatross (Vulnerable in Victoria, DSE 2003a)*, Buller's Albatross, Kerguelen Petrel and Great-winged Petrel (M. Carter *pers comm.*, M. Schulz *pers obs.*). Occasionally whales are seen off the Cape; in the present survey a single large Sperm Whale was observed on 7 December 1987.

The coastal scrub contains a diverse assemblage of fauna. Of special interest was the diversity and high density of native ground mammals in the Selwyn Fault area. This was the only site in which the Dusky Antechinus was recorded in this area. The Swamp Rat is widespread and the Black Wallaby was present in low numbers throughout much of the area. Several species of bats, including Gould's Wattled Bat, Lesser Long-eared Bat and Little Forest Bat were recorded in dense Coast Tea-tree dominated scrub. It is not known where these bats were roosting.

The coastal scrub contains a relatively low diversity of birds. However, several species uncommon on the Peninsula are resident including the Brush Bronzewing and Bassian Thrush. The Pink Robin is an

uncommon winter visitor. A Rose Robin was observed in The Pines area in November 1987. In open areas within the coastal scrub the Tree Dragon and White-lipped Snake are moderately common. Both of these reptiles are uncommon and patchily distributed on the Peninsula. During the survey several large specimens of the Eastern Brown Snake were recorded from coastal scrub principally in The Pines area. Prior to the present survey this species was not known from the Peninsula.

Management:

The presence of the Eastern Bent-wing Bat and Water Rat in sea caves at Bushrangers Bay is related to the inaccessibility of these areas. In order to ensure their continued usage, public access along the base of the cliffs should not be encouraged. Angel Cave receives some visitation and there is evidence of fires being lit in the cave. Such activity is likely to have an adverse effect on roosting bats.

The pair of Hooded Plovers attempt to nest each year in the dunes behind the beach at Bushrangers Bay. However, all nesting attempts from 1987-1991 have failed, probably due to a combination of factors such as disturbance by people, predation by foxes and trampling. Occasionally vehicles are driven into the dunes from adjoining private land at "Clondrisse", which may also have an effect.

The banks of Main Creek, particularly on the eastern side, have been subject to trampling and vegetation denudation by stock. This has led to bank erosion and weed invasion. Continued stock presence may in the long-term adversely affect the populations of Clamorous Reed Warblers and Brown Quail.

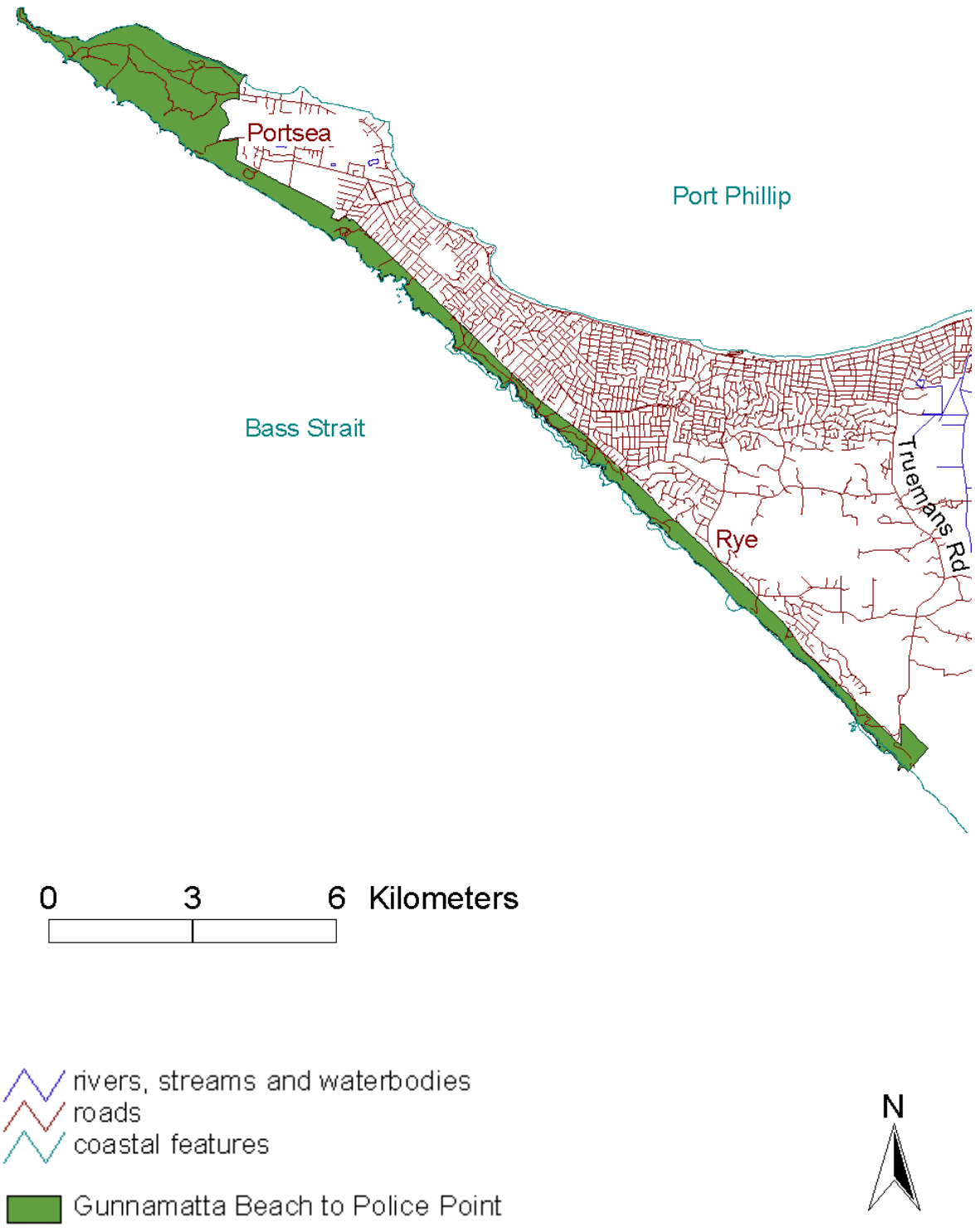
The Selwyn Fault area consists of a fragile moss and herb ground layer with few weeds. This sensitive area would be quickly affected by trampling and it is important not to encourage the public to visit the area.

The tip of Cape Schanck has been used for many years by sea-watchers and sea bird enthusiasts. However, in recent times the track to the tip has been closed off to reduce erosion. No alternative provision has been set aside for this sector of public visitors to the Cape. It would be desirable with the appropriate planning and environmental consideration to re-open a track to the tip and provide seats and a sea-watching interpretation display. Such visitor facilities have been provided in other areas, such as Cape Naturaliste in WA, with a high level of success.

Large areas of coastal scrub are subject to invasion by antagonistic exotic species such as the Myrtle-leaf Milkwort. Control of these plants is a priority, yet at the same time must not affect the overall nature conservation values of the area.

***Editors' Note:**

At the time of the survey the Brown Quail, , White-fronted Tern, Shy Albatross, Yellow-nosed Albatross and Royal Albatross did not have threatened status in Victoria (Baker-Gabb 1991).


Portsea
Port Phillip
Bass Strait
Rye
Truemans Rd
0
3
6 Kilometers
rivers, streams and waterbodies
roads
coastal features
Gunnamatta Beach to Police Point
N

Coastline - Gunnamatta Beach to Police Point

Significance: State, International Treaty Significance

Location:

The coastline from Gunnamatta Beach to Police Point, Portsea and all sections of Nepean State Park (now Mornington Peninsula National Park – ed.) adjoining the shore and Commonwealth territory at Point Nepean.

Land Tenure: Public land.

Site Description:

The coastline is characterised by sandy beaches with intervening calcareous cliffs and headlands. Scattered reef platforms and small rock stacks such as Corsair Rocks, occur along the shore. The calcareous dunes and headlands are typically dominated on the seaward side by a low shrubland of Cushion-bush, Coast Everlasting, Coast Wattle, White Correa, Tussock-grass, Coast Beard-heath and Coast Bitter-bush. These give way further inland to a dense coastal scrub dominated by Coast Tea-tree, Moonah and Wirilda with a sparse to dense understorey, frequently dominated by the exotic Myrtle-leaf Milkwort. An ocean outfall discharge is located at Boags Rocks. Point Nepean was formerly used as a gunnery emplacement and quarantine station. A section of the area is still used by the Australian Army. A number of surf life-saving clubs, beach access points and car parks occur along the coastline between Gunnamatta Beach and London Bridge.

Reasons for Significance:

A population of the Vulnerable Hooded Plover (DSE 2003a) is resident on the beaches between Gunnamatta Beach and Point Nepean (AWSG Hooded Plover survey data, October 1990).* Nests of the Hooded Plover have been located in primary and secondary sand dunes, sometimes several hundred metres inland from the beach, and on adjacent rocky headlands (C. Chandler pers. comm.). Numbers are highest during the non-breeding season between April and September, with a maximum count of 53 birds recorded in May 1988 during the present survey. Such seasonal increases in the numbers of birds present have been noted on other central Victorian beaches (Schulz and Lumsden 1983) and it is not known where these additional birds originate. In two yearly Hooded Plover counts since 1980 overall numbers appear stable (RAOU Wader Count data).

The reef platforms at Point Nepean provide habitat for 5% of the Victorian population of the Sooty Oystercatcher (Lane *et al*. 1984) (Near Threatened in Victoria, DSE 2003a)*. This was the primary reason for listing Point Nepean as a site of state significance in the "Birds of Port Phillip Bay" report (Lane *et al*. 1984).

Small numbers of other waders frequent the beaches and reef platforms of this section of coastline. Most notable are the occurrence of up to 40 Double-banded Plovers and the occasional Sanderling (Near Threatened in Victoria, DSE 2003a)*, an uncommon wader in central Victoria (Emison *et al*. 1987) and a CAMBA/JAMBA listed speices.

The Common Scaly-foot is a rarely observed species within the survey area, having only been recorded from three localities. Prior to the present survey it was unknown from the southern section of the Mornington Peninsula. A single individual was located sheltering under a dead mat of Marram Grass in secondary dunes behind Rye Ocean Beach.

A population of the Long-nosed Bandicoot is present in the Point Nepean area (Brown and Horrocks 1988a, present survey) where it occurs in dense coastal scrub and adjacent open grassland habitat. Prior to the present survey it had not been recorded from the Mornington Peninsula (Atlas of Victorian Wildlife).

The reef platforms at Point Nepean are important for roosting cormorants, gulls and terns (Lane *et al*. 1984). This is also the site for the only breeding attempt of the Kelp Gull in Port Phillip Bay* (M. Carter pers comm.).

The coastal scrub present behind the shoreline provides remnant habitat for a number of species on the southern sections of the Mornington Peninsula. These include the Black Wallaby, Tree Dragon, Eastern

Three-lined Skink, Brush Bronzewing, Bassian Thrush and Pink Robin (non-breeding winter visitor). The Black Wallaby is gradually disappearing from the area; it has not been seen in the Ti-tree Avenue area, Blairgowrie, for about the last seven years (1984-1991). The White-footed Dunnart (Vulnerable in Victoria, DSE 2003a)* has been recorded from tussock grasslands and low coastal heathland in the Point Nepean area (Maclean 1986). However, it was not recorded by Brown and Horrocks (1988a) or during the present survey. Pitfall trapping in suitable habitat in the Blairgowrie area also failed to detect this species.

White's Skink, Metallic Skink and White-lipped Snake are scattered throughout this section of coastline; all these species were recorded from primary sand dunes. The Eastern Brown Snake was recorded from coastal scrub in the Sorrento area. The presence of this species from this area as well as around Cape Schanck suggests that it may be widespread in coastal scrub on the Bass Strait side of the Mornington Peninsula. Prior to the present survey this snake was not known from the Peninsula.

Spiny-cheeked and Singing Honeyeaters are common breeding residents, although close to the eastern limit of their breeding range in Victoria (Emison *et al*. 1987).

A number of rare seabirds have been found beach-cast on the beaches, including the Antarctic Petrel, Southern Fulmar and Kerguelen Petrel (Blakers *et al*. 1984, M. Carter pers comm., M. Schulz pers obs.). Occasionally Southern Right Whales have been seen close inshore, particularly off Gunnamatta Beach. Australian Fur Seals are sometimes washed up dead or come ashore. A live Leopard Seal was present in the Rye Ocean Beach area in September 1990 (M. Carter pers comm.).

A number of species have been recorded for the Point Nepean area, which were not observed by Brown and Horrocks (1988a) or during the present survey. These have been listed by Brown and Horrocks (1988b). Some of these species must be regarded as unconfirmed sightings and their presence requires verification. These include the Southern Brown Bandicoot (Near Threatened in Victoria, DSE 2003a)*, Swamp Skink (Vulnerable in Victoria, DSE 2003a), McCoy's Skink, Southern Water Skink, Growling Grass Frog (Endangered in Victoria, DSE 2003a)* and Victorian Smooth Froglet.

An initial search of sea caves in the Point Nepean - Portsea area failed to locate any indication of roosting Eastern Bent-wing Bats. However, a more exhaustive search is required during the winter months.

Management:

The Hooded Plover appears to be most vulnerable when breeding. The nesting season coincides with the time when many people are using ocean beaches. Hooded Plovers will leave a nest site if approached by people and will usually not return until after the source of disturbance has left the area. An abandoned nest leaves the egg or chicks exposed and vulnerable to predation and extremes of temperature (Schulz and Bamford 1987). In order to ensure the maintenance of populations it is therefore important to identify breeding areas and where possible protect these from the general public. Such protection may include consideration to the siting of access tracks, the erection of fences to restrict public access and advisory notices. The control of foxes, cats and unrestrained dogs should also be of high priority.

The control of foxes, roaming dogs and cats is also important in the coastal scrub area. Here Swamp Wallabies have been observed chased by packs of dogs and the disappearance of this species from the Ti-tree Avenue (Blairgowrie) area has been attributed to domestic dog predation (local residents, pers comm.). Populations of uncommon species such as the Long-nosed Bandicoot, White-footed Dunnart, Bassian Thrush and herpetofauna such as the Common Scaly-foot, are all vulnerable to such predation.

Coastal scrub adjacent to the Park, such as in the Ti-tree Avenue and Brewster Road areas, form habitat for species such as the Black Wallaby, Long-nosed Bandicoot (unconfirmed records in the former area) and Short-beaked Echidna. The continued clearing of such habitat is likely to affect the populations of these species.

Large areas of coastal scrub are subject to invasion by antagonistic exotic species such as the Myrtle-leaf Milkwort and Boneseed. Control of such weeds is important in order to maintain the floristic and hence faunal diversity of the coastal scrub. Due to the presence of a variety of regionally uncommon species in coastal scrub adjacent to housing sub-division, fire management must take nature conservation values into consideration.

The reef platforms are important feeding areas for the Sooty Oystercatcher, Hooded Plover and, on occasions, other wading birds (Schulz 1986). The protection of this environment against the illegal collection of marine

intertidal invertebrates is important to ensure a continued food supply for these birds. The present restrictions on public access to the Point Nepean coastline should be continued.

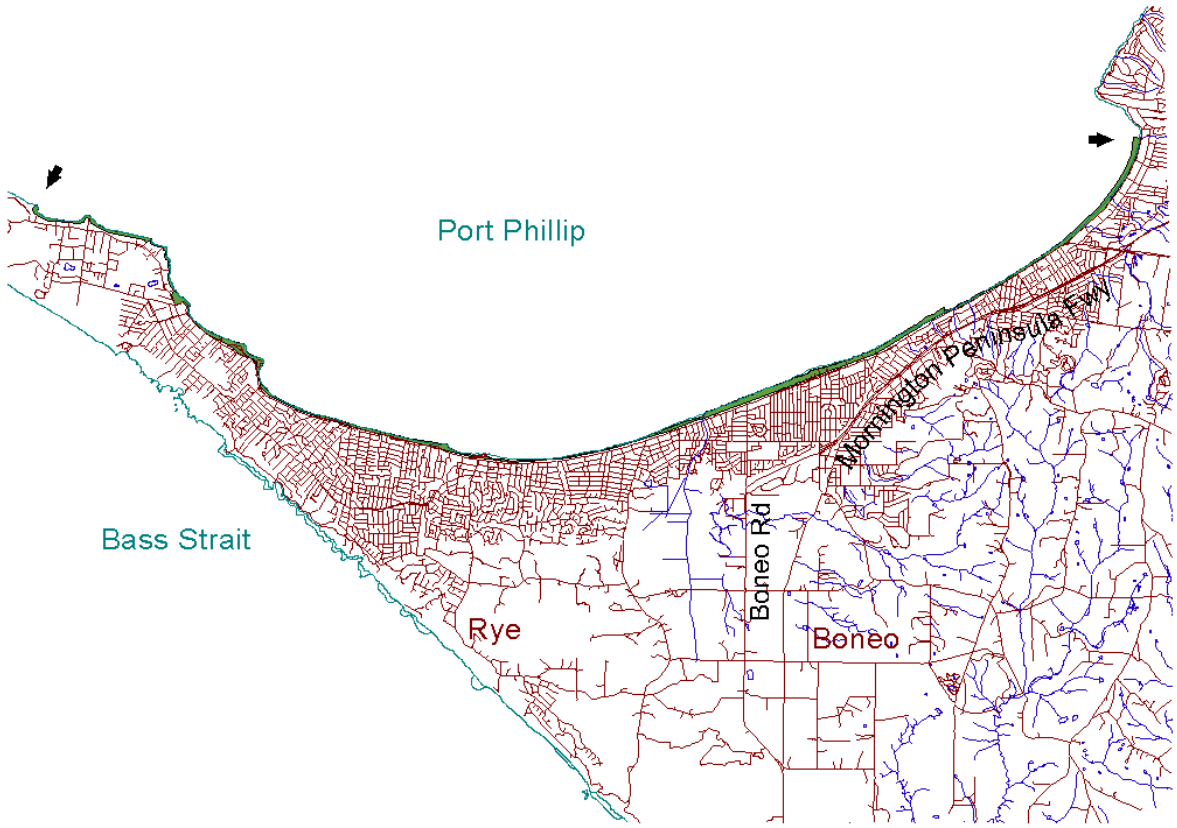
Discouraging the public from leaving the main beach access tracks and closing off minor tracks would reduce degradation of fragile dune and headland plant communities from trampling.

***Editors' Note:**

More detailed information about Hooded Plovers on this coast is given by Weston (2001). Various management actions have been implemented.

At the time of the survey the Sooty Oystercatcher, Sanderling, White-footed Dunnart, Southern Brown Bandicoot and Growling Grass Frog did not have threatened status in Victoria (Baker-Gabb 1991).

The Kelp Gull, although formerly considered threatened in Victoria (Baker-Gabb 1991, NRE 2000) by virtue of a limited Victorian distribution, no longer has this status (DSE 2003a) as its national range is expanding.



0 3 6 Kilometers

rivers, streams and waterbodies
roads
coastal features
limit of site
Police Point to Safety Beach

N

Coastline - Police Point to Safety Beach

Significance: Regional B

Location:

The coastline from Police Point, Portsea to Brokil (or Tassells) Creek, Safety Beach and a varying width of remnant native vegetation backing the shore, inland to the Nepean Highway and Marine Drive. Also along Chinamans Creek upstream to Eastbourne Road and an area of native bushland between the Nepean Highway and Latrobe Parade, Dromana.

Land Tenure:

Public Land, with the exception of private land adjacent to the shoreline in the Sullivans Bay area and in sections along the Portsea and Sorrento coastline.

Site Description:

The coastline between Police Point and Camerons Bight is characterised by sandy beaches with intervening calcareous cliffs and headlands. The rest of the coastline consists of a long sandy beach with some intertidal sandflat development present in the Rosebud and Sorrento areas. The band of vegetation backing the shoreline varies in width and is particularly narrow and discontinuous in parts between Portsea to Sorrento where private land fronts on to the shore. Coastal vegetation behind the long sandy beach extending from Blairgowrie to Safety Beach is highly altered with remnant Coast Banksia stands and little native understorey. A patch of native scrub dominated by Coast Tea-tree and Moonah is present in The Sisters area. A number of piers, yacht clubs, beach access points and car parks occur along the coastline. A number of caravan parks are situated in remnant coastal scrub in the Blairgowrie to Dromana area. Stands of Common Reed occur along Chinaman Creek.

Reasons for Significance:

Frequent occurrence of the Arctic Tern in the Sorrento area between Point King and Sorrento Front Beach was the primary reason Lane *et al*. (1984) listed this site as of state significance. However, the sightings of this tern have increased elsewhere in Victoria in recent years (Emison *et al*. 1987). This has been attributed to an increase in offshore bird watching and observers becoming more familiar with this species. Consequently in recent years regular sightings of this species have been made off the coast of south-west Victoria and elsewhere along the state's coastline. Hence this locality is one of many used by migrating Arctic Terns on passage, and it has not been identified as of State Significance in the present survey.*

The Sorrento area (outlined above) and the Rosebud foreshore between Fourth Avenue and the Southern Peninsula Hospital are regarded as regionally significant due to the importance of these areas for roosting terns. In the Rosebud foreshore area up to 35 Common Terns and 19 Fairy Terns (Endangered in Victoria, DSE 2003a) have been recorded and in the Sorrento area up to 560 Crested Terns*, 25 White-fronted Terns (Near Threatened in Victoria, DSE 2003a)*, 1 Arctic Tern and 2 Fairy Terns have been observed. With the exception of the Crested and Common Terns (both CAMBA/JAMBA listed species), these tern species are rare on the eastern side of Port Phillip Bay. Small numbers of Common and Crested Terns also roost in the Dromana Pier area. Additionally these areas are important roosting sites for cormorants and gulls (Lane *et al*. 1984, present survey).

Intertidal flats in the Rosebud and Sorrento areas provide feeding grounds for a number of birds, including a small number of Pied Oystercatchers and the Great Egret and White-faced Heron. The Great Egret is rare on the eastern shoreline of Port Phillip Bay, a CAMBA/JAMBA listed species and classified as Vulnerable in Victoria (DSE 2003a). No migratory wader species were recorded from these sand flats by Lane *et al.* (1984) or during the present survey.

The Australian Fur Seal is regularly present around Sorrento Pier, and is occasionally seen elsewhere. White-faced Storm-Petrels (Near Threatened in Victoria, DSE 2003a) are infrequently reported washed up or attracted to lights in shopping centres and night tennis courts.

The Metallic skink was recorded from primary dune vegetation in the Sheepwash Creek mouth and Anthonys Nose area. It had not previously been recorded from the eastern shoreline of Port Phillip Bay, prior to this survey.

A small roost of Nankeen Night-Herons (Near Threatened in Victoria, DSE 2003a) is present along Chinamans Creek between the Nepean Highway and Eastbourne Road. Small breeding populations of the Dusky Moorhen and Yellow Thornbill are present in this locality.

The Spiny-cheeked and Singing Honeyeaters are common in the coastal scrub between Police Point and Rye Jetty. Further north on the eastern side of Port Phillip Bay these honeyeaters are rare non-breeding visitors.

Management:

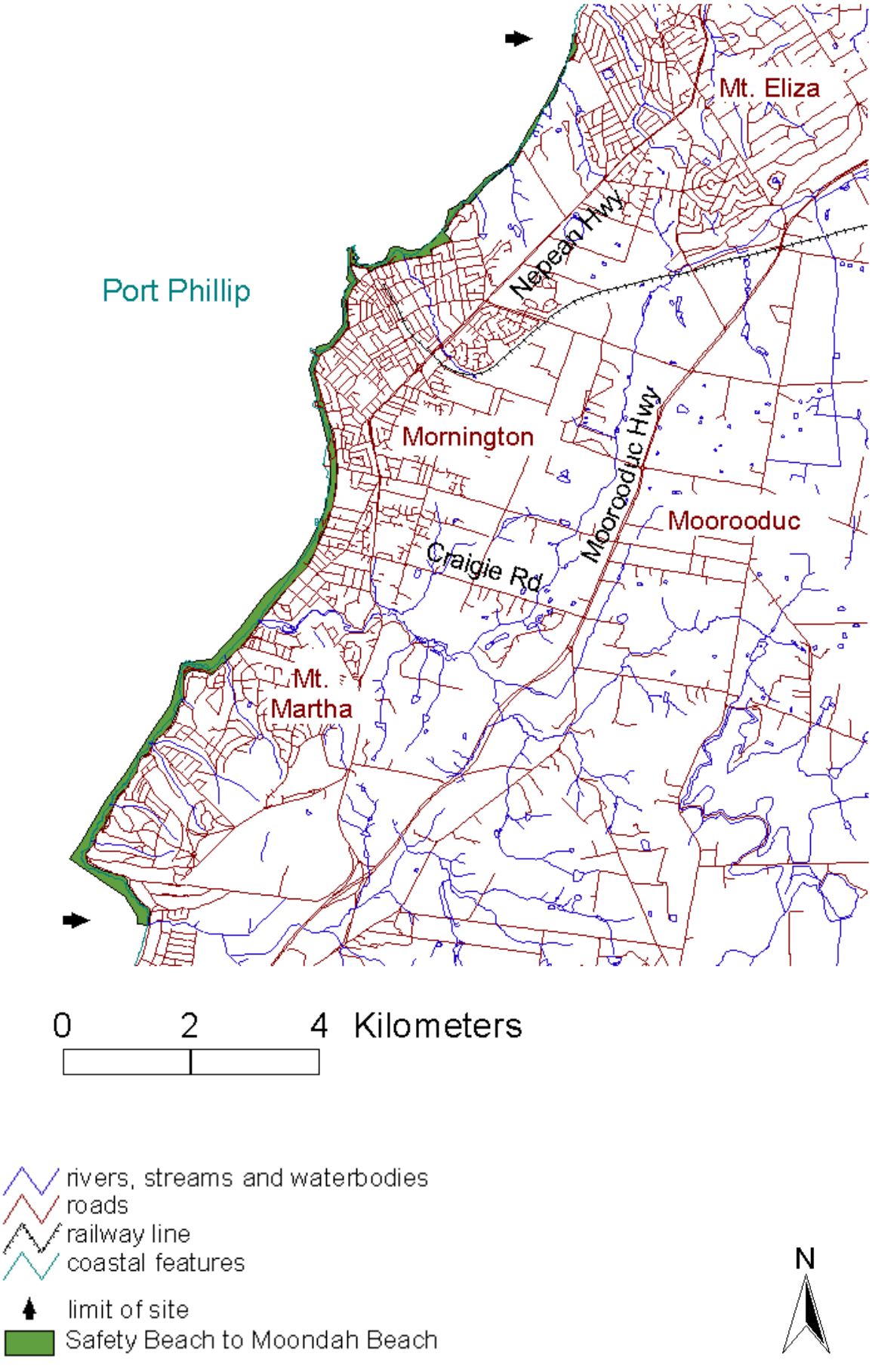
To maintain the Rosebud and Sorrento areas as important roost sites for terns, cormorants and gulls it is important to retain the existing roost sites, particularly those protected from human disturbance. At Rosebud foreshore the sand flats and offshore sandbars are used by birds as roost sites, thus it is important to maintain these features.

Much of the coastal vegetation has a low faunal diversity. An increased diversity may be encouraged by the planting of native understorey vegetation and restricting public access to these planted areas. The patch of native coastal vegetation at The Sisters is important habitat.

***Editors' Note:**

Artic Terns are now considered mainly as passage migrants to pelagic waters, rarely using inshore habitats.

At the time of the survey the White-fronted Tern did not have threatened status (Baker-Gabb 1991). The Crested Tern was at the time classified under the category of Restricted colonial breeding sites in Victoria (Baker-Gabb, 1991), however this species no longer has threatened status in Victoria (DSE 2003a).


Port Phillip
Mt. Eliza
Nepean Hwy
Mornington
Mooroodoc Hwy
Moorooduc
Craigie Rd
Mt. Martha
0 2 4 Kilometers
rivers, streams and waterbodies
roads
railway line
coastal features
limit of site
Safety Beach to Moondah Beach
N

Coastline - Safety Beach to Moondah Beach

Significance: Regional A

Location:

The coastline from Tassells Creek, Safety Beach to Moondah Beach, Mt Eliza and a varying width of remnant native vegetation backing the shore, inland to the Esplanade (south of Mills Beach) and private land (north of Mills Beach). Also along Balcombe Creek upstream to the Nepean Highway and Sunshine Reserve.

Land Tenure:

Public, with some adjacent coastal vegetation on private land, such as the Mornington Country Golf Club and behind Sunnyside Beach.

Site Description:

The shoreline is typified by granitic and sandstone cliffs and coastline with intervening short sandy beaches. In many sections, such as between Balcombe and Martha Points, access is difficult. Coastal vegetation backing the shoreline is dominated by Coast Tea-tree, Coast Wattle and Black Sheoak with areas of tussock grassland. Little native vegetation is present in the Schnapper Point area. The Balcombe Creek Mouth forms a lagoon. This lagoon is bordered by Swamp Paperbark closed scrub with a limited area of saltmarsh dominated by Beaded Glasswort and Creeping Brookweed. Adjacent to these vegetation communities are patches of Coast-tea-tree scrub and Manna Gum woodland with an understorey of Dogwood, Coast Wattle and Swamp Paperbark. A number of piers, yacht clubs, boat launching ramps, beach access points and car parks occur along the coast, principally in the Mount Martha and Mornington sections. The Mornington Country Golf Club is adjacent to the coast between Caraar Creek and Sunnyside Beach.

Reasons for Significance:

The Common Scaly-foot has been recorded from four localities within this area: Sunnyside Beach, Balcombe Point, adjacent to Marguerita Avenue and adjacent to Sunshine Reserve (Atlas of Victoria Wildlife, present survey). At Sunnyside Beach and adjacent to Sunshine Reserve individuals were located amongst tussock grass (*Poa labillardieri*) in open areas or beneath a sparse canopy of Black Sheoak. An individual located at Balcombe Point was observed basking in a low Cushion Bush. Two individuals found near Marguerita Avenue were on the edge of a short beach amongst rocks, Cushion Bush and sedges. This legless lizard was only recorded from one other locality outside the Mt. Martha - Safety Beach area (behind Rye Ocean Beach) during the present survey.

Bougainville's Skink was recorded in the same habitat at Safety Bay as the Common Scaly-foot. White's Skink was present in coastal scrub at Moondah Beach and the Metallic Skink was recorded from the Marguerita Avenue area. Prior to the present survey, the latter species was not known from the eastern shoreline of Port Phillip Bay. The Eastern Three-lined Skink was widespread along the edge of the shoreline in coastal scrub and cliff-top vegetation communities.

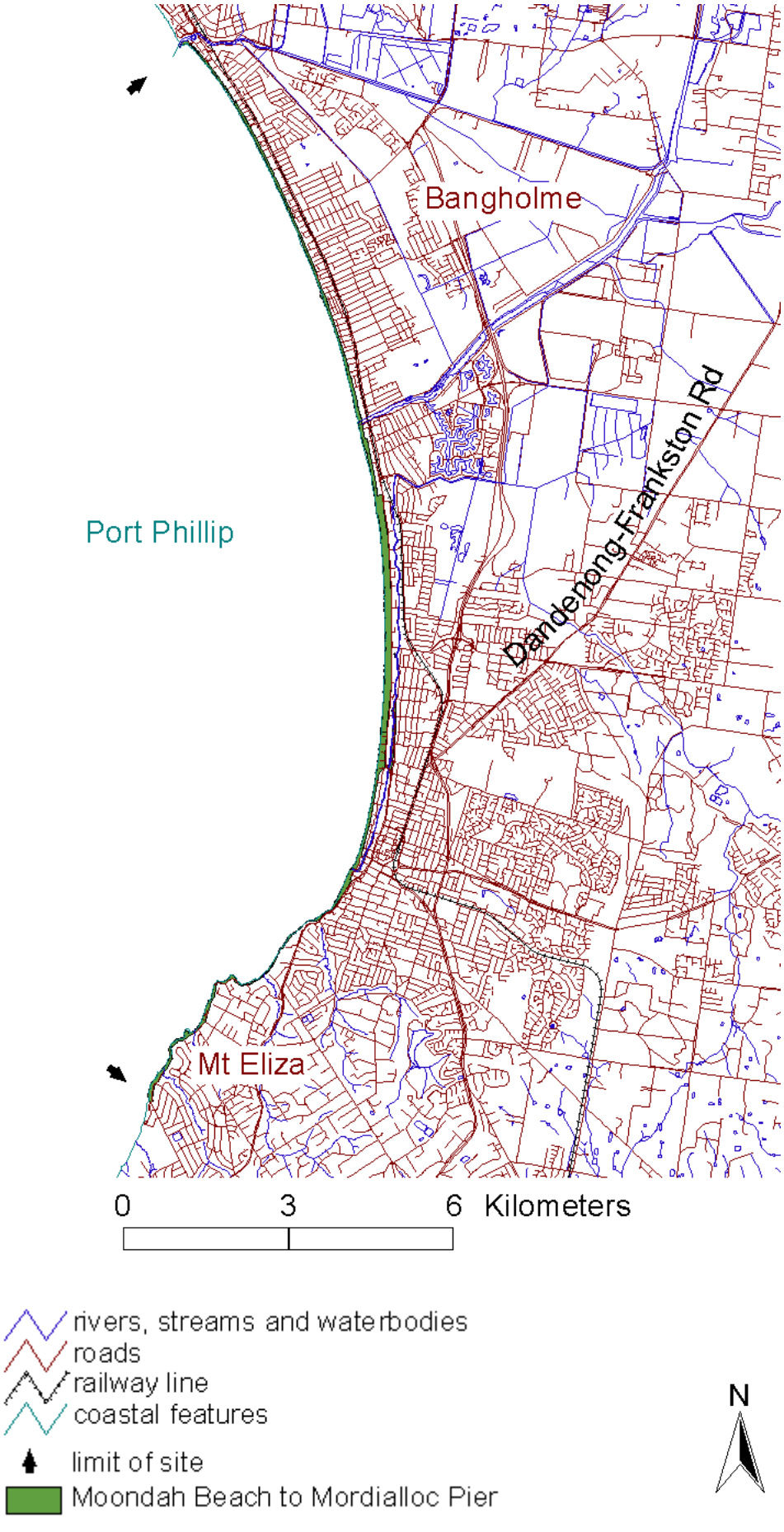
Small numbers of waterbirds frequent the lagoon at the mouth of Balcombe Creek, including Little Egret (Endangered in Victoria, DSE 2003a), Great Egret (a CAMBA/JAMBA listed species and Vulnerable in Victoria, DSE 2003a), Chestnut Teal, Great Cormorant and Masked Lapwing. The saltmarsh habitat is too limited in area to support any significant bird communities. The adjacent bushland vegetation supports uncommon or patchily distributed species, such as the Swamp Rat, Eastern Three-lined Skink, Rufous Fantail, Bassian Thrush, Crested Shrike-tit, Varied Sittella and Satin Flycatcher. This area was identified as of regional significance by Lane *et al*. (1984) due to the diversity of bush birds, the population of waterbirds and the bird community associated with the Swamp Paperbark closed scrub.

The coastal scrub adjacent to the shoreline provides habitat for a number of terrestrial birds, including the Eastern Yellow Robin, Golden Whistler and Brown-headed Honeyeater. The Black-faced Cormorant, a species listed as Near Threatened in Victoria (DSE 2003a), occasionally roosts on rock stacks, rocky points and piers.

Management:

The presence of populations of the Common Scaly-foot in the Sunnyside Beach and Mt. Martha foreshore areas is of high significance and the maintenance these populations would be enhanced by restrictions on vegetation clearance or other activities affecting the nature conservation values of the area. Foxes and cats are a likely predator of this lizard. Only allowing dogs on leashes in these areas would reduce possible pressure from domestic dogs. Due to the possibility of the illegal collection of the Common Scaly-foot it is suggested that the presence of this species not be publicised. It is recommended that a study examining the distribution, abundance, habitat requirements and threats facing the Common Scaly-foot in the Mt. Martha and Sunnyside area be undertaken.

The exclusion of horses and trail bikes and a predator control program (foxes and feral cats) would aid the maintenance of the fauna values of Balcombe Creek and adjoining bushland environments. It is recommended that development activities that would adversely affect the nature conservation values of the area be restricted.


Bangholme
Port Phillip
Dandenong-Frankston Rd
Mt Eliza
0
3
6 Kilometers
rivers, streams and waterbodies
roads
railway line
coastal features
limit of site
Moondah Beach to Mordialloc Pier
N

Coastline - Moondah Beach to Mordialloc Pier

Significance: Regional B

Location:

The coastline from Moondah Beach to Mordialloc Pier and where present remnant vegetation backing the shore, inland to the boundary of private property and along Kananook Creek to Seaford Road.

Land Tenure:

Public, with some adjacent coastal vegetation on private land, such as in the Mt. Eliza - Olivers Hill area.

Site Description:

Between Moondah Beach and Frankston Pier the shoreline is typified by granitic and sandstone cliffs and headlands with intervening short sandy beaches. The coastal vegetation adjacent to the shore is variable in extent and degraded in nature, heavily invaded by exotic species in the understorey. Between Frankston Pier and Mordialloc Pier the coastline is characterised by a long sandy beach, intersected by the Patterson River, Main Drain and Kananook Creek. The coastal vegetation adjacent to the shoreline varies from non-existent to a narrow band extending inland to the Nepean Highway. This vegetation is typically dominated by Coast Tea-tree with Coast Banksia emergents, and a predominantly weed-infested understorey. Kananook Creek is lined by a band of Common Reed. This creek is backed on the eastern side by a reserve that contains remnant vegetation, including Swamp Paperbark Scrub, Coast Tea-tree scrub with Coast Banksia emergents and patches of Manna Gum woodland on higher situations above the creek. Numerous beach access tracks, car parks, life saving clubs and yacht clubs occur along the coast. The Patterson River Mouth is an important launching and storage area for recreational boats.

Reasons for Significance:

The remnant native vegetation along the Kananook Creek between Seaford Station and Frankston Pier was considered to be regionally significant by Lane *et al*. (1984). This was principally due to the diversity of birds it supported; 60 species recorded between 1970 and 1980 with breeding populations of several species, including the Rufous and Golden Whistlers.

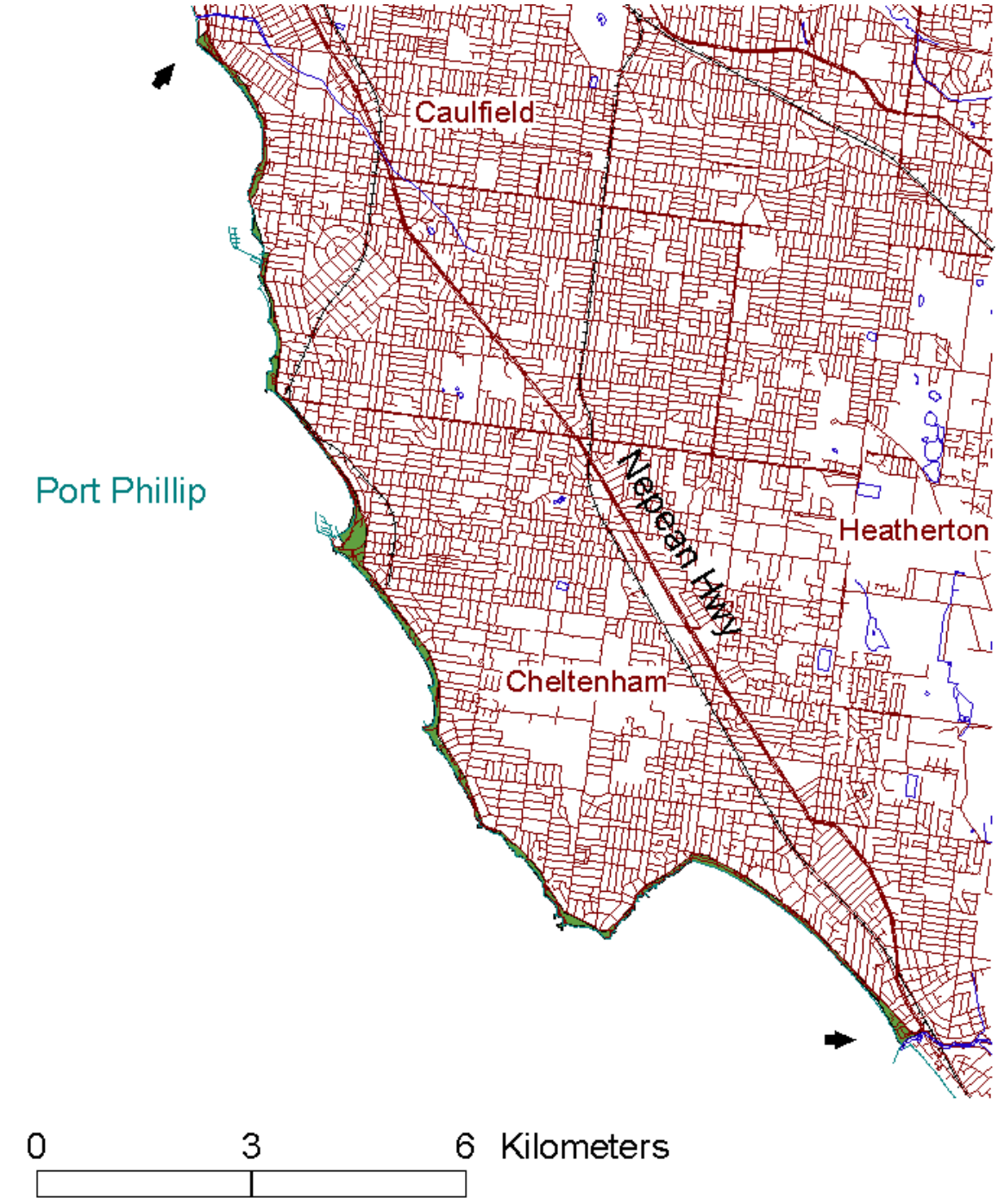
Small numbers of cormorants, terns, and gulls roost on rocky points, piers and other artificial structures along this stretch of coastline. However, none were regarded as significant by Lane *et al*. (1984).

A low diversity of terrestrial fauna inhabits the coastal vegetation adjacent to the coastline. Species of interest, include the Australian Hobby, Rainbow Lorikeet, Golden Whistler, Yellow Thornbill, and Common Ringtail Possum. Vagrant species are occasionally recorded, including the Southern Boobook, Common Bronzewing and Spiny-cheeked Honeyeater.

Management:

Lane *et al*. (1984) made useful recommendations for maintaining the avifaunal diversity along Kananook Creek. They suggested retaining or (where possible) expanding natural vegetation; investigating and if considered necessary, improving the water quality of Kananook Creek sufficiently to enhance waterbird food sources; restricting bicycles to formal tracks and enforcing the exclusion trailbikes in the area; undertaking a fox control program and taking steps to reduce the presence of unrestrained dogs and cats in the area.

The planting of native shrubs and ground layer plants and fencing these areas to reduce public disturbance could increase the diversity of fauna along the foreshore.


Caulfield
Port Phillip
Nepean Hwy
Heatherton
Cheltenham
0
3
6 Kilometers
rivers, streams and waterbodies
roads
railway line
coastal features
limit of site
Mordialloc Pier to Point Ormond
N

Coastline - Mordialloc Pier to Point Ormond

Significance: Regional B, International Treaty Significance

Location:

The coastline from Mordialloc Pier to Point Ormond and (where present) remnant vegetation backing the shore inland to the boundary of private property (north of Middle Brighton Pier) or to the Esplanade/Beach Road.

Land Tenure: Public.

Site Description:

The shoreline is typified by the sandy beaches with cliffs and rocky headlands occurring in the Watkins Bay, Half Moon Bay and Picnic Point areas. There is a band of native coastal vegetation adjacent to the coastline between Beaumaris Bay and Picnic Point. This vegetation is dominated by Coast Tea-tree with Coast Banksia emergents (particularly in the Ricketts Point area) and a weed-infested understorey. Remnant coastal scrub dominated by Coast Tea-tree is also present between Green Point and Brighton Life Saving Club. Elsewhere little native vegetation remains adjacent to the shoreline and the prime habitat consists of parkland, planted embankments and mown grassed areas. Numerous beach access tracks, car parks, life saving clubs and yacht clubs occur along the coast.

Reasons for Significance:

Ricketts Point was regarded as regionally significant by Lane *et al*. (1984). This was due to its importance as a roosting site for terns and cormorants with more than 70 Crested Terns* and 35 Common Terns recorded, and the occasional presence of species rare on the east coast of Port Phillip Bay, such as the Common Sandpiper (Vulnerable in Victoria, DSE 2003a)*, Ruddy Turnstone and Double-banded Plover. A vagrant Black-tailed Gull was seen here in September 1978 (Emison *et al*. 1987). Crested Terns, Common Terns, Common Sandpipers and Ruddy Turnstones are all CAMBA/JAMBA listed species.

Smaller numbers of cormorants, terns and gulls roost elsewhere along this stretch of coastline. However, no other sites were regarded as significant by Lane *et al*. (1984). A number of uncommon seabirds and marine mammals have been found beach-cast, including the Blue Petrel (Wheeler 1966), Greater Frigatebird (a CAMBA/JAMBA listed species) (Hitchcock 1952), Southern Fulmar (M. Schulz pers. obs.), Light-mantled Sooty Albatross (Vulnerable in Victoria, DSE 2003a)*(M. Schulz pers obs.) and Crabeater Seal (Atlas of Victorian Wildlife).

A specimen of the Yellow-bellied Sheathtail Bat was found on the corner of Abbott and Essex Streets, Sandringham close to Sandringham Beach in May 1971 (Museum of Victoria). It is not known if this individual was a vagrant, on migration or resident to the area.*

The coastal scrub between Beaumaris Bay and Picnic Point provides habitat for a moderate diversity of terrestrial fauna, including the Australian Hobby, Grey Fantail, Golden Whistler, Superb Fairy-wren, Mistletoebird, Eastern Spinebill and Common Ringtail Possum. A number of these species are uncommon elsewhere in adjacent suburbs. A small breeding population of the Superb Fairy-wren, White-browed Scrubwren and Brown Thornbill occurs in remnant native coastal vegetation at Middle Brighton. This site is the northernmost resident population of these common bush birds on the eastern shore of Port Phillip Bay. A family of Superb Fairy-wrens at Elwood Beach appeared to have become extinct in recent years (M. Schulz pers obs). Unidentified small insectivorous bats were observed on a number of occasions. However, their identity was not ascertained due to the difficulties involved in trapping bats in this area.

Management:

Management recommendations outlined in Lane *et al.* (1984) for the maintenance of avifaunal values can be applied at Ricketts Point. These include maintaining a secure roosting area with minimal disturbance to roosting birds, especially by allowing dogs on leash only; ensuring the diversity of invertebrate reef-life as prey for shorebirds and ensuring a secure food supply for terns and cormorants in nearshore waters.

The small population of Superb Fairy-wrens and White-browed Scrubwrens behind Middle Brighton Beach is in danger of becoming extinct, as seen at Elwood Beach. The presence of these species, as well as other native resident bird species in coastal scrub, would be preserved by eliminating further habitat loss, reducing public access to selected areas, closing off numerous small access tracks and controlling feral cats.

Large populations of the exotic Black and Brown Rats occur along sections of the coast, especially in the Green Point and Bay Street - Elwood Beach areas. These rats may place pressure on small populations of passerine birds in adjacent areas such as Middle Brighton Beach.

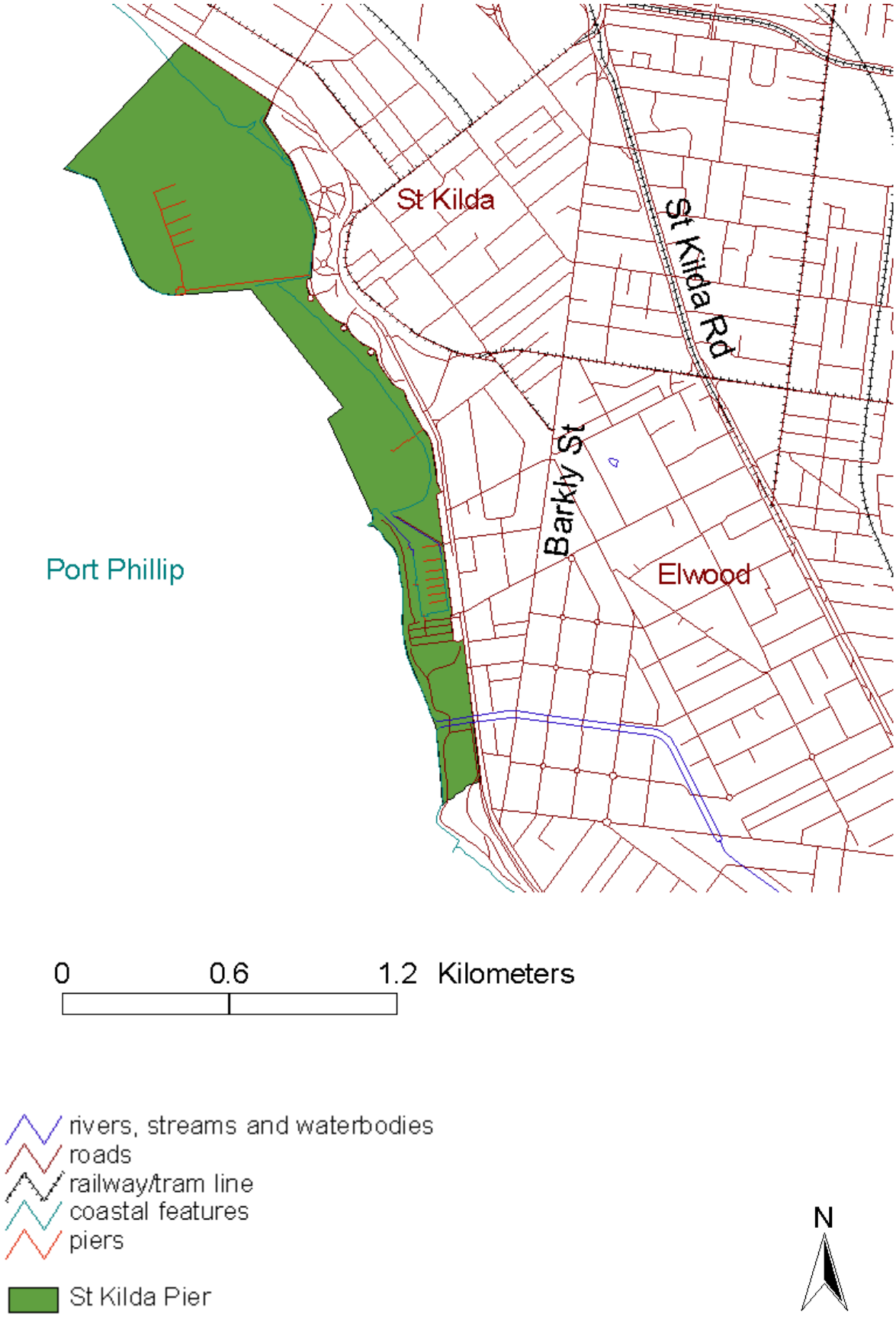
The planting of native shrubs and understorey plants in areas not currently vegetated would encourage the natural spread of terrestrial species that were once widespread in the region. The area between Mordialloc Pier and Charman Road in particular would benefit from revegetation.

***Editors' Note:**

At the time of the survey the Crested Tern was classified under the category Restricted colonial breeding sites in Victoria (Baker-Gabb, 1991), however this species no longer has threatened status in Victoria (DSE 2003a). Also at the time, the Common Sandpiper and Light-mantled Sooty Albatross did not have threatened status in Victoria (Baker-Gabb 1991).

Regular observations have been made along this coast by local observers, with several species recorded as vagrants (e.g. Terek Sandpiper, a CAMBA/JAMBA listed species) (M. Norris pers. comm.). The rarely recorded Grey-tailed Tattler (a CAMBA/JAMBA listed species) was observed recently (December 2001) at Ricketts Point. Both the Terek Sandpiper and Grey-tailed Tattler were recent additions to Victoria's threatened species list as Endangered and Critically Endangered respectively (DSE 2003a). These observations have highlighted the importance of habitat such as Ricketts Point. Populations of common bush birds such as Superb Fairy-wrens appear to fluctuate locally.

Recent records of Yellow-bellied Sheath-tail Bats have been made from nearby suburbs (Atlas of Victorian Wildlife).


St Kilda
St Kilda Rd
Barkly St
Elwood
Port Phillip
0
0.6
1.2 Kilometers
rivers, streams and waterbodies
roads
railway/tram line
coastal features
piers
St Kilda Pier
N

Coastline - St Kilda Pier

Significance: State

Location: St. Kilda and adjacent waters.

Land Tenure: Public

Site Description:

An artificial structure that extends approximately one kilometre out from the Pier road. Approximately 500 metres consists of a breakwater. On the northern side of the pier is an extensive boat mooring facility associated with the Royal Melbourne Yacht Squadron.

Reasons for Significance:

This locality was overlooked as a site of significance by Lane *et al*. (1984). A breeding colony of some thirty to forty pairs of Little Penguins has been recorded in gaps between the boulders of the breakwater.*

A small population of Water Rats also occurs in the breakwater area. This species frequents freshwater lakes, swamps and watercourses throughout Australia (Watts and Aslin 1981). The presence of this rat species in an exclusively marine environment is of scientific interest.

A single Eastern Bent-wing Bat was recorded in the present survey roosting in a dark recess of a convoluted gap between boulders on the Port Phillip Bay side of the breakwater in June 1990. The bat was not detected on subsequent visits to the area and it is likely that it was only en passage. This suggestion is supported by the failure to detect any scat accumulations in the darker recesses between boulders.

On rare occasions single individuals of the Black-faced Cormorant (Near Threatened in Victoria, DSE 2003a) and the CAMBA/JAMBA listed species Pomarine Jaeger and Great Skua have been observed flying close inshore to the Pier. These species are uncommon in the northern parts of Port Phillip Bay. Single or rarely larger numbers of the Common Tern roost on moored boats or feed off the Pier. This species is also listed under the CAMBA/JAMBA treaties.

Management:

The nesting colony of Little Penguins is the only substantial breeding site for the species in Port Phillip Bay. In order to ensure the maintenance of this breeding colony it is important that no works be undertaken that would affect the well being of the colony. There are currently pressures to extend the boat mooring facilities at the Pier. It is of paramount importance that for any such proposals a detailed environmental study be conducted by appropriate experts.*

It is recommended that the presence of the Little Penguin colony be as little publicised as possible to reduce human disturbance. Erecting a barrier to limit public access to the seaward end of the breakwater where the penguins breed may further reduce pressure on the colony. It is important that a program monitoring the population numbers be continued into the future.

***Editors' Note:**

The pier has been extended, in consultation with DSE biologists. The penguin colony survives and 30-40 pairs were recently estimated to be breeding (A. Webster pers. comm.).

6. REFERENCES

Ahern, L.D. (1982) Threatened wildlife in Victoria and issues related to its conservation. *Fisheries and Wildlife Paper* No. 27. Ministry for Conservation, Fisheries and Wildlife Division, East Melbourne

Ahern, L.D., Brown, P.R., Robertson, P. and Seebeck, J.H. (1985) Application of a taxon priority system to some Victorian vertebrate fauna. *Arthur Rylah Institute for Environmental Research Technical Report* No. 32. Department of Conservation, Forests and Lands, Heidelberg

Andrew, D.L., Lumsden, L.F. and Dixon, J.M. (1984) Sites of zoological significance in the Westernport Region. Ministry for Conservation, Victoria, *Environmental Study Series Report* No. 327. Department of Conservation, Forests and Lands, East Melbourne

Atlas of Victorian Wildlife (2003) Electronic database, Department of Sustainability and Environment, East Melbourne

Baker-Gabb, D. (1991) List of threatened fauna in Victoria in 1991. Department of Conservation and Environment, Victoria (unpublished report)

Beardsell, C. (1997) Sites of faunal and habitat significance in North East Melbourne. Dunmoochin Biological Surveys, Report for the North East Regional Organisation of Councils, Nullimbik Shire Council, Melbourne

Beardsell, C. and Frood, D. (1988) Eastern Freeway extension - Ringwood Bypass link proposal. (unpublished report)

Blakers, M., Davies, S.J.J.F. and Reilly, P.N. (1984) *The Atlas of Australian Birds*. Melbourne University Press, Carlton

Braithwaite, R.W. and Gullan, P.K. (1978) Habitat selection by small mammals in a Victorian heathland. *Australian Journal of Ecology* **3:**109-127

Braithwaite, R.W. (1979) Social dominance and habitat utilisation in *Antechinus stuartii* (Marsupialia). *Australian Journal of Zoology* **27:**517-28

Brown, G.W. and Horrocks, G.F.B. (1988a) The vertebrate fauna of Point Nepean, Victoria I. Bat fauna, with notes on the terrestrial vertebrates. *Victorian Naturalist* **105:**114-23

Brown, G.W. and Horrocks, G.F.B. (1988b) Non-avian vertebrates species known from Point Nepean. *Victorian Naturalist* **105:**141

Cadwallader, P.L. and Backhouse, G.N. (1983) *A guide to the Freshwater Fish of Victoria*. Government Printer, Melbourne

Calder, W. (1975) Peninsula perspectives: vegetation on the Mornington Peninsula, Victoria. Centre for Environmental Studies, University of Melbourne, Melbourne

Carr, G.W. and Robinson, R.W. (1987) Vegetation of Braeside Metropolitan Park, Braeside, Victoria and its management. Ecological Horticulture, East Hawthorn

CFL (1986) Proposed plan for public comment: Langwarrin Flora and Fauna Reserve management plan. National Parks Service and Dandenong Region Department of Conservation Forests and Lands. Department of Conservation Forests and Lands, East Melbourne

CFL (1987) Conservation in Victoria: 1 Plants and animals at risk. Community Education and Information Branch, Department of Conservation, Forests and Lands, Melbourne

Chandler, C. (1988) Environmental weeds of the Mornington Peninsula. *Trees and Natural Resources* **30(3):**19-22

Corrick, A.H. (1981) Wetlands of Victoria II. Wetlands and waterbirds of south Gippsland. *Proceedings of the Royal Society of Victoria* **92:**187-200

Corrick, A.H. (1982) Wetlands of Victoria III. Wetlands and waterbirds between Port Phillip Bay and Mount Emu Creek. *Proceedings of the Royal Society of Victoria* **94:**69-87

DSE (2003a) Advisory list of threatened vertebrate fauna in Victoria – 2003. Department of Sustainability and Environment, East Melbourne

DSE (2003b) Relocating Flying-foxes. Fact sheet June 2003. Department of Sustainability and Environement, East Melbourne

Emison, W.B., Beardsell, C.M., Norman, F.I., Loyn, R.L. and Bennett, S. (1987) *Atlas of Victorian Birds*. Department of Conservation Forests and Lands and RAOU, Melbourne

Emison, W.B., Menkhorst, P.W., Mansergh, I.M., Norman, F.I., Robertson, P., Corrick, A.H. and Alderson, J.A. (1984) Wildlife Surveys conducted by the Fisheries and Wildlife Division in Victoria, 1972-1983. pp. 166-194 *In* Myers, K., Margules, C.R. and Musto, I. (eds). *Survey Methods for nature conservation*. v.2:1. CSIRO, Canberra

Endersby, I. and Carter, M. (2001) Edithvale Wetlands Bird Census Project September 1989 – August 1999. RAOU VicGroup report to Melbourne Water, Melbourne (unpublished report)

Helman, P. and Churchill, S. (1986) Bat capture techniques and their use in surveys. *Macroderma* **2(2):**32-53

Hitchcock, W.B. (1952) New and rare Victorian records. *Emu* **52:**273-284

Kinnear, J.E., Onus, M.L. and Bromilow, R.N. (1988) Fox control and rock-wallaby population dynamics. *Australian Wildlife Research* **15:**435-450

Koehn, J.D. (1986) Dandenong Creek: Fishes, their habitats and management recommendations. *Arthur Rylah Institute for Environmental Research Technical Report* No. 51, Department of Conservation, Forests and Lands, Victoria

Koehn, J.D. and Morison, A.K. (1990) A review of the conservation status of native freshwater fish in Victoria. *Victorian Naturalist* **107:**13-25

Lane, B.A. and Davies, J.N. (1987) *Shorebirds in Australia*. Thomas Nelson, Melbourne

Lane, B.A., Schulz, M. and Wood, K.L. (1984) Birds of Port Phillip Bay. *Coastal Unit Technical Report* No. 1. Ministry of Planning and Environment, Melbourne

Loyn, R.H., Dann, P. and McCulloch, E. (2001) Important wader sites in the east Asian-Australian flyway: 1. Western Port, Victoria, Australia. *The Stilt* **38:**39-53

Loyn, R.H. and Smith, I.W. (1999). Dieback of eucalypts in the Moorooduc Quarry Flora and Fauna Reserve. *Centre for Forest Tree Technology Report* **99/044**. NRE, Melbourne.

Loyn, R.H., Runnalls, R.G., Forward, G.Y. and Tyers, J. (1983) Territorial Bell Miners and other birds affecting populations of insect prey. *Science* **221:**1411-1413

Maclean, A. (1986) A terrestrial fauna survey of the Norris Barracks Army Reserve, Point Nepean/Portsea (Vic.). Unpublished Thesis, Bachelor of Science (Honors), Department of Zoology, Latrobe University, Melbourne

Mansergh, I., Beardsell, C., Bennett, S., Brereton, R., O'Connor, W., Sandiford, K. and Schulz, M. (1989) Report on the sites of zoological significance in the Upper Yarra Valley (western sections) and Dandenong Ranges. *Arthur Rylah Institute for Environmental Research Technical Report* No. 90, *Upper Yarra Valley and Dandenong Ranges Authority Technical Report* No. 25, Upper Yarra Valley & Dandenong Ranges Authority and Department of Conservation, Forests and Lands, Victoria

McCulloch, E. and Thomas, R. (1986) Nest boxes for Australian birds. BOCA leaflet. Bird Observers Club, Nunawading

MMBW (1987) Braeside Metropolitan Park: master plan report. Waterways & Parks Division, Melbourne and Metropolitan Board of Works, Melbourne

MMBW (1988) *The Yarra Book: an urban wildlife guide*. Waterways and Parks Division, Melbourne and Metropolitan Board of Works, Melbourne

Naarding, J.A. (1983) Latham's Snipe *Gallinago hardwickii* in southern Australia. *Wildlife Division Technical Report* No. 83/1, National Parks and Wildlife Service, Hobart

Norris, K. and Mansergh, I. (1981) Sites of Zoological Significance in East Gippsland 2Vols. Ministry for Conservation, Victoria, *Environmental Studies Series Report* No. 321-2. Ministry of Conservation, East Melbourne

Norris, K.C., Mansergh, I.M., Ahern, L.D., Belcher, C.B., Temby, I.D. and Walsh, N.G., 1983. Vertebrate fauna of the Gippsland Lakes Catchment. *Fisheries and Wildlife Division Occasional Paper Series* No. 1. Ministry for Conservation, Melbourne

NRE (2000) Threatened vertebrate fauna in Victoria 2000: A systematic list of vertebrate fauna considered extinct, at risk of extinction or in major decline in Victoria. Department of Natural Resources and Environment, East Melbourne

NRE FIS (2001) Flora species list. Electronic database, Flora Information System, Department of Natural Resources and Environment, East Melbourne

Nuttal, P.M. (1982) A biological assessment of water quality in Dandenong creek and its major tributaries, Victoria. *Dandenong Valley Authority Technical Report* No. 23. (unpublished report)

Nuttal, P.M. (1983) Temporal changes in water quality in the Dandenong creek catchment. *Dandenong Valley Authority Technical Report* No. 24. (unpublished report)

O'Brien, T. and O'Connor, J. (2001) Mobility of Australian Grayling and other fish species in relation to instream barriers. Unpublished report to Parks Victoria. Department of Natural Resources and Environment, Heidelberg

Posamentier, H. and Recher, H.F. (1974) The status of *Pseudomys novaehollandiae* (the New Holland Mouse) *Australian Zoologist* **18:**66-71

Schodde, R. and Mason, I.J. (1980) *Nocturnal Birds of Australia.* Landsdowne Press, Melbourne

Schulz, M. (1986) The Hooded Plover (*Charadrius rubricollis*) as a reef forager. *The Stilt* **9:**50-55

Schulz, M. (1988) The diet of the Mountain Owlet-Nightjar, *Aegotheles albertisi*. *Corella* **12:**59-60

Schulz, M. (1991) The Grey-crowned Babbler (*Pomatostomus temporalis*) a cause for concern in Southern Victoria. *The Australian Bird Watcher* **14(2):**37-45

Schulz, M. and Bamford, M. (1987) The Hooded Plover. RAOU Conservation Statement, Royal Australian Ornithological Union, Melbourne

Schulz, M. and Lumsden, L. (1983) Fluctuations in Hooded Plover numbers at Venus Bay in 1981 and 1982. *Victorian Wader Study Group Bulletin* **7:**11-12

Seebeck, J.H. and Beste, H.J. (1970) First record of the New Holland Mouse (*Pseudomys novaehollandiae* (Waterhouse, 1843)) in Victoria. *Victorian Naturalist* **87:**280-287

Stranger, M., Clayton, M., Schodde, R., Wombey, J. and Mason, I. (1998) *CSIRO List of Australian vertebrates. A reference with conservation status*. CSIRO Publishing, Collingwood

Tonkinson, D. and Loyn, R. (1997) Portsea Lagoon habitat management. A report prepared for Mornington Peninsula Shire Council. Arthur Rylah Institute for Environmental Research, Department of Natural Resources and Environment, Heidelberg

UYVDRA (1987) Upper Yarra River; revegetation and land management guidelines. Upper Yarra Valley and Dandenong Ranges Authority, Lilydale

Wainer, J.W. (1976) Studies of an island population of *Antechinus minimus* (Marsupialia, Dasyuridae). *Australian Zoologist* **19:**1-7

Watts, C.H.S. and Aslin, H.J. (1981) *The Rodents of Australia*. Angus and Robertson, Sydney

Webb, G.A. (1989) A note of the diet of the Australian Owlet-Nightjar *Aegotheles cristatus. Corella* **13:**90-1

Weston, M.A. (2001) Evaluation of existing information and information needs for the management of Hooded Plovers on land managed by Parks Victoria. Parks Victoria, Melbourne

Wheeler, R. (1966) *A handlist of the birds of Victoria*. Melbourne University Press, Melbourne

Yugovic, J.V., Crosby, D.F., Ebert, K., Lillywhite, P., Saddlier, S.R., Schulz, M., Vaughan, P.J., Westaway, J. and Yen, A.L. (1990) Flora and fauna of the Koonung and Mullum Mullum Valleys (Proposed Eastern Arterial Road and Ringwood Bypass), Victoria. *Lands and Forests Division Ecological Survey Report* No. 38. Department of Conservation Forests and Lands, Victoria

7. APPENDICES

Appendix I
Scientific names of vertebrate fauna mentioned in the text (following the Atlas of Victorian Wildlife, 2003; Stranger *et al.* 1998; Cadwallader and Backhouse 1983)

Birds

Stubble Quail	*Coturnix pectoralis*
Brown Quail	*Coturnix ypsilophora*
Blue-billed Duck	*Oxyura australis*
Musk Duck	*Biziura lobata*
Freckled Duck	*Stictonetta naevosa*
Black Swan	*Cygnus atratus*
Australian Shelduck	*Tadorna tadornoides*
Mallard	*Anas platyrhynchos*
Pacific Black Duck	*Anas superciliosa*
Australasian Shoveler	*Anas rhynchotis*
Grey Teal	*Anas gracilis*
Chestnut Teal	*Anas castanea*
Great Crested Grebe	*Podiceps cristatus*
Little Penguin	*Eudyptula minor*
Giant-Petrel:	
Southern Giant-Petrel	*Macronectes giganteus*
Northern Giant-Petrel	*Macronectes halli*
Southern Fulmar	*Fulmarus glacialoides*
Antarctic Petrel	*Thalassoica antarctica*
Kerguelen Petrel	*Lugensa brevirostris*
Great-winged Petrel	*Pterodroma macroptera*
Blue Petrel	*Halobaena caerulea*
Short-tailed Shearwater	*Puffinus tenuirostris*
Royal Albatross	*Diomedea epomophora*
Black-browed Albatross	*Diomedea melanophris*
Shy Albatross	*Diomedea cauta*
Yellow-nosed Albatross	*Diomedea chlororhynchos*
Buller's Albatross	*Diomedea bulleri*
Light-mantled Sooty Albatross	*Phoebetria palpebrata*
White-faced Storm-Petrel	*Pelagodroma marina*
Darter	*Anhinga melanogaster*
Great Cormorant	*Phalacrocorax carbo*
Black-faced Cormorant	*Phalacrocorax fuscescens*
Greater Frigatebird	*Fregata minor*
White-faced Heron	*Egretta novaehollandiae*
Little Egret	*Egretta garzetta*
Great Egret	*Ardea alba*
Intermediate Egret	*Ardea intermedia*
Nankeen Night-Heron	*Nycticorax caledonicus*
Little Bittern	*Ixobrychus minutus*
Australasian Bittern	*Botaurus poiciloptilus*
Glossy Ibis	*Plegadis falcinellus*
Australian White Ibis	*Threskiornis molucca*
Royal Spoonbill	*Platalea regia*
Square-tailed Kite	*Lophoictinia isura*
White-bellied Sea-Eagle	*Haliaeetus leucogaster*
Swamp Harrier	*Circus approximans*
Grey Goshawk	*Accipiter novaehollandiae*
Collared Sparrowhawk	*Accipiter cirrhocephalus*
Australian Hobby	*Falco longipennis*
Black Falcon	*Falco subniger*
Peregrine Falcon	*Falco peregrinus*
Buff-banded Rail	*Gallirallus philippensis*
Lewin's Rail	*Rallus pectoralis*

Baillon's Crake	*Porzana pusilla*
Australian Spotted Crake	*Porzana fluminea*
Spotless Crake	*Porzana tabuensis*
Dusky Moorhen	*Gallinula tenebrosa*
Black-tailed Native-hen	*Gallinula ventralis*
Eurasian Coot	*Fulica atra*
Little Button-quail	*Turnix velox*
Painted Button-quail	*Turnix varia*
Latham's Snipe	*Gallinago hardwickii*
Black-tailed Godwit	*Limosa limosa*
Little Curlew	*Numenius minutus*
Whimbrel	*Numenius phaeopus*
Marsh Sandpiper	*Tringa stagnatilis*
Common Greenshank	*Tringa nebularia*
Spotted Redshank	*Tringa erythropus*
Terek Sandpiper	*Xenus cinereus*
Common Sandpiper	*Actitis hypoleucos*
Grey-tailed Tattler	*Heteroscelus brevipes*
Ruddy Turnstone	*Arenaria interpres*
Sanderling	*Calidris alba*
Red-necked Stint	*Calidris ruficollis*
Sharp-tailed Sandpiper	*Calidris acuminata*
Curlew Sandpiper	*Calidris ferruginea*
Buff-breasted Sandpiper	*Tryngites subruficollis*
Ruff	*Philomachus pugnax*
Painted Snipe	*Rostratula benghalensis*
Pied Oystercatcher	*Haematopus longirostris*
Sooty Oystercatcher	*Haematopus fuliginosus*
Black-winged Stilt	*Himantopus himantopus*
Pacific Golden Plover	*Pluvialis fulva*
Grey Plover	*Pluvialis squatarola*
Red-capped Plover	*Charadrius ruficapillus*
Double-banded Plover	*Charadrius bicinctus*
Black-fronted Dotterel	*Elseyornis melanops*
Hooded Plover	*Thinornis rubricollis*
Red-kneed Dotterel	*Erythrogonys cinctus*
Banded Lapwing	*Vanellus tricolor*
Masked Lapwing	*Vanellus miles*
Great Skua	*Catharacta skua*
Pomarine Jaeger	*Stercorarius pomarinus*
Black-tailed Gull	*Larus crassirostris*
Kelp Gull	*Larus dominicanus*
Silver Gull	*Larus novaehollandiae*
Caspian Tern	*Sterna caspia*
Crested Tern	*Sterna bergii*
White-fronted Tern	*Sterna striata*
Common Tern	*Sterna hirundo*
Arctic Tern	*Sterna paradisaea*
Fairy Tern	*Sterna nereis*
Bridled Tern	*Sterna anaethetus*
Whiskered Tern	*Chlidonias hybridus*
White-winged Black Tern	*Chlidonias leucopterus*
Common Bronzewing	*Phaps chalcoptera*
Brush Bronzewing	*Phaps elegans*
Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*
Gang-gang Cockatoo	*Callocephalon fimbriatum*
Long-billed Corella	*Cacatua tenuirostris*
Rainbow Lorikeet	*Trichoglossus haematodus*
Musk Lorikeet	*Glossopsitta concinna*
Little Lorikeet	*Glossopsitta pusilla*
Australian King-Parrot	*Alisterus scapularis*
Swift Parrot	*Lathamus discolor*

Red-rumped Parrot	*Psephotus haematonotus*
Blue-winged Parrot	*Neophema chrysostoma*
Orange-bellied Parrot	*Neophema chrysogaster*
Pallid Cuckoo	*Cuculus pallidus*
Brush Cuckoo	*Cacomantis variolosus*
Powerful Owl	*Ninox strenua*
Southern Boobook	*Ninox boobook*
Barn Owl	*Tyto alba*
Tawny Frogmouth	*Podargus strigoides*
Australian Owlet-nightjar	*Aegotheles cristatus*
Azure Kingfisher	*Alcedo azurea*
Sacred Kingfisher	*Todiramphus sanctus*
Dollarbird	*Eurystomus orientalis*
Red-browed Treecreeper	*Climacteris erythrops*
Superb Fairy-wren	*Malurus cyaneus*
Southern Emu-wren	*Stipiturus malachurus*
White-browed Scrubwren	*Sericornis frontalis*
Striated Fieldwren	*Calamanthus fuliginosus*
Speckled Warbler	*Chthonicola sagittata*
Brown Thornbill	*Acanthiza pusilla*
Buff-rumped Thornbill	*Acanthiza reguloides*
Yellow Thornbill	*Acanthiza nana*
Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*
Regent Honeyeater	*Xanthomyza phrygia*
Bell Miner	*Manorina melanophrys*
Lewin's Honeyeater	*Meliphaga lewinii*
Singing Honeyeater	*Lichenostomus virescens*
Brown-headed Honeyeater	*Melithreptus brevirostris*
Crescent Honeyeater	*Phylidonyris pyrrhoptera*
Eastern Spinebill	*Acanthorhynchus tenuirostris*
Scarlet Honeyeater	*Myzomela sanguinolenta*
Scarlet Robin	*Petroica multicolor*
Red-capped Robin	*Petroica goodenovii*
Rose Robin	*Petroica rosea*
Pink Robin	*Petroica rodinogaster*
Hooded Robin	*Melanodryas cucullata*
Eastern Yellow Robin	*Eopsaltria australis*
Grey-crowned Babbler	*Pomatostomus temporalis*
Eastern Whipbird	*Psophodes olivaceus*
Varied Sittella	*Daphoenositta chrysoptera*
Crested Shrike-tit	*Falcunculus frontatus*
Olive Whistler	*Pachycephala olivacea*
Golden Whistler	*Pachycephala pectoralis*
Leaden Flycatcher	*Myiagra rubecula*
Satin Flycatcher	*Myiagra cyanoleuca*
Restless Flycatcher	*Myiagra inquieta*
Rufous Fantail	*Rhipidura rufifrons*
Grey Fantail	*Rhipidura fuliginosa*
Spangled Drongo	*Dicrurus bracteatus*
Dusky Woodswallow	*Artamus cyanopterus*
White-winged Chough	*Corcorax melanorhamphos*
Singing Bushlark	*Mirafra javanica*
Chestnut-breasted Mannikin	*Lonchura castaneothorax*
Mistletoebird	*Dicaeum hirundinaceum*
Tree Martin	*Hirundo nigricans*
Clamorous Reed Warbler	*Acrocephalus stentoreus*
Little Grassbird	*Megalurus gramineus*
Rufous Songlark	*Cincloramphus mathewsi*
Bassian Thrush	*Zoothera lunulata*
Common Starling	*Sturnus vulgaris*
Common Myna	*Acridotheres tristis*

Mammals

Platypus	*Ornithorhynchus anatinus*
Short-beaked Echidna	*Tachyglossus aculeatus*
Agile Antechinus	*Antechinus agilis*
Swamp Antechinus	*Antechinus minimus*
Dusky Antechinus	*Antechinus swainsonii*
Brush-tailed Phascogale	*Phascogale tapoatafa*
White-footed Dunnart	*Sminthopsis leucopus*
Southern Brown Bandicoot	*Isoodon obesulus*
Koala	*Phascolarctos cinereus*
Common Wombat	*Vombatus ursinus*
Long-nosed Bandicoot	*Perameles nasuta*
Eastern Pygmy-possum	*Cercartetus nanus*
Sugar Glider	*Petaurus breviceps*
Common Ringtail Possum	*Pseudocheirus peregrinus*
Common Brushtail Possum	*Trichosurus vulpecula*
Eastern Grey Kangaroo	*Macropus giganteus*
Black Wallaby	*Wallabia bicolor*
Grey-headed Flying-fox	*Pteropus poliocephalus*
Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*
White-striped Freetail Bat	*Tadarida australis*
Eastern Bent-wing Bat	*Miniopterus schreibersii oceanensis*
Lesser Long-eared Bat	*Nyctophilus geoffroyi*
Gould's Long-eared Bat	*Nyctophilus gouldi*
Gould's Wattled Bat	*Chalinolobus gouldii*
Chocolate Wattled Bat	*Chalinolobus morio*
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*
Large-footed Myotis	*Myotis macropus*
Inland Broad-nosed Bat	*Scotorepens balstoni*
Eastern Broad-nosed Bat	*Scotorepens orion*
Large Forest Bat	*Vespadelus darlingtoni*
Southern Forest Bat	*Vespadelus regulus*
Little Forest Bat	*Vespadelus vulturnus*
New Holland Mouse	*Pseudomys novaehollandiae*
Water Rat	*Hydromys chrysogaster*
Swamp Rat	*Rattus lutreolus*
Brown Rat	*Rattus norvegicus*
Black Rat	*Rattus rattus*
Australian Fur Seal	*Arctocephalus pusillus*
Leopard Seal	*Hydrurga leptonyx*
Crabeater Seal	*Lobodon carcinophagus*
Dog	*Canis familaris*
Dingo	*Canis lupus dingo*
Red Fox	*Canis vulpes*
Cat	*Felis catus*
European Rabbit	*Oryctolagus cuniculus*
Horse	*Equus caballus*
Cattle	*Bos taurus*
Sperm Whale	*Physeter macrocephalus*
Southern Right Whale	*Eubalaena australis*

Reptiles

Common Scaly-foot	*Pygopus lepidopodus*
Tree Dragon	*Amphibolurus muricatus*
Tree Goanna	*Varanus varius*
Eastern Three-lined Skink	*Bassiana duperreyi*
Swamp Skink	*Egernia coventryi*
White's Skink	*Egernia whitii*

Southern Water Skink	*Eulamprus tympanum*
Delicate Skink	*Lampropholis delicata*
Bougainville's Skink	*Lerista bougainvillii*
McCoy's Skink	*Nannoscincus maccoyi*
Metallic Skink	*Niveoscincus metallicus*
Glossy Grass Skink	*Pseudemoia rawlinsoni*
Lowland Copperhead	*Austrelaps superbus*
White-lipped Snake	*Drysdalia coronoides*
Tiger Snake	*Notechis scutatus*
Eastern Brown Snake	*Pseudonaja textilis*
Eastern Small-eyed Snake	*Rhinoplocephalus nigrescens*

Amphibians

Common Froglet	*Crinia signifera*
Victorian Smooth Froglet	*Geocrinia victoriana*
Southern Bullfrog	*Limnodynastes dumerilii*
Spotted Marsh Frog	*Limnodynastes tasmaniensis*
Common Spadefoot Toad	*Neobatrachus sudelli*
Haswell's Froglet	*Paracrinia haswelli*
Bibron's Toadlet	*Pseudophryne bibronii*
Southern Toadlet	*Pseudophryne semimarmorata*
Peron's Tree Frog	*Litoria peronii*
Growling Grass Frog	*Litoria raniformis*

Fish

Pouched Lamprey	*Geotria australis*
Short-finned Eel	*Anguilla australis*
Common Galaxias	*Galaxias maculatus*
Broad-finned Galaxias	*Galaxias brevipinnis*
Spotted Galaxias	*Galaxias truttaceus*
Australian Mudfish	*Galaxias cleaveri*
Dwarf Galaxias	*Galaxiella pusilla*
Australian Grayling	*Prototroctes maraena*
Macquarie Perch	*Macquaria australasica*
Southern Pygmy Perch	*Nannoperca australis*
Tupong	*Pseudaphritis urvillii*

Appendix II
Scientific names of vascular plants mentioned in the text (following the FIS Flora species list, NRE 2001)

Tree species

Black Sheoak	*Allocasuarina littoralis*
Black Wattle	*Acacia mearnsii*
Blackwood	*Acacia melanoxylon*
Cherry Ballart	*Exocarpos cupressiformis*
Coast Manna Gum	*Eucalyptus viminalis* ssp. *pryoriana*
Drooping Sheoak	*Allocasuarina verticillata*
Golden Wattle	*Acacia pycnantha*
Lightwood	*Acacia implexa*
Long-leaf Box	*Eucalyptus goniocalyx*
Manna Gum	*Eucalyptus viminalis*
Messmate	*Eucalyptus obliqua*
Moonah	*Melaleuca lanceolata* ssp. *lanceolata*
Narrow-leaf Peppermint	*Eucalyptus radiata*
Red Box	*Eucalyptus polyanthemos* ssp. *vestita*
Red Ironbark	*Eucalyptus tricarpa*
Red Stringybark	*Eucalyptus macrorhyncha*
River Red Gum	*Eucalyptus camaldulensis*
Silver Wattle	*Acacia dealbata*
Silver-leaf Stringybark	*Eucalyptus cephalocarpa*
Swamp Paperbark	*Melaleuca ericifolia*
Swamp Gum	*Eucalyptus ovata*
White Sallee	*Eucalyptus pauciflora* ssp. *pauciflora*
Woolly Tea-tree	*Leptospermum lanigerum*
Yellow Box	*Eucalyptus melliodora*

Shrub species

Beaded Glasswort	*Sarcocornia quinqueflora*
Burgan	*Kunzea ericoides*
Coast Banksia	*Banksia integrifolia* ssp. *integrifolia*
Coast Beard-heath	*Leucopogon parviflorus*
Coast Bitter-bush	*Adriana quadripartita*
Coast Everlasting	*Ozothamnus turbinatus*
Coast Tea-tree	*Leptospermum laevigatum*
Coast Wattle	*Acacia longifolia* var. *sophorae*
Common Heath	*Epacris impressa*
Cushion-bush	*Leucophyta brownii*
Dagger Hakea	*Hakea teretifolia*
Dogwood	*Cassinia aculeata*
Drooping Cassinia	*Cassinia arcuata*
Dusty Miller	*Spyridium parvifolium*
Furze Hakea	*Hakea ulicina*
Green Sheoak	*Allocasuarina paradoxa*
Guinea Flower	*Hibbertia* spp.
Heath Tea-tree	*Leptospermum myrsinoides*
Hedge Wattle	*Acacia paradoxa*
Hop Goodenia	*Goodenia ovata*
Horny Cone-bush	*Isopogon ceratophyllus*
Pink Beard-heath	*Leucopogon ericoides*
Prickly Moses	*Acacia verticillata*
Prickly Tea-tree	*Leptospermum continentale*
River Bottlebrush	*Callistemon sieberi*
Scented Paperbark	*Melaleuca squarrosa*
Scrub Sheoak	*Allocasuarina paludosa*

Shiny Cassinia	*Cassinia longifolia*
Showy Bossiaea	*Bossiaea cinerea*
Showy Parrot-pea	*Dillwynia sericea*
Silver Banksia	*Banksia marginata*
Snowy Daisy-bush	*Olearia lirata*
Spike Wattle	*Acacia oxycedrus*
Sweet Bursaria	*Bursaria spinosa*
Tree Everlasting	*Ozothamnus ferrugineus*
Victorian Christmas-bush	*Prostanthera lasianthos*
Wedding Bush	*Ricinocarpos pinifolius*
White Correa	*Correa alba*
Wirilda	*Acacia retinodes*
Yellow Hakea	*Hakea nodosa*

Ground layer species

Austral Bracken	*Pteridium esculentum*
Bulrush	*Typha* spp.
Chaffy Saw-sedge	*Gahnia filum*
Common Reed	*Phragmites australis*
Coral Fern	*Gleichenia* spp.
Creeping Brookweed	*Samolus repens*
Cumbungi	*Typha domingensis*
Fishbone Water-fern	*Blechnum nudum*
Kangaroo Grass	*Themeda triandra*
Parsnip Trachymene	*Trachymene anisocarpa*
Red-fruit Saw-sedge	*Gahnia sieberiana*
Rush	*Juncus* spp.
Sandhill Sword-sedge	*Lepidosperma concavum*
Saw Sedge	*Gahnia* spp.
Hollow Sedge	*Carex tereticaulis*
Small Grass-tree	*Xanthorrhoea minor*
Spike Sedge	*Eleocharis* spp.
Spiny-headed Mat-rush	*Lomandra longifolia*
Swamp Wallaby-grass	*Amphibromus* spp.
Sword-sedge	*Lepidosperma* spp.
Thatch Saw-sedge	*Gahnia radula*
Tussock Grass	*Poa labillardierei*
Wallaby Grass	*Austrodanthonia* spp.
Water Buttons	*Cotula coronopifolia*

Weed species

Blackberry*	*Rubus fruticosus* spp. agg.
Boneseed*	*Chrysanthemoides monilifera*
Kikuyu*	*Pennisetum clandestinum*
Monterey Pine*	*Pinus radiata*
Myrtle-leaf Milkwort*	*Polygala myrtifolia*
Sallow Wattle	*Acacia longifolia* var. *longifolia*
Sweet Pittosporum	*Pittosporum undulatum*
Willow*	*Salix* spp.

* Introduced to Australia

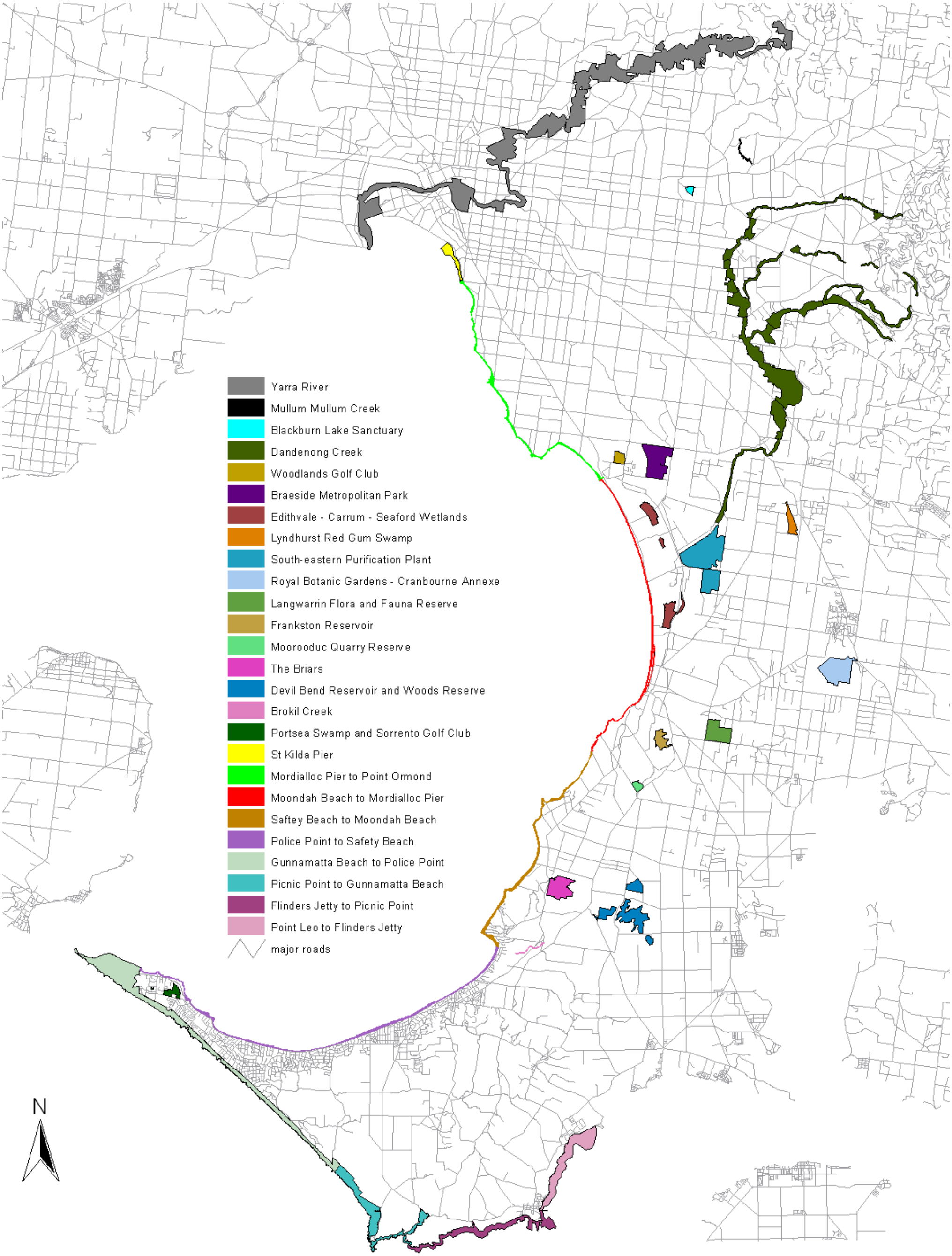


Figure 2. Locations of sites of zoological significance within the South East Melbourne and Mornington Peninsula study region, as identified by the authors in 1991. Only includes the 26 sites that are fully described in the text.